**Acid Deposition Monitoring Network in East Asia (EANET)**

# Data Report 2017

**December 2018**

**Network Center for EANET**

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# CHAPTER 1

## Introduction

# 1. Introduction

The Acid Deposition Monitoring Network in East Asia (EANET) was established as an initiative for regional cooperation among the participating countries, creation of a common understanding on the state of acid deposition problems and for providing useful inputs to policy makers at various levels.

Monitoring activities started during the preparatory phase activities of EANET from March 1998 to December 2000. Regular monitoring of acid deposition started from January 2001 with the participation of 10 countries, namely China, Indonesia, Japan, Malaysia, Mongolia, Philippines, Republic of Korea, Russia, Thailand, and Vietnam. Cambodia, Lao PDR and Myanmar joined EANET in 2001, 2002 and 2005, respectively. There are currently 13 countries participating in EANET activities.

Acid deposition monitoring of EANET covers five environmental items – wet deposition, dry deposition (air concentration), soil and vegetation, inland aquatic environment, and catchment-scale monitoring. Monitoring of wet and dry deposition was implemented in order to measure atmospheric concentrations and to evaluate fluxes of acidic substances to the land surface, while monitoring for soil/vegetation, inland aquatic environment and catchment-scale has been carried out to assess adverse impacts on terrestrial and aquatic ecosystems. The monitoring data were used to evaluate the state of acid deposition as well as impacts on ecosystems.

The participating countries are required to submit the data and related information obtained from the monitoring activities conducted at the EANET sites in their respective countries to the Network Center for EANET (NC) by the end of June of each calendar year based on the guidelines of EANET. The NC had prepared and presented a draft Data Report 2017, which contains the monitoring data from the participating countries at the Eighteenth Session of Scientific Advisory Committee (SAC18), held in October 2018. The draft Data Report was considered at SAC18 by the experts from the participating countries. Following the comments and guidance at the SAC18, the NC has elaborated and finalized the report.

The Data Report 2017 contains the data obtained from monitoring activities carried out in 2017.

# CHAPTER 2

## Network Description

# 2. Network Description

## 2.1 Classification of Monitoring Sites

EANET monitoring sites are classified into two basic categories, namely acid deposition monitoring sites and ecological survey sites. Acid deposition monitoring sites are sites for the collection of fundamental data on the temporal and spatial distribution of acid deposition, and they are further classified into 3 sub-categories: remote sites, rural sites and urban sites for specific objectives of the monitoring. Ecological survey sites are those that provide basic data for assessing the effects of acidification on terrestrial ecosystems, and they are further classified into 2 sub-categories: survey sites and ecosystem analysis sites. Their classification of the monitoring sites is shown in Table 2.1.

**Table 2.1 Classification of Monitoring Sites**

| Site Category | Site Classification | Main Purpose and Siting Criteria |
|---|---|---|
| **Acid Deposition Monitoring Site**<br>for wet deposition and dry deposition monitoring | Urban Site | - Assessment of the state of acid deposition in urban areas<br>- Urbanized and industrial areas, and the areas immediately outside the urban area<br>- Data can be used for evaluation of acid deposition effect on buildings and historical monuments or human health |
| | Rural Site | - Assessment of the state of acid deposition in rural areas and/or hinterlands<br>- Data can be used for the evaluation of acid deposition on agricultural crops, forests and etc.<br>- More than 20km apart from large pollution sources like cities, power plants and highways |
| | Remote Site | - Assessment of the state of acid deposition in background areas<br>- Data can be used for evaluation of long-range transport and deposition models<br>- More than 50km apart from large pollution sources like cities, power plants and highways<br>- More than 500m apart from main roads (less than 500 vehicles per day) |
| **Ecological Survey Site**<br>for soil and vegetation monitoring and Inland aquatic monitoring | Basic survey site | - Accumulation of basic data on soil, forest, and inland aquatic environment and disclose trends in their properties<br>- In the vicinity of the acid deposition monitoring site |
| | Ecosystem analysis site | - Assessment of acid deposition impacts on whole ecosystem through application of terrestrial ecosystem analysis and/or catchment analysis<br>- Sensitive Areas to changes in atmospheric acidity and ecologically conserved area |

## 2.2 Monitoring activities in 2017

Thirteen EANET countries, namely, Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand and Vietnam participated in monitoring of acid deposition in 2017. The data on deposition monitoring were submitted from a total of 62 monitoring sites, including 27 urban, 16 rural, and 19 remote sites. The map showing the location of these sites with the classification information is provided in Figure 2.1. The details on the location of the monitoring sites are presented in Table 2.2 and Table 2.3.

**Figure 2.1 Locations of EANET deposition monitoring sites in 2017**

**Table 2.2 Locations of EANET deposition monitoring sites**

| Country | Site | Code | Classification | Latitude[*1] | Longitude[*1] | Altitude[*1] /m |
|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | *KHA001* | Urban | 11°33'18"N | 104°56'20"E | 12 |
| China | Chongqing - Haifu | *CNA003* | Urban | 29°37'30"N | 106°30'34"E | 300 |
| | - Jinyunshan | *CNA004* | Rural | 29°49'42"N | 106°22'43"E | 403 |
| | Xi'an - Shizhan | *CNA005* | Urban | 34°14'33"N | 108°57'10"E | 419 |
| | - Jiwozi | *CNA007* | Remote | 33°51'06"N | 108°48'52"E | 2,198 |
| | Xiamen - Hongwen | *CNA008* | Urban | 24°28'47"N | 118°09'47"E | 39 |
| | - Xiaoping | *CNA009* | Remote | 24°51'23"N | 118°02'55"E | 530 |
| | Zhuhai - Xiang Zhou | *CNA010* | Urban | 22°16'22"N | 113°31'46"E | 40 |
| | - Zhuxiandong | *CNA011* | Urban | 22°12'24"N | 113°30'60"E | 50 |
| | - Haibin-Park | *CNA012* | Urban | 22°15'40"N | 113°34'25"E | 30 |
| Indonesia | Jakarta[*2] | *IDA001* | Urban | 06°09'22"S | 106°50'32"E | 7 |
| | Serpong | *IDA002* | Rural | 06°21'02"S | 109°40'04"E | 64 |
| | Kototabang | *IDA003* | Remote | 00°12'08"S | 100°19'05"E | 845 |
| | Bandung | *IDA004* | Urban | 06°53'41"S | 107°35'11"E | 753 |
| | Maros | *IDA005* | Rural | 04°59'50"S | 119°34'17"E | 1 |
| Japan | Rishiri | *JPA001* | Remote | 45°07'30"N | 141°14'30"E | 40 |
| | Ochiishi | *JPA002* | Remote | 43°09'43"N | 145°29'50"E | 49 |
| | Tappi | *JPA003* | Remote | 41°15'06"N | 140°21'01"E | 106 |
| | Sado-seki | *JPA004* | Remote | 38°15'02"N | 138°24'01"E | 129 |
| | Happo | *JPA005* | Remote | 36°41'48"N | 137°47'53"E | 1,850 |
| | Ijira | *JPA006* | Rural | 35°34'14"N | 136°41'51"E | 140 |
| | Oki | *JPA007* | Remote | 36°17'19"N | 133°11'06"E | 90 |
| | Banryu | *JPA008* | Urban | 34°40'54"N | 131°47'59"E | 53 |
| | Yusuhara | *JPA009* | Remote | 33°22'46"N | 132°56'06"E | 790 |
| | Hedo | *JPA010* | Remote | 26°51'58"N | 128°14'55"E | 60 |
| | Ogasawara | *JPA011* | Remote | 27°05'32"N | 142°13'02"E | 212 |
| | Tokyo | *JPA012* | Urban | 35°41'30"N | 139°45'10"E | 26 |
| Lao PDR | Vientiane[*3] | *LAA001* | Urban | 17°59'88"N | 102°34'93"E | 175 |
| Malaysia | Petaling Jaya | *MYA001* | Urban | 03°06'07"N | 101°38'42"E | 51 |
| | Tanah Rata | *MYA002* | Rural | 04°29'03"N | 101°22'17"E | 1,545 |
| | Danum Valley | *MYA003* | Remote | 04°58'53"N | 117°50'37"E | 438 |
| | Kuching | *MYA004* | Urban | 01°29'25"N | 110°21'09"E | 20 |
| Mongolia | Ulaanbaatar | *MNA001* | Urban | 47°55'13"N | 106°54'43"E | 1,303 |
| | Terelj | *MNA002* | Remote | 47°58'59"N | 107°27'04"E | 1,557 |
| Myanmar | Yangon | *MMA001* | Urban | 16°51'53"N | 96°09'13"E | 21 |
| | Mandalay[*4] | *MMA002* | Urban | 21°54'46"N | 96°03'51"E | 70 |
| Philippines | Metro Manila | *PHA001* | Urban | 14°38'09"N | 121°04'43"E | 55 |
| | Los Baños | *PHA002* | Rural | 14°09'53"N | 121°15'00"E | 25 |
| | Mt. Sto. Tomas | *PHA003* | Remote | 16°25' N | 120°36' E | 1,500 |
| Republic of Korea | Kanghwa | *KRA001* | Rural | 37°42'32"N | 126°16'26"E | 60 |
| | Cheju (Kosan) | *KRA002* | Remote | 33°17'32"N | 126°09'43"E | 37 |
| | Imsil | *KRA003* | Rural | 35°36'09"N | 127°10'53"E | 217 |

**Table 2.2 Locations of EANET deposition monitoring sites (continued)**

| Country | Site | Code | Classification | Latitude*1 | Longitude*1 | Altitude*1 /m |
|---|---|---|---|---|---|---|
| Russia | Mondy | *RUA001* | Remote | 51°37'18"N | 100°55'10"E | 1,996 |
| | Listvyanka | *RUA002* | Rural | 51°50'47"N | 104°53'34"E | 646 |
| | Irkutsk | *RUA003* | Urban | 52°14'53"N | 104°15'33"E | 495 |
| | Primorskaya | *RUA004* | Rural | 43°37'45"N | 132°14'13"E | 85 |
| Thailand | Bangkok | *THA001* | Urban | 13°47'04"N | 100°32'22"E | 5 |
| | Samutprakarn | *THA002* | Urban | 13°39'58"N | 100°36'21"E | 4 |
| | Pathumthani | *THA003* | Rural | 14°02'46"N | 100°42'43"E | 6 |
| | Khanchanaburi (Vachiralongkorn Dam) | *THA004* | Remote | 14°47'05"N | 98°36'05"E | 130 |
| | Chiang Mai | | | | | |
| | - Mae Hia | *THA005* | Rural | 18°45'40"N | 98°55'54"E | 349 |
| | - Chang Phueak | *THA006* | Urban | 18°50'26"N | 98°58'11"E | 329 |
| | - Si Phum | *THA007* | Urban | 18°47'27"N | 98°59'24"E | 313 |
| | Nakhon Ratchasima | | | | | |
| | - Sakaerat | *THA008* | Rural | 14°28'04"N | 101°54'05"E | 409 |
| | - Nai Mueang | *THA009* | Urban | 14°58'46"N | 102°05'53"E | 184 |
| Vietnam | Hanoi | *VNA001* | Urban | 21°03'24"N | 105°43'36"E | 6 |
| | Hoa Binh | *VNA002* | Rural | 20°50'12"N | 105°20'32"E | 23 |
| | Cuc Phuong | *VNA003* | Remote | 20°18'01"N | 105°41'38"E | 155 |
| | Da Nang | *VNA004* | Urban | 16°02'35"N | 108°12'24"E | 5 |
| | Can Tho | *VNA005* | Rural | 10°05'18"N | 105°41'45"E | 2 |
| | Ho Chi Minh | *VNA006* | Urban | 10°47'04"N | 106°42'00"E | 5 |
| | Yen Bai | *VNA007* | Rural | 21°42'28"N | 104°52'29"E | 56 |

*1 The latitude and longitude are shown according to the World Geodetic System. The latitude, longitude and altitude of each site indicate the deposition monitoring site.
*2 Jakarta site was relocated in 2016.
*3 The wet only sampler and filter pack system were moved to Natural Resources and Environment Research Institute (NRERI) on October 2017.
*4 The classification of Mandalay site was changed from rural site to urban site in 2017.

The current situation on basic survey sites for ecological monitoring and their nearest deposition monitoring sites are shown in Table 2.3. Soil and vegetation monitoring and monitoring on inland aquatic environment are conducted at 31 plots in 10 countries and 19 lakes/rivers in 11 countries, respectively. Most of the ecological monitoring sites are corresponded to the deposition monitoring sites. Moreover, both soil and vegetation monitoring and monitoring on inland aquatic environment are conducted in the vicinity of 4 deposition monitoring sites in China, 2 sites in Japan, 2 sites in Philippines, 2 sites in Russia, 1 site in Thailand, and 1 site in Vietnam. It is expected that the deposition data collected in their nearest monitoring sites will be used for interpretation of the data on ecological monitoring in these sites.

**Table 2.3 Basic survey sites for ecological monitoring and their nearest deposition sites**

| Country | Site for deposition monitoring | Plot for soil and vegetation monitoring | Code for soil and vegetation monitoring | Site for monitoring on inland aquatic environment | Code for monitoring on inland aquatic environment |
|---|---|---|---|---|---|
| Cambodia | - | - | - | Sras Srang Lake | *KHI002* |
| China | Chongqing - Jinyunshan | Jinyunshan | *CNS004* | Jinyunshan Lake | *CNI004* |
| | Xi'an - Jiwozi | Dabagou | *CNS007* | Jiwozi River | *CNI007* |
| | Xiamen - Xiaoping | Xiaoping | *CNS009* | Xiaoping Dam | *CNI209* |
| | Zhuhai - Zhuxiandong | Zhuxiandong | *CNS011* | Zhuxiandong Stream | *CNI111* |
| Indonesia | Serpong | Bogor Research Forest (Dramaga Experimental Forest) | *IDS002* | - | - |
| | Bandung | - | - | Patengang Lake | *IDI004* |
| | - | - | - | Gunung Lake | *IDI006* |
| Japan | Ijira | Ijira | *JPS006* | Ijira Lake | *JPI006* |
| | | Yamato | *JPS106* | | |
| | Banryu | Banryu-2[*1] | *JPS008* | Banryu Lake | *JPI008* |
| | | Iwami "rinku" Factory Park[*1] | *JPS108* | | |
| Lao PDR | Vientiane | - | | Nam Hum Lake | *LAI001* |

**Table 2.3 Basic survey sites for ecological monitoring and their nearest deposition sites (continued)**

| Country | Site for deposition monitoring | Plot for soil and vegetation monitoring | Code for soil and vegetation monitoring | Site for monitoring on inland aquatic environment | Code for monitoring on inland aquatic environment |
|---|---|---|---|---|---|
| Malaysia | Petaling Jaya | Pasoh Reserve Forest1 | *MYS001* | Semenyih Dam | *MYI001* |
| | | Pasoh Reserve Forest2 | *MYS101* | | |
| | - | UPMKB Rehabilitated Forest Planted in 1991 | *MYS005* | | |
| | | UPMKB Rehabilitated Forest Planted in 2008 | *MYS105* | | |
| | Danum Valley | - | - | Tembaling River | *MYI003* |
| Mongolia | Ulaanbaatar | Bogdkhan Mountain | *MNS001* | - | - |
| | Terelj | Terelj Mountain | *MNS002* | Terelj River | *MNI002* |
| Philippines | Los Banos | Mt. Makiling | *PHS002* | Pandin Lake | *PHI102* |
| | | UP Quezon, Land Grant | *PHS102* | | |
| | Metro Manila | La Mesa Watershed | *PHS001* | - | - |
| | Mt. Sto Tomas | Boneco Long Term Ecological Research Site | *PHS003* | Ambulalakaw Lake | *PHI003* |
| Republic of Korea | Imsil | Mt. Naejang | *KRS003* | - | - |
| Russia | Irkutsk | Irkutsk | *RUS003* | - | - |
| | Listvyanka | Bolshie Koty | *RUS002* | Pereemnaya River | *RUI102* |
| | | Pereemnaya river catchment | *RUS102* | | - |
| | Mondy | Ilchir Lake | *RUS001* | - | - |
| | | Okinskoe Lake | *RUS101* | | |
| | | Solar Observatory | *RUS201* | | |
| | Primorskaya | Primorskaya | *RUS004* | Komarovka River | *RUI004* |

**Table 2.3 Basic survey sites for ecological monitoring and their nearest deposition sites (continued)**

| Country | Site for deposition monitoring | Plot for soil and vegetation monitoring | Code for soil and vegetation monitoring | Site for monitoring on inland aquatic environment | Code for monitoring on inland aquatic environment |
|---|---|---|---|---|---|
| Thailand | Khanchanaburi (Vachiralongkorn Dam) | Vachiralongkorn Dam | *THS004* | Vachiralongkorn Dam | *THI004* |
| | | Vachiralongkorn Puye | *THS104* | | |
| Vietnam | Hoa Binh | Cave of Heaven | *VNS002* | Hoa Binh Reservoir | *VNI002* |
| | | Thang Ranh | *VNS102* | | |

*1 The sites around Banryu deposition site were relocated in 2001.

Table 2.4 shows the sites for catchment-scale monitoring, and this table contains the site information which is under preparation at this moment.

**Table 2.4 Site for catchment-scale monitoring**

| Country | Site | Code | Note |
|---|---|---|---|
| Japan | Lake Ijira catchment | *JPC006* | |
| Philippines | La Mesa Watershed | *PHC001* | Under preparation |

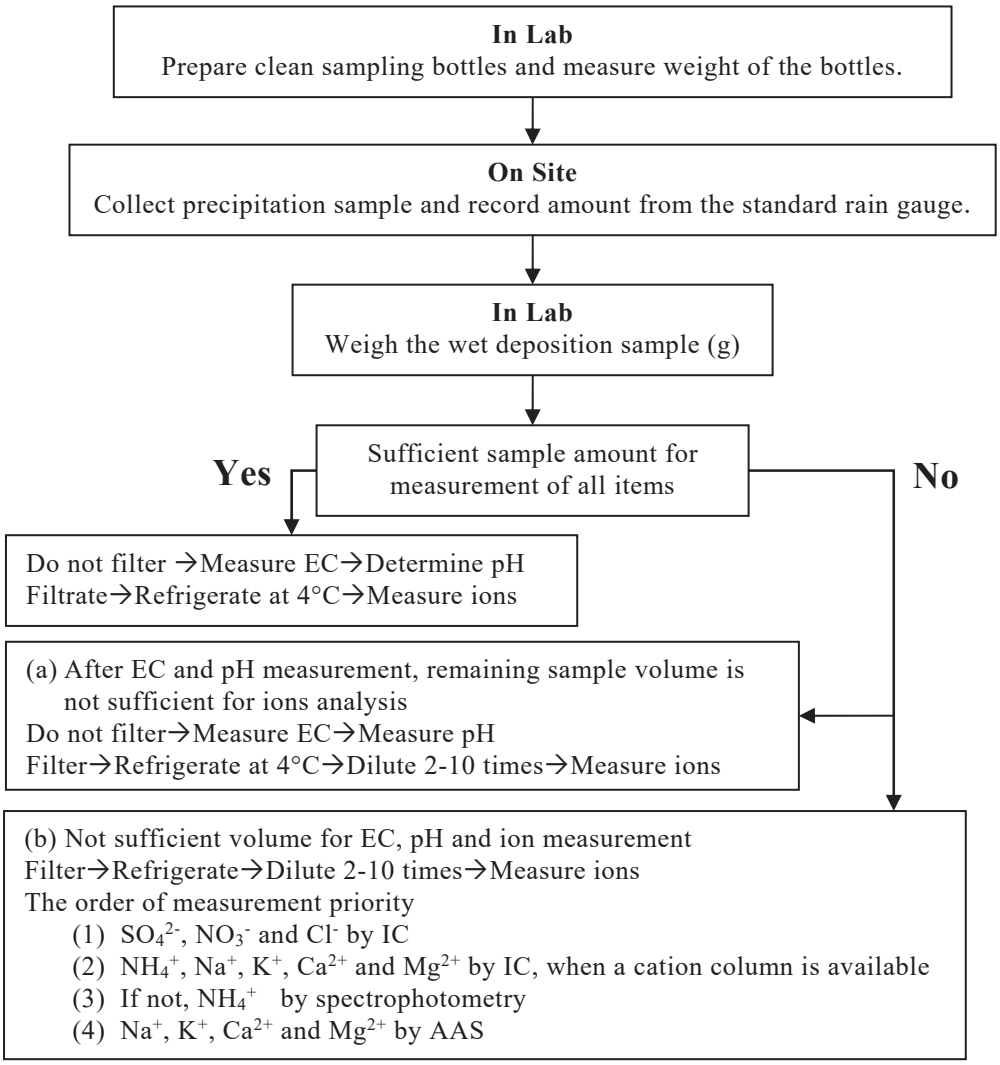
# CHAPTER 3

## Wet Deposition Monitoring

## 3. Wet Deposition Monitoring

### 3.1 Method

Each participating country is required to carry out acid deposition monitoring using common methodologies as specified in "*Guidelines for Acid Deposition Monitoring in East Asia*, *Technical Manual for Wet Deposition Monitoring in East Asia -2010"*, which was issued by the Network Center for EANET in November 2010 to obtain comparable, high quality monitoring data. Figure 3.1 shows the flow chart that summarizes the procedures for sampling and chemical analysis by the participating countries.




* EC: Electric conductivity, IC: Ion chromatography

**Figure 3.1 Flow chart of sampling and chemical analysis of Wet Deposition**

### 3.1.1 Field Operation

The wet-only sampler is recommended for the collection of the precipitation samples. This instrument is designed to collect precipitation samples during the period of rainfall which is detected by an equipped rain sensor that opens the lid on the collecting bucket or funnel. The lid of this instrument closes to avoid any collection into the collecting bucket or funnel, when no rainfall is detected by the sensor.
On the other hand, when a manual sampler is used to collect the precipitation since an automatic instrument is not available, the sampling shall be done by ensuring the sample collection only during rainfall period.

The collected wet deposition samples in a tropical region have to be prevented from any microbiological degradation. Biocides such as thymol should be used to prevent the microbiological degradation when the storage during sampling, shipping and storage of the samples under the refrigeration is not possible.
Samples without biocides have to be shipped to the laboratories in charge of chemical analysis using a cooling box to keep the sample temperature low enough to preserve the sample chemistry. On the other hand, the special care for the sampling of wet deposition in the higher latitude region during winter seasons should be done. The collection of the wet deposition samples may encounter difficulties due to low ambient temperature particularly when the temperature falls below -10 to -20$^{\circ}$C.

### 3.1.2 Laboratory Operation

Procedures for the analysis of major constituent in wet deposition sample according to the *"Technical Manual for Wet Deposition Monitoring in East Asia -2010"* are shown in Table 3.1. Ion chromatography is recommended as the major analytical method which has been adopted by the participating countries for chemical analysis of both anions and cations contained in precipitation samples. Atomic absorption/emission spectrometry for $Na^{+}$, $K^{+}$, $Ca^{2+}$, and $Mg^{2+}$, and spectrophotometry for $NH_4^{+}$ are the secondary methods for the determination of these ions. Laboratories that use other non-recommended methods with insufficient analytical sensitivity, such as titration method, will encounter problems of unsatisfactory detection limit.
The EANET Data quality objective (DQO) values are defined in the *"Technical Documents for Wet Deposition Monitoring in East Asia -2010."* And DQO values about Detection limits are shown in Table 3.2.

### 3.1.3 Data Management

Each laboratory has to submit the analyzed data of the precipitation samples to the National Center. Each National Center is expected to submit the compiled data in the required format to the Network Center for EANET (NC) by the end of June in the following year. All the data have to be checked by calculating values of ion balance ($R_1$) and conductivity agreement ($R_2$). If a sample or individual datum has problems including "insufficient sample volume" or "low precision", the flags corresponding to the problems should be recorded onto the data sheet. Participating countries can refer to QA/QC part of the EANET document on *"Technical Manual for Wet Deposition Monitoring in East Asia -2010."*

### 3.1.4 Meteorological Measurements

It is recommended that monitoring sites incorporate collocated meteorological measurements including wind direction/speed, temperature, humidity, precipitation amount and solar radiation. Meteorological data can also be acquired from the nearest standard meteorological station (meeting the requirements of the national weather service). Local meteorological data is very useful when dealing with the interpretation of unusual precipitation events.

Meteorological statistics at the monitoring sites are shown in Appendix 2 at the end of the report.

**Table 3.1 Recommended analytical method for the measurement of major constituent in wet deposition samples**

| Analysis | Method |
|---|---|
| Electric conductivity (EC) | Conductivity cell method |
| pH | Glass electrode |
| $Cl^-$, $NO_3^-$, $SO_4^{2-}$, $NO_2^-$, $F^-$, $PO_4^{3-}$ | Ion chromatography, Spectrophotometry |
| $NH_4^+$ | Ion chromatography,<br>Spectrophotometry (Indophenol Blue)* |
| $Na^+$, $K^+$, $Ca^{2+}$, $Mg^{2+}$ | Ion chromatography<br>Atomic absorption/emission spectrometry |
| $HCO_3^-$ | Ion chromatography, Alkalinity method, HPLC |
| Organic acids | Ion chromatography |

* An alternate analysis method should be used if thymol has been used as a biocide during sample collection.

**Table 3.2 DQO values about Detection limits**

| Items | Detection limits (μmol $L^{-1}$) |
|---|---|
| $SO_4^{2-}$ | 0.3 |
| $NO_3^-$ | 0.5 |
| $Cl^-$ | 0.5 |
| $NH_4^+$ | 0.8 |
| $Na^+$ | 0.3 |
| $K^+$ | 0.3 |
| $Ca^{2+}$ | 0.2 |
| $Mg^{2+}$ | 0.3 |

### 3.1.5 Overview of the Statistics and Definition

An overview of the statistics and definitions used is given below.

**Weighted average:** the precipitation amount weighted average concentration (μmol $L^{-1}$) over the summary period.

Calculated as:

$$\hat{C} = \Sigma(C_i P_i) / \Sigma P_i$$

where $\hat{C}$ : precipitation amount weighted average concentration (μmol $L^{-1}$)

$C_i$ : measured valid concentration for sample i (μmol $L^{-1}$)

$P_i$ : precipitation amount for the same sample i with valid concentration (mm)

**Deposition amount:** the wet deposition amount (mmol $m^{-2}$) for the summary period.

Calculated as:

Deposition amount = $\hat{C}$ × (total precipitation amount for the summary period)/1000

The concentrations for the sampling periods with missing data have consequently been assumed to be equal to the weighted average of the summary period.

**Non-sea-salt sulfate and non-sea-salt calcium (μmol $L^{-1}$):** Equal to the measured sulfate (calcium) in the sample minus the sulfate (calcium) contributed by sea salt. Sea salt sulfate (calcium) is estimated from the concentration of sodium and the component ratio of sea water.

$$[\text{nss-}SO_4^{2-}] = [SO_4^{2-}] - 0.06028\,[Na^+]$$
$$[\text{nss-}Ca^{2+}] = [Ca^{2+}] - 0.02161\,[Na^+]$$

($Na^+$ : 468.3 mmol $L^{-1}$, $SO_4^{2-}$ : 28.23 mmol $L^{-1}$, $Ca^{2+}$ : 10.12 mmol $L^{-1}$; Ref.: *Guide to maritime observation*, *Oceanographic Society of Japan*)

**Data completeness:**

**(i) Percent precipitation coverage length (%PCL):** Percentage of days with measured precipitation plus no precipitation days in the summary period. Calculated as:

%PCL = [(Number of days in the summary period)−(Number of days with missing or unknown precipitation)] / (Number of days in the summary period)×100

**(ii) Percent total precipitation (%TP):** Percentage of total precipitation amount over the summary period represented by valid component measurements. Calculated as:

%TP = (Sum of precipitation amounts for samples with valid sample component measurements) / (Sum of precipitation amounts for all samples)×100

**(iii) Data completeness criteria for monthly and annual summaries:**

%PCL ≥ 80%, and %TP ≥ 80%

The low values on data completeness were caused by some trouble, such as contamination of sample and malfunction of the wet-only sampler or the rain gauge.

**Ion balance ($R_1$):**

Calculated as:

$$R_1 = (C - A) / (C + A) \times 100\ (\%)$$

where C: total cation equivalent concentration (μeq $L^{-1}$)

A: total anion equivalent concentration (μeq $L^{-1}$)

$$C = 10^{(6-pH)} + \Sigma(C_{Ci}V_i)$$

where $C_{Ci}$ : the concentration of i-th cation (μmol $L^{-1}$)

$V_i$ : the valence of the given ion

$$A = \Sigma(C_{Ai}V_i)$$

where $C_{Ai}$ : the concentration of i-th anion (μmol $L^{-1}$)

**Required criteria for $R_1$ :**

The required ion balances of precipitation analyses are given in Table 3.3.

**Table 3.3 Required criteria for $R_1$**

| (C+A) ($\mu$eq $L^{-1}$) | $R_1$ (%) |
|---|---|
| <50 | ±30 |
| 50 – 100 | ±15 |
| >100 | ±8 |

**Conductivity agreement ($R_2$) :**

Calculated as:

$$R_2 = (\Lambda_{calc} - \Lambda_{meas}) / (\Lambda_{calc} + \Lambda_{meas}) \times 100\ (\%)$$

where $\Lambda_{calc}$ : the calculated conductivity (mS $m^{-1}$)

$\Lambda_{meas}$ : the measured conductivity (mS $m^{-1}$)

$$\Lambda_{calc} = \Sigma(C_i\ \Lambda_i^0) \times 10^{-4}$$

where $C_i$ : the ionic concentration of i-th ion ($\mu$mol $L^{-1}$)

$\Lambda_i^0$ : the molar conductivity at infinite dilution and 25°C ($Scm^2\ mol^{-1}$)

$$\Lambda_{calc} = \{349.7 \times 10^{(6-pH)} + 80.0 \times 2c(SO_4^{2-}) + 71.4c(NO_3^-) + 76.3c(Cl^-) + 73.5c(NH_4^+) + 50.1c(Na^+) + 73.5c(K^+) + 59.5 \times 2c(Ca^{2+}) + 53.0 \times 2c(Mg^{2+})\}/10000$$

where c( ) : the ionic concentrations ($\mu$mol $L^{-1}$)

**Required criteria for $R_2$ :**

The required conductivity comparison criteria are given in Table 3.4.

**Table 3.4 Required criteria for $R_2$**

| $\Lambda_{meas}$ (mS $m^{-1}$) | $R_2$ (%) |
|---|---|
| <0.5 | ±20 |
| 0.5 – 3 | ±13 |
| >3 | ±9 |

### 3.1.6 Terms and Abbreviations

Terms and abbreviations are given in Table 3.5.

**Table 3.5 Terms and abbreviations**

| | Terms and abbreviations | Definition |
|---|---|---|
| For all data | Data in hatched cell ( ) | Rejected monthly (annual) value by the criteria. [%PCL<80% and/or %TP<80%] |
| | [--] | Precipitation was 0 mm. |
| | [*] | The constituent was not measured although precipitation was not 0 mm. [%TP=0%] |
| | [**] | Precipitation was not measured. [%PCL=0%] |
| | [***] | No data or no measurement |
| | Black cell ( ) | Monitoring was not carried out. |
| For precipitation amount weighted average concentrations | Max | Maximum monitoring data for a year. |
| | Min | Minimum monitoring data for a year. |
| For concentration of ions except for $H^+$ | [<0.2]<br>[<0.3]<br>[<0.5]<br>[<0.8] | The values were lower than each DQO value about Detection limit.<br>nss-$SO_4^{2-}$ and nss-$Ca^{2+}$ refer to Detection limit of $SO_4^{2-}$ and $Ca^{2+}$ respectively. |
| For deposition | [0.00] | Deposition amount was zero. (Precipitation was 0 mm.) |
| | [<0.01] | Calculated deposition amount was lower than 0.01mmol $m^{-2}$. |
| For results of ion balance ($R_1$) and conductivity agreement check ($R_2$) | Sample (N) | Number of samples. |
| | $R_1$ (N) | Number of samples measured and calculated ion balance ($R_1$). |
| | $R_1$ (AA) | Number of samples within allowable ranges for $R_1$. |
| | $R_2$ (N) | Number of samples measured and calculated conductivity agreement ($R_2$). |
| | $R_2$ (AA) | Number of samples within allowable ranges for $R_2$. |
| | $R_1$&$R_2$ (N) | Number of samples measured and calculated both $R_1$ and $R_2$. |
| | $R_1$&$R_2$ (AA) | Number of samples within allowable ranges of both $R_1$ and $R_2$. |

### 3.1.7 Monitoring Sites

Precipitation samples are collected on a daily basis at 36 out of 57 sites, while weekly collection are performed at 21 sites, as presented in Table 3.6. The analytical methods used in the laboratories for measuring the precipitation samples are presented in Table 3.7.
In addition, Table 3.7 shows additional items that some sites analyzed. $R_1$ and $R_2$ were calculated for these sites including the additional items.

**Table 3.6 Sampling Frequencies for Wet Deposition Monitoring in 2017**

| Country | Site | Classification | Sampling Interval | Starting Month |
|---|---|---|---|---|
| Cambodia | Phnom Penh | Urban | Weekly | April 2004 |
| China | Chongqing - Haifu | Urban | Daily | January 2008 |
| | - Jinyunshan | Rural | Daily | April 1999 |
| | Xi'an - Shizhan | Urban | Daily | April 1999 |
| | - Jiwozi | Remote | Daily | April 1999 |
| | Xiamen - Hongwen | Urban | Daily | April 1999 |
| | - Xiaoping | Remote | Daily | April 1999 |
| | Zhuhai - Xiang Zhou | Urban | Daily | April 1999 |
| | - Zhuxiandong | Urban | Daily | December 1999 |
| Indonesia | Jakarta | Urban | Weekly | April 1998 |
| | Serpong | Rural | Daily | April 1998 |
| | Kototabang | Remote | Weekly | April 1998 |
| | Bandung | Urban | Daily | January 1999 |
| | Maros | Rural | Weekly | January 2008 |
| Japan | Rishiri | Remote | Daily | April 1998 |
| | Ochiishi | Remote | Daily | January 2003 |
| | Tappi | Remote | Daily | April 1998 |
| | Sado-seki | Remote | Daily | April 1999 |
| | Happo | Remote | Daily | April 1998 |
| | Ijira | Rural | Weekly | June 1999 |
| | Oki | Remote | Daily | April 1998 |
| | Banryu | Urban | Weekly | May 1999 |
| | Yusuhara | Remote | Daily | December 1999 |
| | Hedo | Remote | Daily | December 1999 |
| | Ogasawara | Remote | Daily | May 1999 |
| | Tokyo | Urban | Daily | April 2007 |
| Lao PDR | Vientiane | Urban | Daily | October 2003 |
| Malaysia | Petaling Jaya | Urban | Weekly | April 1998 |
| | Tanah Rata | Rural | Weekly | January 1999 |
| | Danum Valley | Remote | Weekly | January 2005 |
| | Kuching | Urban | Weekly | January 2008 |
| Mongolia | Ulaanbaatar | Urban | Daily | August 1998 |
| | Terelj | Remote | Daily | September 1998 |
| Myanmar | Yangon | Urban | Weekly | January 2007 |
| Philippines | Metro Manila | Urban | Weekly | April 1999 |
| | Los Baños | Rural | Weekly | April 1999 |
| | Mt. Sto. Tomas | Remote | Weekly | October 2006 |

**Table 3.6 Sampling Frequencies for Wet Deposition Monitoring in 2017 (continued)**

| Country | Site | Classification | Sampling Interval | Starting Month |
|---|---|---|---|---|
| Republic of Korea | Kanghwa | Rural | Daily | March 1999 |
| | Cheju (Kosan) | Remote | Daily | April 1999 |
| | Imsil | Rural | Daily | January 2001 |
| Russia | Mondy | Remote | Daily | May 1999 |
| | Listvyanka | Rural | Daily | January 2000 |
| | Irkutsk | Urban | Daily | January 2000 |
| | Primorskaya | Rural | Daily | February 2002 |
| Thailand | Bangkok | Urban | Daily | April 1999 |
| | Samutprakarn | Urban | Daily | January 2004 |
| | Pathumthani | Rural | Daily | March 1999 |
| | Khanchanaburi | Remote | Daily | April 1999 |
| | Chiang Mai - Mae Hia | Rural | Daily | January 2001 |
| | Nakhon Ratchasima - Sakaerat | Rural | Daily | January 2006 |
| Vietnam | Hanoi | Urban | Weekly | August 1999 |
| | Hoa Binh | Rural | Weekly | August 1999 |
| | Cuc Phuong | Remote | Weekly | January 2009 |
| | Da Nang | Urban | Weekly | January 2009 |
| | Can Tho | Rural | Weekly | January 2014 |
| | Ho Chi Minh | Urban | Weekly | January 2014 |
| | Yen Bai | Rural | Weekly | May 2015 |

**Table 3.7 Analytical methods and additional items in 2017**

| Country | Site | Analytical methods | | | Additional items |
|---|---|---|---|---|---|
| | | Anions | $NH_4^+$ | Other Cations | |
| Cambodia | Phnom Penh | IC | IC | IC | |
| China | Chongqing - Haifu | IC, TI | IC | IC | $HCO_3^-$, $F^-$ |
| | - Jinyunshan | IC, TI | IC | IC | $HCO_3^-$, $F^-$ |
| | Xi'an - Shizhan | IC | IC | IC | |
| | - Jiwozi | IC | IC | IC | |
| | Xiamen - Hongwen | IC | IC | IC | $F^-$ |
| | - Xiaoping | IC | IC | IC | $F^-$ |
| | Zhuhai - Xiang Zhou | IC | IC | IC | $F^-$ |
| | - Zhuxiandong | IC | IC | IC | $F^-$ |
| Indonesia | Jakarta | IC | IC | IC | |
| | Serpong | IC | IC | IC | |
| | Kototabang | IC | IC | IC | |
| | Bandung | IC | IC | IC | |
| | Maros | IC | IC | IC | |

**Table 3.7 Analytical methods and additional items in 2017 (continued)**

| Country | Site | Analytical methods | | | Additional items |
|---|---|---|---|---|---|
| | | Anions | $NH_4^+$ | Other Cations | |
| Japan | Rishiri | IC | IC | IC | |
| | Ochiishi | IC | IC | IC | |
| | Tappi | IC | IC | IC | Formic, Acetic, Oxalic acid |
| | Sado-seki | IC | IC | IC | |
| | Happo | IC | IC | IC | |
| | Ijira | IC | IC | IC | |
| | Oki | IC | IC | IC | |
| | Banryu | IC | IC | IC | |
| | Yusuhara | IC | IC | IC | $F^-$, $NO_2^-$, $PO_4^{3-}$ |
| | Hedo | IC | IC | IC | |
| | Ogasawara | IC | IC | IC | $F^-$, $NO_2^-$ |
| | Tokyo | IC | IC | IC | $F^-$, $NO_2^-$ |
| Lao PDR | Vientiane | IC | IC | IC | |
| Malaysia | Petaling Jaya | IC | IC | IC | Formic, Acetic, Oxalic acid |
| | Tanah Rata | IC | IC | IC | Formic, Acetic, Oxalic acid |
| | Danum Valley | IC | IC | IC | Formic, Acetic, Oxalic acid |
| | Kuching | IC | IC | IC | Formic, Acetic, Oxalic acid |
| Mongolia | Ulaanbaatar | IC | IC | IC | |
| | Terelj | IC | IC | IC | |
| Myanmar | Yangon | IC | IC | IC | |
| Philippines | Metro Manila | IC | IC | IC | $PO_4^{3-}$ |
| | Los Baños | IC | IC | IC | $PO_4^{3-}$ |
| | Mt. Sto. Tomas | IC | IC | IC | |
| Republic of Korea | Kanghwa | IC | IC | IC | |
| | Cheju (Kosan) | IC | IC | IC | |
| | Imsil | IC | IC | IC | |
| Russia | Mondy | IC | SP | AES | $HCO_3^-$, $F^-$, $Br^-$, $NO_2^-$ |
| | Listvyanka | IC | SP | AES | $HCO_3^-$, $F^-$, $Br^-$, $NO_2^-$ |
| | Irkutsk | IC | SP | AES | $HCO_3^-$, $F^-$, $Br^-$, $NO_2^-$ |
| | Primorskaya | SP, TI | SP | AAS, AES | |
| Thailand | Bangkok | IC | IC | IC | $PO_4^{3-}$, Formic, Acetic acid |
| | Samutprakarn | IC | IC | IC | $PO_4^{3-}$, Formic, Acetic acid |
| | Pathumthani | IC | IC | IC | $PO_4^{3-}$, Formic, Acetic acid |
| | Khanchanaburi | IC | IC | IC | $PO_4^{3-}$, Formic, Acetic acid |
| | Chiang Mai - Mae Hia | IC | IC | IC | $PO_4^{3-}$, Formic, Acetic acid |
| | Nakhon Ratchasima - Sakaerat | IC | IC | IC | $PO_4^{3-}$, Formic, Acetic acid |
| Vietnam | Hanoi | IC | IC | IC | $F^-$ |
| | Hoa Binh | IC | IC | IC | $F^-$ |
| | Cuc Phuong | IC | IC | IC | $HCO_3^-$, $F^-$ |
| | Da Nang | IC | IC | IC | $HCO_3^-$, $F^-$ |
| | Can Tho | IC | SP | AAS | $F^-$ |
| | Ho Chi Minh | IC | SP | AAS | $F^-$ |
| | Yen Bai | IC | IC | IC | $F^-$ |

AAS: Atomic absorption spectrometry, AES: Atomic emission spectrometry,
IC: Ion chromatography, SP: Spectrophotometry, TI: Titration

## 3.2 Results of Monitoring

The monthly summaries of each monitoring site in 2017 are shown in Table 3.8 through Table 3.64. The annual summaries of wet deposition monitoring in 2017 are shown in Table 3.65 through Table 3.67. The summaries contain the precipitation amount weighted average, data completeness (%PCL, %TP) and the wet deposition amount.

Results of ion balance ($R_1$) and the conductivity agreement ($R_2$) of each monitoring site are shown in Table 3.68. The summaries of annual data from 2000 to 2017 are shown in Table 3.69 through Table 3.93. Figure3.2 to Figure 3.58 are plots of $R_1$ and $R_2$ for each site. The following information is provided to describe the figures:

(1) Ion Balance ($R_1$)
- (C + A) is logarithmic scale
- Horizontal bar : The allowable range of $R_1$ in each concentration range

(2) Conductivity Agreement ($R_2$)
- ($\Lambda_{meas}$) is logarithmic scale
- Horizontal bar : The allowable range of $R_2$ in each conductivity range

Results of the additional items are shown in Table 3.94 through Table 3.101.
Note that the data in 2000 is obtained during the preparatory-phase activities of EANET.

**Table 3.8 Monthly results** **Site: Phnom Penh** **Country: Cambodia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 13.9 | 13.5 | 15.9 | 8.03 | 37.4 | 6.26 | 1.97 | 6.86 | 6.72 | 1.21 | 0.794 | 6.10 | 0.987 | 46.2 |
| Feb | 10.9 | 10.5 | 18.5 | 6.44 | 31.1 | 6.48 | 1.53 | 7.90 | 7.76 | 1.32 | 0.692 | 6.16 | 0.900 | 54.3 |
| Mar | 16.9 | 16.6 | 17.4 | 8.13 | 37.2 | 5.30 | 1.55 | 10.8 | 10.7 | 1.19 | 2.24 | 5.65 | 1.25 | 29.6 |
| Apr | 25.2 | 24.5 | 31.0 | 18.6 | 38.1 | 10.4 | 3.90 | 15.2 | 15.0 | 2.29 | 0.977 | 6.01 | 1.33 | 21.6 |
| May | 17.1 | 16.8 | 25.6 | 13.2 | 47.0 | 4.80 | 3.05 | 16.4 | 16.2 | 2.27 | 0.710 | 6.15 | 1.25 | 50.0 |
| June | 17.3 | 16.9 | 13.1 | 7.46 | 25.8 | 6.56 | 1.12 | 13.2 | 13.1 | 1.78 | 0.631 | 6.20 | 0.852 | 285 |
| July | 9.11 | 8.79 | 6.86 | 4.17 | 21.7 | 5.26 | 0.855 | 9.41 | 9.29 | 1.17 | 0.447 | 6.35 | 0.685 | 127 |
| Aug | 13.6 | 13.1 | 10.8 | 6.68 | 23.1 | 6.85 | 1.84 | 15.9 | 15.7 | 2.22 | 0.471 | 6.33 | 0.843 | 173 |
| Sept | 7.07 | 6.95 | 7.50 | 4.93 | 16.2 | 2.10 | 0.748 | 4.60 | 4.55 | 1.08 | 0.607 | 6.22 | 0.572 | 290 |
| Oct | 7.59 | 7.53 | 7.30 | 3.56 | 15.1 | 0.932 | 0.756 | 6.84 | 6.82 | 0.959 | 0.838 | 6.08 | 0.639 | 145 |
| Nov | 5.30 | 5.12 | 7.78 | 3.91 | 12.3 | 2.90 | 1.09 | 8.26 | 8.20 | 0.732 | 0.668 | 6.17 | 0.489 | 115 |
| Dec | 5.80 | 5.70 | 6.32 | 3.99 | 13.4 | 1.73 | 0.720 | 5.60 | 5.56 | 0.780 | 0.724 | 6.14 | 0.390 | 41.5 |
| Annual | 11.3 | 11.0 | 10.9 | 6.09 | 22.2 | 4.45 | 1.22 | 9.74 | 9.64 | 1.41 | 0.667 | 6.18 | 0.747 | 1379 |
| Max. | 25.2 | 24.5 | 31.0 | 18.6 | 51.5 | 12.2 | 3.90 | 21.8 | 21.6 | 3.08 | 2.24 | 6.58 | 1.38 | |
| Min. | 3.72 | 3.58 | 4.19 | 2.52 | 9.20 | 0.680 | 0.400 | 2.34 | 2.31 | 0.450 | 0.263 | 5.65 | 0.380 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.643 | 0.625 | 0.734 | 0.371 | 1.73 | 0.289 | 0.0910 | 0.317 | 0.310 | 0.0559 | 0.0367 |
| Feb | 0.591 | 0.569 | 1.00 | 0.350 | 1.69 | 0.352 | 0.0831 | 0.429 | 0.421 | 0.0717 | 0.0376 |
| Mar | 0.500 | 0.490 | 0.513 | 0.240 | 1.10 | 0.157 | 0.0458 | 0.318 | 0.315 | 0.0352 | 0.0662 |
| Apr | 0.544 | 0.530 | 0.669 | 0.401 | 0.823 | 0.225 | 0.0842 | 0.328 | 0.323 | 0.0495 | 0.0211 |
| May | 0.856 | 0.841 | 1.28 | 0.661 | 2.35 | 0.240 | 0.152 | 0.818 | 0.813 | 0.113 | 0.0355 |
| June | 4.93 | 4.82 | 3.75 | 2.13 | 7.35 | 1.87 | 0.318 | 3.76 | 3.72 | 0.508 | 0.180 |
| July | 1.16 | 1.12 | 0.874 | 0.531 | 2.77 | 0.669 | 0.109 | 1.20 | 1.18 | 0.149 | 0.0569 |
| Aug | 2.35 | 2.28 | 1.87 | 1.16 | 4.01 | 1.19 | 0.318 | 2.75 | 2.73 | 0.386 | 0.0817 |
| Sept | 2.05 | 2.01 | 2.17 | 1.43 | 4.70 | 0.608 | 0.217 | 1.33 | 1.32 | 0.314 | 0.176 |
| Oct | 1.10 | 1.09 | 1.06 | 0.516 | 2.18 | 0.135 | 0.109 | 0.990 | 0.987 | 0.139 | 0.121 |
| Nov | 0.609 | 0.589 | 0.896 | 0.450 | 1.42 | 0.334 | 0.125 | 0.951 | 0.944 | 0.0843 | 0.0769 |
| Dec | 0.240 | 0.236 | 0.262 | 0.165 | 0.556 | 0.0717 | 0.0299 | 0.232 | 0.231 | 0.0323 | 0.0300 |
| **Annual** | 15.6 | 15.2 | 15.1 | 8.40 | 30.7 | 6.14 | 1.68 | 13.4 | 13.3 | 1.94 | 0.920 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.9 Monthly results** **Site: Haifu** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 103 | 102 | 104 | 28.6 | 249 | 9.72 | 22.7 | 65.9 | 65.7 | 10.7 | 6.22 | 5.21 | 5.76 | 12.2 |
| Feb | 123 | 122 | 136 | 19.3 | 258 | 11.9 | 11.4 | 132 | 131 | 9.17 | 7.55 | 5.12 | 7.07 | 28.9 |
| Mar | 65.2 | 64.8 | 80.5 | 11.5 | 131 | 5.61 | 5.58 | 59.4 | 59.2 | 6.01 | 1.97 | 5.71 | 3.60 | 87.4 |
| Apr | 49.5 | 49.2 | 50.7 | 7.03 | 90.1 | 4.75 | 4.93 | 59.3 | 59.2 | 5.43 | 0.621 | 6.21 | 2.80 | 96.8 |
| May | 58.3 | 57.8 | 63.7 | 11.5 | 135 | 8.35 | 8.73 | 72.2 | 72.0 | 6.64 | 0.333 | 6.48 | 3.91 | 104 |
| June | 35.7 | 35.4 | 55.0 | 7.94 | 136 | 4.55 | 6.75 | 32.7 | 32.6 | 3.64 | 0.708 | 6.15 | 3.02 | 129 |
| July | 19.8 | 19.6 | 37.3 | 5.35 | 60.6 | 3.13 | 2.87 | 63.7 | 63.6 | 3.03 | 0.486 | 6.31 | 2.04 | 170 |
| Aug | 27.1 | 26.9 | 33.6 | 5.53 | 56.2 | 3.71 | 3.32 | 36.7 | 36.6 | 2.48 | 1.17 | 5.93 | 1.71 | 233 |
| Sept | 29.2 | 29.1 | 28.6 | 4.16 | 62.4 | 2.24 | 2.21 | 39.7 | 39.6 | 2.85 | 1.41 | 5.85 | 1.81 | 173 |
| Oct | 28.5 | 28.4 | 27.8 | 5.28 | 50.3 | 2.44 | 1.44 | 50.4 | 50.3 | 3.24 | 0.497 | 6.30 | 1.78 | 151 |
| Nov | 135 | 134 | 251 | 25.9 | 323 | 10.0 | 21.0 | 132 | 132 | 8.79 | 10.2 | 4.99 | 8.66 | 18.8 |
| Dec | 184 | 183 | 330 | 37.7 | 561 | 13.7 | 19.3 | 118 | 117 | 9.55 | 21.5 | 4.67 | 11.8 | 13.2 |
| Annual | 41.0 | 40.7 | 51.8 | 7.80 | 96.3 | 4.42 | 4.80 | 53.5 | 53.4 | 4.08 | 1.47 | 5.83 | 2.71 | 1217 |
| Max. | 595 | 590 | 652 | 205 | 1400 | 89.6 | 206 | 512 | 510 | 66.6 | 64.6 | 8.25 | 39.7 | |
| Min. | 6.45 | 6.38 | 5.64 | 1.13 | 6.10 | 0.435 | <0.3 | 11.2 | 11.2 | 0.822 | 0.0056 | 4.19 | 0.560 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.26 | 1.25 | 1.27 | 0.349 | 3.04 | 0.119 | 0.277 | 0.804 | 0.802 | 0.130 | 0.0759 |
| Feb | 3.55 | 3.53 | 3.93 | 0.558 | 7.45 | 0.345 | 0.330 | 3.80 | 3.80 | 0.265 | 0.218 |
| Mar | 5.70 | 5.67 | 7.04 | 1.01 | 11.5 | 0.490 | 0.488 | 5.19 | 5.18 | 0.525 | 0.172 |
| Apr | 4.79 | 4.76 | 4.91 | 0.681 | 8.72 | 0.460 | 0.477 | 5.74 | 5.73 | 0.526 | 0.0601 |
| May | 6.05 | 6.00 | 6.62 | 1.20 | 14.0 | 0.867 | 0.906 | 7.49 | 7.48 | 0.689 | 0.0345 |
| June | 4.60 | 4.56 | 7.08 | 1.02 | 17.5 | 0.586 | 0.869 | 4.21 | 4.20 | 0.468 | 0.0911 |
| July | 3.36 | 3.33 | 6.34 | 0.910 | 10.3 | 0.532 | 0.487 | 10.8 | 10.8 | 0.515 | 0.0827 |
| Aug | 6.30 | 6.25 | 7.82 | 1.29 | 13.1 | 0.864 | 0.771 | 8.53 | 8.52 | 0.577 | 0.272 |
| Sept | 5.06 | 5.03 | 4.94 | 0.720 | 10.8 | 0.388 | 0.382 | 6.87 | 6.86 | 0.493 | 0.244 |
| Oct | 4.31 | 4.29 | 4.20 | 0.798 | 7.60 | 0.369 | 0.218 | 7.61 | 7.61 | 0.490 | 0.0752 |
| Nov | 2.54 | 2.53 | 4.71 | 0.486 | 6.08 | 0.188 | 0.394 | 2.48 | 2.48 | 0.165 | 0.191 |
| Dec | 2.43 | 2.42 | 4.35 | 0.497 | 7.40 | 0.181 | 0.254 | 1.55 | 1.55 | 0.126 | 0.284 |
| **Annual** | 49.8 | 49.5 | 63.1 | 9.49 | 117 | 5.38 | 5.84 | 65.1 | 65.0 | 4.96 | 1.79 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 100 |
| Apr | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 100 |
| May | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 100 |
| June | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| Sept | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 97.0 | 100 |
| **Annual** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.10 Monthly results** **Site: Jinyunshan** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | | mS $m^{-1}$ | mm $month^{-1}$ or mm $year^{-1}$ |
| Jan | 81.4 | 81.1 | 84.8 | 16.8 | 145 | 4.27 | 14.7 | 28.1 | 28.0 | 5.28 | 57.3 | 4.24 | 5.85 | 34.9 |
| Feb | 91.9 | 91.6 | 80.6 | 12.1 | 151 | 5.21 | 12.4 | 67.6 | 67.5 | 9.63 | 6.37 | 5.20 | 4.48 | 14.6 |
| Mar | 49.0 | 48.8 | 53.3 | 4.28 | 69.8 | 2.75 | 3.64 | 29.9 | 29.9 | 3.85 | 23.4 | 4.63 | 2.93 | 76.1 |
| Apr | 44.3 | 44.1 | 38.1 | 4.51 | 59.6 | 3.38 | 3.59 | 49.3 | 49.3 | 5.63 | 2.17 | 5.66 | 2.32 | 120 |
| May | 41.1 | 40.8 | 39.1 | 5.21 | 89.5 | 4.20 | 5.56 | 55.4 | 55.3 | 6.15 | 0.551 | 6.26 | 2.59 | 171 |
| June | 28.3 | 28.2 | 32.6 | 3.61 | 58.8 | 2.24 | 2.37 | 28.7 | 28.6 | 3.33 | 8.43 | 5.07 | 2.01 | 228 |
| July | 17.1 | 17.0 | 20.1 | 3.02 | 34.8 | 1.79 | 1.98 | 45.9 | 45.8 | 3.85 | 0.382 | 6.42 | 1.41 | 72.5 |
| Aug | 16.3 | 16.2 | 17.4 | 3.41 | 25.6 | 1.43 | 1.70 | 46.2 | 46.2 | 3.79 | 0.494 | 6.31 | 1.25 | 161 |
| Sept | 25.1 | 25.0 | 20.0 | 3.18 | 35.0 | 0.835 | 0.853 | 44.4 | 44.4 | 3.19 | 2.49 | 5.60 | 1.47 | 200 |
| Oct | 41.7 | 41.3 | 23.8 | 8.88 | 28.0 | 5.89 | 4.88 | 106 | 106 | 7.07 | 4.90 | 5.31 | 2.83 | 154 |
| Nov | 95.8 | 95.5 | 160 | 14.1 | 193 | 4.23 | 5.70 | 96.1 | 96.0 | 6.95 | 19.4 | 4.71 | 6.37 | 23.4 |
| Dec | 154 | 154 | 305 | 24.4 | 379 | 10.6 | 14.3 | 106 | 106 | 9.89 | 72.3 | 4.14 | 12.1 | 13.8 |
| Annual | 36.5 | 36.4 | 36.8 | 5.34 | 60.0 | 2.95 | 3.60 | 51.9 | 51.9 | 4.74 | 7.07 | 5.15 | 2.38 | 1268 |
| Max. | 327 | 325 | 711 | 62.9 | 711 | 38.7 | 73.1 | 511 | 510 | 33.3 | 132 | 7.33 | 22.5 | |
| Min. | 6.14 | 6.06 | 6.29 | 0.846 | <0.8 | 0.435 | <0.3 | 6.74 | 6.71 | 0.822 | 0.0468 | 3.88 | 0.471 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 2.84 | 2.83 | 2.96 | 0.585 | 5.04 | 0.149 | 0.515 | 0.980 | 0.977 | 0.184 | 2.00 |
| Feb | 1.34 | 1.34 | 1.18 | 0.177 | 2.20 | 0.0760 | 0.181 | 0.988 | 0.986 | 0.141 | 0.0930 |
| Mar | 3.73 | 3.72 | 4.06 | 0.326 | 5.31 | 0.209 | 0.277 | 2.28 | 2.27 | 0.293 | 1.78 |
| Apr | 5.31 | 5.28 | 4.56 | 0.540 | 7.14 | 0.405 | 0.430 | 5.91 | 5.90 | 0.674 | 0.260 |
| May | 7.02 | 6.98 | 6.69 | 0.892 | 15.3 | 0.718 | 0.950 | 9.46 | 9.45 | 1.05 | 0.0942 |
| June | 6.44 | 6.41 | 7.41 | 0.822 | 13.4 | 0.509 | 0.540 | 6.53 | 6.51 | 0.757 | 1.92 |
| July | 1.24 | 1.23 | 1.45 | 0.219 | 2.52 | 0.130 | 0.144 | 3.32 | 3.32 | 0.279 | 0.0277 |
| Aug | 2.62 | 2.61 | 2.79 | 0.548 | 4.11 | 0.230 | 0.274 | 7.43 | 7.42 | 0.609 | 0.0794 |
| Sept | 5.00 | 4.99 | 3.98 | 0.635 | 6.98 | 0.167 | 0.170 | 8.86 | 8.86 | 0.637 | 0.496 |
| Oct | 6.40 | 6.35 | 3.65 | 1.36 | 4.31 | 0.905 | 0.750 | 16.4 | 16.3 | 1.09 | 0.752 |
| Nov | 2.24 | 2.24 | 3.74 | 0.329 | 4.52 | 0.0991 | 0.133 | 2.25 | 2.25 | 0.163 | 0.454 |
| Dec | 2.13 | 2.12 | 4.21 | 0.336 | 5.24 | 0.146 | 0.197 | 1.47 | 1.47 | 0.136 | 0.998 |
| **Annual** | 46.3 | 46.1 | 46.7 | 6.77 | 76.1 | 3.74 | 4.56 | 65.8 | 65.7 | 6.01 | 8.96 |

**Data completeness**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %PCL |
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.11 Monthly results** **Site: Shizhan** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1343 | 1339 | 288 | 6.74 | 2122 | 68.3 | 30.4 | 953 | 952 | 72.8 | 0.525 | 6.28 | 55.5 | 3.1 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 56.3 | 56.2 | 18.0 | 1.39 | 224 | 2.55 | 16.4 | 51.7 | 51.7 | 4.93 | 0.457 | 6.34 | 3.56 | 31.5 |
| Apr | 123 | 118 | 27.9 | 1.34 | 230 | 91.5 | 7.25 | 307 | 305 | 29.4 | 0.186 | 6.73 | 6.39 | 37.8 |
| May | 155 | 147 | 15.2 | 1.50 | 120 | 133 | 5.30 | 91.5 | 88.6 | 18.1 | 0.352 | 6.45 | 3.53 | 69.5 |
| June | 105 | 104 | 22.0 | 6.81 | 138 | 18.3 | 5.11 | 75.5 | 75.1 | 14.8 | 0.202 | 6.69 | 4.51 | 59.7 |
| July | 41.8 | 41.1 | 14.3 | 20.2 | 144 | 11.9 | 5.53 | 96.3 | 96.1 | 19.7 | 0.163 | 6.79 | 4.10 | 43.5 |
| Aug | 63.1 | 62.2 | 35.4 | 19.3 | 205 | 13.9 | 5.64 | 37.9 | 37.6 | 14.0 | 0.301 | 6.52 | 3.67 | 97.0 |
| Sept | 26.4 | 26.3 | 43.0 | 7.52 | 116 | 1.31 | 0.677 | 16.8 | 16.8 | 1.50 | 0.411 | 6.39 | 2.05 | 107 |
| Oct | 22.8 | 22.7 | 7.12 | 7.24 | 50.1 | 2.78 | 1.39 | 15.7 | 15.7 | 2.81 | 0.0531 | 7.27 | 1.57 | 115 |
| Nov | 62.0 | 61.4 | 15.5 | 10.7 | 137 | 10.9 | 6.14 | 69.4 | 69.1 | 9.46 | 0.135 | 6.87 | 4.84 | 12.6 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 72.5 | 70.8 | 25.2 | 8.93 | 147 | 28.7 | 4.60 | 68.3 | 67.7 | 11.2 | 0.256 | 6.59 | 3.53 | 577 |
| Max. | 1343 | 1339 | 288 | 57.9 | 2122 | 321 | 30.4 | 953 | 952 | 80.0 | 1.82 | 7.43 | 55.5 | |
| Min. | 7.87 | 7.27 | 2.10 | 0.790 | 2.44 | <0.3 | <0.3 | 4.24 | 4.23 | <0.3 | 0.0372 | 5.74 | 0.590 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.16 | 4.15 | 0.891 | 0.0209 | 6.58 | 0.212 | 0.0941 | 2.96 | 2.95 | 0.226 | <0.01 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 1.77 | 1.77 | 0.567 | 0.0438 | 7.07 | 0.0803 | 0.515 | 1.63 | 1.63 | 0.155 | 0.0144 |
| Apr | 4.66 | 4.45 | 1.05 | 0.0507 | 8.68 | 3.46 | 0.274 | 11.6 | 11.5 | 1.11 | <0.01 |
| May | 10.8 | 10.2 | 1.06 | 0.104 | 8.37 | 9.26 | 0.369 | 6.36 | 6.16 | 1.26 | 0.0245 |
| June | 6.30 | 6.23 | 1.32 | 0.406 | 8.27 | 1.09 | 0.305 | 4.51 | 4.48 | 0.881 | 0.0121 |
| July | 1.82 | 1.79 | 0.620 | 0.877 | 6.25 | 0.517 | 0.241 | 4.19 | 4.18 | 0.855 | <0.01 |
| Aug | 6.12 | 6.04 | 3.44 | 1.88 | 19.9 | 1.35 | 0.547 | 3.67 | 3.64 | 1.36 | 0.0292 |
| Sept | 2.83 | 2.82 | 4.61 | 0.805 | 12.4 | 0.140 | 0.0724 | 1.80 | 1.80 | 0.160 | 0.0440 |
| Oct | 2.63 | 2.61 | 0.820 | 0.834 | 5.76 | 0.320 | 0.160 | 1.81 | 1.80 | 0.323 | <0.01 |
| Nov | 0.782 | 0.774 | 0.195 | 0.135 | 1.73 | 0.137 | 0.0773 | 0.874 | 0.871 | 0.119 | <0.01 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 41.8 | 40.8 | 14.6 | 5.15 | 85.0 | 16.6 | 2.65 | 39.4 | 39.0 | 6.45 | 0.148 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.12 Monthly results** **Site: Jiwozi** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | 39.8 | 38.3 | 6.92 | 10.7 | 11.4 | 24.4 | 9.11 | 58.0 | 57.5 | 19.4 | 0.313 | 6.50 | 2.32 | 42.2 |
| May | 19.4 | 18.8 | 2.74 | 11.4 | <0.8 | 10.2 | 6.42 | 51.6 | 51.4 | 10.3 | 0.207 | 6.68 | 1.33 | 102 |
| June | 51.3 | 48.0 | 2.25 | 19.6 | <0.8 | 55.0 | 15.6 | 102 | 101 | 29.8 | 0.215 | 6.67 | 2.99 | 70.8 |
| July | 106 | 99.7 | 2.39 | 23.4 | <0.8 | 101 | 22.2 | 263 | 261 | 57.6 | 0.0889 | 7.05 | 7.19 | 49.6 |
| Aug | 33.8 | 30.9 | 2.85 | 12.4 | <0.8 | 46.6 | 24.5 | 145 | 144 | 23.4 | 0.104 | 6.98 | 3.58 | 115 |
| Sept | 14.4 | 14.2 | 0.502 | 20.4 | <0.8 | 3.55 | 3.61 | 29.9 | 29.9 | 3.40 | 0.274 | 6.56 | 1.02 | 86.3 |
| Oct | 12.6 | 12.2 | 1.61 | 20.4 | <0.8 | 7.52 | 3.47 | 19.2 | 19.1 | 3.67 | 0.349 | 6.46 | 0.778 | 34.8 |
| Nov | 9.91 | 8.61 | 2.73 | 59.0 | <0.8 | 21.6 | 13.7 | 55.2 | 54.7 | 10.0 | 0.209 | 6.68 | 1.43 | 7.2 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 35.8 | 33.8 | 2.55 | 16.7 | 1.07 | 33.7 | 13.0 | 95.1 | 94.4 | 19.7 | 0.203 | 6.69 | 2.64 | 508 |
| Max. | 111 | 105 | 23.3 | 74.4 | 36.0 | 126 | 59.3 | 344 | 341 | 74.2 | 0.513 | 7.25 | 7.96 | |
| Min. | 6.30 | 5.91 | <0.5 | 2.12 | <0.8 | 2.00 | 2.25 | 5.11 | 4.66 | <0.3 | 0.0562 | 6.29 | 0.492 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 1.68 | 1.62 | 0.292 | 0.453 | 0.481 | 1.03 | 0.384 | 2.45 | 2.43 | 0.820 | 0.0132 |
| May | 1.97 | 1.91 | 0.279 | 1.16 | <0.01 | 1.04 | 0.653 | 5.25 | 5.22 | 1.05 | 0.0210 |
| June | 3.63 | 3.40 | 0.159 | 1.39 | 0.0506 | 3.90 | 1.11 | 7.22 | 7.14 | 2.11 | 0.0152 |
| July | 5.25 | 4.95 | 0.119 | 1.16 | 0.0123 | 5.03 | 1.10 | 13.0 | 12.9 | 2.86 | <0.01 |
| Aug | 3.89 | 3.56 | 0.328 | 1.43 | <0.01 | 5.37 | 2.82 | 16.7 | 16.6 | 2.69 | 0.0119 |
| Sept | 1.24 | 1.22 | 0.0434 | 1.76 | <0.01 | 0.306 | 0.312 | 2.58 | 2.58 | 0.293 | 0.0236 |
| Oct | 0.439 | 0.423 | 0.0560 | 0.709 | <0.01 | 0.262 | 0.121 | 0.669 | 0.663 | 0.128 | 0.0121 |
| Nov | 0.0714 | 0.0620 | 0.0196 | 0.425 | <0.01 | 0.155 | 0.0989 | 0.397 | 0.394 | 0.0723 | <0.01 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 18.2 | 17.1 | 1.30 | 8.49 | 0.544 | 17.1 | 6.59 | 48.3 | 47.9 | 10.0 | 0.103 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.13 Monthly results** **Site: Hongwen** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | 14.1 | 13.5 | 14.3 | 14.8 | 26.4 | 10.3 | 2.36 | 12.9 | 12.7 | 2.83 | 2.63 | 5.58 | 1.06 | 57.3 |
| Mar | 213 | 203 | 253 | 348 | 144 | 168 | 139 | 175 | 171 | 33.7 | 4.53 | 5.34 | 9.60 | 22.7 |
| Apr | 90.8 | 85.6 | 114 | 199 | 75.5 | 86.6 | 72.6 | 61.5 | 59.7 | 14.3 | 1.02 | 5.99 | 4.39 | 52.3 |
| May | 13.6 | 12.4 | 23.7 | 109 | 32.3 | 19.5 | 108 | 9.18 | 8.76 | 3.27 | 2.69 | 5.57 | 2.29 | 54.7 |
| June | 15.2 | 14.0 | 26.6 | 31.3 | 26.1 | 20.6 | 12.9 | 12.8 | 12.4 | 3.61 | 4.41 | 5.36 | 1.28 | 250 |
| July | 19.5 | 16.8 | 23.9 | 58.7 | 3.37 | 45.6 | 24.8 | 31.5 | 30.5 | 12.6 | 11.4 | 4.94 | 2.00 | 78.1 |
| Aug | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Sept | * | * | * | * | * | * | * | * | * | * | * | * | * | 0.2 |
| Oct | 33.3 | 31.1 | 78.1 | 56.4 | 75.1 | 36.5 | 41.6 | 36.1 | 35.3 | 6.34 | 0.209 | 6.68 | 2.83 | 8.2 |
| Nov | 24.7 | 23.7 | 42.0 | 46.0 | 24.3 | 16.3 | 24.3 | 58.8 | 58.5 | 5.58 | 0.255 | 6.59 | 3.85 | 15.2 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 31.7 | 29.5 | 43.7 | 71.7 | 33.8 | 35.7 | 35.0 | 28.3 | 27.5 | 7.19 | 4.56 | 5.34 | 2.21 | 538 |
| Max. | 362 | 346 | 418 | 494 | 213 | 330 | 254 | 301 | 295 | 57.4 | 20.0 | 6.90 | 13.8 | |
| Min. | 5.51 | 5.27 | 5.40 | 8.01 | <0.8 | 4.10 | 1.29 | 1.49 | 1.39 | 1.15 | 0.126 | 4.70 | 0.428 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.806 | 0.771 | 0.821 | 0.850 | 1.51 | 0.590 | 0.135 | 0.738 | 0.725 | 0.162 | 0.150 |
| Mar | 4.84 | 4.61 | 5.74 | 7.90 | 3.26 | 3.80 | 3.16 | 3.96 | 3.88 | 0.763 | 0.103 |
| Apr | 4.75 | 4.47 | 5.95 | 10.4 | 3.95 | 4.53 | 3.79 | 3.22 | 3.12 | 0.748 | 0.0533 |
| May | 0.745 | 0.680 | 1.30 | 5.97 | 1.77 | 1.07 | 5.91 | 0.503 | 0.480 | 0.179 | 0.147 |
| June | 3.80 | 3.49 | 6.65 | 7.81 | 6.52 | 5.14 | 3.22 | 3.20 | 3.09 | 0.901 | 1.10 |
| July | 1.52 | 1.31 | 1.87 | 4.59 | 0.263 | 3.56 | 1.93 | 2.46 | 2.39 | 0.987 | 0.894 |
| Aug | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sept | * | * | * | * | * | * | * | * | * | * | * |
| Oct | 0.274 | 0.256 | 0.644 | 0.465 | 0.619 | 0.301 | 0.342 | 0.297 | 0.291 | 0.0522 | <0.01 |
| Nov | 0.376 | 0.361 | 0.638 | 0.700 | 0.370 | 0.248 | 0.370 | 0.895 | 0.890 | 0.0849 | <0.01 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 17.1 | 15.9 | 23.5 | 38.6 | 18.2 | 19.2 | 18.8 | 15.2 | 14.8 | 3.87 | 2.46 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 100 |
| Mar | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Sept | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.14 Monthly results** **Site: Xiaoping** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | | mS $m^{-1}$ | mm $month^{-1}$ or mm $year^{-1}$ |
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | 11.3 | 10.5 | 23.1 | 27.3 | 17.3 | 12.6 | 11.4 | 20.6 | 20.4 | 4.36 | 0.740 | 6.13 | 0.996 | 54.7 |
| Mar | 19.9 | 19.5 | 35.9 | 24.3 | 40.1 | 6.86 | 14.4 | 36.4 | 36.3 | 4.53 | 1.53 | 5.82 | 1.43 | 83.7 |
| Apr | 25.9 | 25.5 | 48.7 | 17.8 | 47.9 | 6.58 | 2.65 | 14.4 | 14.3 | 3.67 | 0.985 | 6.01 | 1.19 | 96.8 |
| May | 14.2 | 13.8 | 25.6 | 11.3 | 33.6 | 6.81 | 7.80 | 12.9 | 12.8 | 2.96 | 0.745 | 6.13 | 0.959 | 62.8 |
| June | 10.5 | 10.3 | 19.5 | 22.4 | 20.2 | 4.55 | 17.1 | 9.81 | 9.71 | 2.05 | 1.26 | 5.90 | 0.723 | 201 |
| July | 8.98 | 8.52 | 17.0 | 16.7 | 23.5 | 7.62 | 7.41 | 7.14 | 6.97 | 1.76 | 1.18 | 5.93 | 0.768 | 97.4 |
| Aug | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Sept | 12.8 | 12.0 | 34.2 | 56.3 | 51.9 | 12.9 | 48.4 | 7.08 | 6.80 | 2.37 | 1.28 | 5.89 | 1.21 | 22.5 |
| Oct | 27.4 | 26.7 | 56.4 | 19.9 | 49.8 | 11.7 | 2.34 | 27.5 | 27.2 | 1.19 | 2.56 | 5.59 | 1.96 | 24.2 |
| Nov | 6.67 | 6.52 | 20.5 | 20.9 | 5.99 | 2.66 | 15.0 | 9.51 | 9.45 | 1.65 | 2.68 | 5.57 | 0.884 | 32.4 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 14.6 | 14.2 | 28.1 | 21.5 | 29.5 | 6.87 | 12.4 | 15.1 | 14.9 | 2.78 | 1.27 | 5.90 | 0.996 | 676 |
| Max. | 142 | 141 | 277 | 85.6 | 331 | 35.9 | 60.6 | 106 | 106 | 18.2 | 5.62 | 6.46 | 7.74 | |
| Min. | <0.3 | <0.3 | 8.39 | 3.83 | <0.8 | 1.00 | 1.37 | 1.14 | 0.945 | 0.493 | 0.347 | 5.25 | 0.257 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.618 | 0.577 | 1.26 | 1.49 | 0.947 | 0.688 | 0.622 | 1.13 | 1.11 | 0.238 | 0.0405 |
| Mar | 1.67 | 1.63 | 3.00 | 2.04 | 3.35 | 0.575 | 1.20 | 3.05 | 3.04 | 0.379 | 0.128 |
| Apr | 2.51 | 2.47 | 4.72 | 1.72 | 4.63 | 0.637 | 0.257 | 1.40 | 1.38 | 0.355 | 0.0953 |
| May | 0.892 | 0.866 | 1.61 | 0.708 | 2.11 | 0.427 | 0.490 | 0.811 | 0.801 | 0.186 | 0.0468 |
| June | 2.12 | 2.07 | 3.92 | 4.51 | 4.06 | 0.916 | 3.45 | 1.97 | 1.96 | 0.413 | 0.253 |
| July | 0.875 | 0.830 | 1.65 | 1.63 | 2.29 | 0.742 | 0.722 | 0.695 | 0.679 | 0.171 | 0.114 |
| Aug | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sept | 0.288 | 0.270 | 0.769 | 1.27 | 1.17 | 0.290 | 1.09 | 0.159 | 0.153 | 0.0534 | 0.0288 |
| Oct | 0.662 | 0.645 | 1.36 | 0.480 | 1.20 | 0.282 | 0.0566 | 0.664 | 0.658 | 0.0287 | 0.0617 |
| Nov | 0.216 | 0.211 | 0.666 | 0.679 | 0.194 | 0.0864 | 0.485 | 0.308 | 0.306 | 0.0536 | 0.0869 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 9.85 | 9.57 | 19.0 | 14.5 | 20.0 | 4.64 | 8.37 | 10.2 | 10.1 | 1.88 | 0.856 |

**Data completeness**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %PCL |
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.15 Monthly results** **Site: Xiang Zhou** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 126 | 125 | 85.0 | 34.1 | 141 | 8.40 | 5.63 | 21.6 | 21.4 | 2.10 | 63.1 | 4.20 | 5.96 | 6.5 |
| Feb | 14.7 | 12.8 | 21.8 | 29.7 | 17.4 | 32.5 | 5.56 | 6.47 | 5.77 | 1.90 | 15.5 | 4.81 | 1.36 | 11.5 |
| Mar | 34.7 | 32.7 | 58.0 | 38.1 | 64.0 | 33.5 | 4.25 | 9.63 | 8.90 | 3.65 | 35.5 | 4.45 | 3.52 | 77.0 |
| Apr | 18.4 | 17.5 | 23.8 | 15.3 | 35.6 | 15.5 | 2.65 | 11.6 | 11.3 | 2.28 | 11.4 | 4.94 | 1.46 | 133 |
| May | 14.2 | 13.3 | 22.4 | 17.1 | 24.5 | 15.6 | 1.50 | 5.80 | 5.46 | 2.14 | 20.1 | 4.70 | 1.57 | 226 |
| June | 9.19 | 7.71 | 14.9 | 19.7 | 27.9 | 24.4 | 1.27 | 11.7 | 11.2 | 2.35 | 4.69 | 5.33 | 0.898 | 202 |
| July | 7.96 | 6.57 | 9.17 | 20.7 | 11.4 | 23.1 | 1.26 | 7.58 | 7.08 | 2.58 | 4.66 | 5.33 | 0.789 | 311 |
| Aug | 19.3 | 8.51 | 13.7 | 219 | 19.6 | 178 | 5.54 | 17.7 | 13.8 | 18.8 | 5.46 | 5.26 | 4.12 | 384 |
| Sept | 10.8 | 9.85 | 19.4 | 17.7 | 27.5 | 15.1 | 1.39 | 7.24 | 6.91 | 1.79 | 12.6 | 4.90 | 1.18 | 383 |
| Oct | 8.13 | 6.40 | 10.4 | 34.7 | 11.6 | 28.7 | 2.42 | 4.91 | 4.29 | 2.82 | 5.99 | 5.22 | 0.965 | 148 |
| Nov | 23.1 | 22.2 | 39.3 | 21.5 | 57.3 | 15.7 | 3.66 | 10.9 | 10.6 | 1.86 | 18.8 | 4.73 | 2.03 | 25.0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 14.1 | 11.0 | 18.1 | 61.1 | 24.5 | 52.2 | 2.56 | 10.0 | 8.88 | 5.64 | 10.5 | 4.98 | 1.85 | 1905 |
| Max. | 126 | 125 | 189 | 1332 | 237 | 1081 | 29.6 | 77.1 | 53.7 | 112 | 145 | 6.53 | 22.0 | |
| Min. | 4.39 | 3.66 | 5.25 | 2.46 | 1.68 | 3.06 | 0.572 | 2.24 | 1.98 | 0.482 | 0.295 | 3.84 | 0.323 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.819 | 0.816 | 0.552 | 0.222 | 0.919 | 0.0546 | 0.0366 | 0.141 | 0.139 | 0.0137 | 0.410 |
| Feb | 0.169 | 0.147 | 0.250 | 0.342 | 0.200 | 0.374 | 0.0639 | 0.0744 | 0.0663 | 0.0219 | 0.178 |
| Mar | 2.67 | 2.52 | 4.46 | 2.93 | 4.93 | 2.58 | 0.327 | 0.741 | 0.686 | 0.281 | 2.73 |
| Apr | 2.44 | 2.32 | 3.16 | 2.03 | 4.72 | 2.05 | 0.351 | 1.54 | 1.49 | 0.302 | 1.51 |
| May | 3.21 | 3.00 | 5.04 | 3.85 | 5.53 | 3.52 | 0.337 | 1.31 | 1.23 | 0.482 | 4.54 |
| June | 1.85 | 1.55 | 3.01 | 3.97 | 5.62 | 4.92 | 0.256 | 2.37 | 2.26 | 0.474 | 0.944 |
| July | 2.48 | 2.04 | 2.85 | 6.45 | 3.55 | 7.18 | 0.393 | 2.36 | 2.20 | 0.802 | 1.45 |
| Aug | 7.39 | 3.26 | 5.25 | 84.1 | 7.53 | 68.4 | 2.13 | 6.77 | 5.29 | 7.22 | 2.09 |
| Sept | 4.12 | 3.77 | 7.41 | 6.76 | 10.5 | 5.79 | 0.532 | 2.77 | 2.64 | 0.684 | 4.82 |
| Oct | 1.20 | 0.947 | 1.55 | 5.14 | 1.72 | 4.25 | 0.358 | 0.727 | 0.636 | 0.417 | 0.886 |
| Nov | 0.577 | 0.554 | 0.982 | 0.537 | 1.43 | 0.392 | 0.0915 | 0.272 | 0.264 | 0.0465 | 0.470 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 26.9 | 20.9 | 34.5 | 116 | 46.6 | 99.5 | 4.87 | 19.1 | 16.9 | 10.7 | 20.0 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.16 Monthly results** **Site: Zhuxiandong** **Country: China**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | | mS $m^{-1}$ | mm $month^{-1}$ or mm $year^{-1}$ |
| Jan | 179 | 171 | 325 | 168 | 183 | 125 | 21.4 | 318 | 315 | 22.9 | 0.427 | 6.37 | 12.4 | 5.0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 49.1 | 44.9 | 86.3 | 77.4 | 73.3 | 69.6 | 4.78 | 29.3 | 27.8 | 7.74 | 24.3 | 4.61 | 4.15 | 71.5 |
| Apr | 26.0 | 24.1 | 44.2 | 34.6 | 61.6 | 31.7 | 4.79 | 21.1 | 20.4 | 4.93 | 11.3 | 4.95 | 2.61 | 133 |
| May | 17.5 | 15.7 | 31.4 | 25.1 | 26.4 | 30.2 | 2.39 | 13.1 | 12.5 | 3.51 | 17.0 | 4.77 | 1.84 | 215 |
| June | 8.80 | 7.70 | 11.5 | 20.3 | 17.4 | 18.3 | 1.72 | 12.7 | 12.3 | 2.62 | 2.57 | 5.59 | 0.831 | 184 |
| July | 8.34 | 7.20 | 8.98 | 21.1 | 11.0 | 18.9 | 1.30 | 9.74 | 9.33 | 2.85 | 4.01 | 5.40 | 0.688 | 377 |
| Aug | 6.57 | 5.31 | 9.31 | 24.6 | 12.0 | 20.9 | 1.66 | 18.5 | 18.0 | 2.37 | 1.34 | 5.87 | 0.910 | 265 |
| Sept | 11.8 | 11.0 | 23.0 | 16.8 | 27.0 | 12.8 | 1.85 | 7.43 | 7.15 | 1.51 | 12.5 | 4.90 | 1.43 | 398 |
| Oct | 11.3 | 7.49 | 13.2 | 76.8 | 16.1 | 63.0 | 1.81 | 8.73 | 7.37 | 5.79 | 7.67 | 5.12 | 1.57 | 140 |
| Nov | 43.6 | 40.6 | 69.9 | 42.9 | 106 | 48.5 | 8.13 | 29.1 | 28.0 | 5.26 | 5.39 | 5.27 | 3.32 | 30.0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 14.1 | 12.6 | 22.8 | 29.3 | 25.7 | 26.2 | 2.24 | 13.9 | 13.3 | 3.21 | 8.49 | 5.07 | 1.45 | 1817 |
| Max. | 305 | 258 | 614 | 845 | 442 | 771 | 40.6 | 318 | 315 | 93.4 | 155 | 6.74 | 28.3 | |
| Min. | 4.20 | 3.11 | 4.15 | 5.39 | 4.34 | 3.30 | 0.707 | 2.71 | 2.56 | 0.473 | 0.182 | 3.81 | 0.316 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.893 | 0.855 | 1.62 | 0.842 | 0.917 | 0.626 | 0.107 | 1.59 | 1.58 | 0.115 | <0.01 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 3.51 | 3.21 | 6.17 | 5.54 | 5.24 | 4.98 | 0.342 | 2.10 | 1.99 | 0.554 | 1.74 |
| Apr | 3.46 | 3.20 | 5.87 | 4.61 | 8.20 | 4.21 | 0.638 | 2.81 | 2.71 | 0.655 | 1.50 |
| May | 3.75 | 3.36 | 6.74 | 5.38 | 5.66 | 6.48 | 0.513 | 2.82 | 2.68 | 0.752 | 3.65 |
| June | 1.61 | 1.41 | 2.10 | 3.73 | 3.20 | 3.36 | 0.315 | 2.33 | 2.25 | 0.480 | 0.472 |
| July | 3.14 | 2.71 | 3.38 | 7.93 | 4.13 | 7.10 | 0.490 | 3.67 | 3.51 | 1.07 | 1.51 |
| Aug | 1.74 | 1.41 | 2.47 | 6.51 | 3.19 | 5.55 | 0.440 | 4.89 | 4.77 | 0.628 | 0.355 |
| Sept | 4.68 | 4.38 | 9.16 | 6.69 | 10.7 | 5.11 | 0.737 | 2.96 | 2.85 | 0.600 | 4.97 |
| Oct | 1.58 | 1.05 | 1.85 | 10.8 | 2.25 | 8.82 | 0.253 | 1.22 | 1.03 | 0.810 | 1.07 |
| Nov | 1.31 | 1.22 | 2.10 | 1.29 | 3.18 | 1.45 | 0.244 | 0.873 | 0.841 | 0.158 | 0.162 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 25.7 | 22.8 | 41.5 | 53.3 | 46.7 | 47.7 | 4.08 | 25.2 | 24.2 | 5.82 | 15.4 |

**Data completeness**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %PCL |
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.17 Monthly results** **Site: Jakarta** **Country: Indonesia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 14.2 | 13.2 | 18.6 | 13.4 | 8.22 | 15.4 | 6.47 | 43.1 | 42.8 | 10.7 | 1.87 | 5.73 | 1.01 | 148 |
| Feb | 17.8 | 17.0 | 12.3 | 18.1 | 18.4 | 13.4 | 2.25 | 7.89 | 7.60 | 3.05 | 11.5 | 4.94 | 1.20 | 325 |
| Mar | 20.3 | 19.8 | 23.9 | 14.7 | 21.5 | 9.22 | 1.85 | 12.8 | 12.6 | 2.41 | 11.6 | 4.94 | 1.61 | 122 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| June | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| July | 29.0 | 28.5 | 38.5 | 12.8 | 47.2 | 9.58 | 2.31 | 14.1 | 13.9 | 2.87 | 11.7 | 4.93 | 1.72 | 81.4 |
| Aug | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Sept | 17.3 | 17.0 | 15.9 | 6.49 | 30.1 | 4.66 | 1.97 | 9.26 | 9.16 | 1.42 | 33.1 | 4.48 | 1.39 | 151 |
| Oct | 24.9 | 24.4 | 39.6 | 12.2 | 40.7 | 8.68 | 1.49 | 27.2 | 27.0 | 1.16 | 31.3 | 4.50 | 2.38 | 80.5 |
| Nov | 17.8 | 17.2 | 26.8 | 13.0 | 34.4 | 9.09 | 1.48 | 27.9 | 27.7 | 1.03 | 12.1 | 4.92 | 1.32 | 152 |
| Dec | 10.5 | 10.1 | 9.16 | 6.23 | 19.1 | 5.86 | 1.46 | 13.9 | 13.8 | 1.17 | 4.35 | 5.36 | 0.736 | 248 |
| Annual | 17.3 | 16.7 | 18.9 | 12.4 | 24.0 | 9.76 | 2.38 | 17.6 | 17.3 | 2.95 | 12.9 | 4.89 | 1.27 | 1307 |
| Max. | 57.2 | 55.6 | 62.1 | 37.8 | 85.7 | 62.4 | 16.4 | 89.7 | 88.3 | 13.4 | 38.0 | 5.77 | 6.35 | |
| Min. | 8.11 | 6.54 | <0.5 | 0.746 | 1.23 | 0.870 | 0.893 | 1.98 | 1.96 | 0.749 | 1.70 | 4.42 | 0.587 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 2.09 | 1.96 | 2.76 | 1.98 | 1.22 | 2.28 | 0.958 | 6.38 | 6.34 | 1.59 | 0.277 |
| Feb | 5.77 | 5.51 | 4.00 | 5.86 | 5.97 | 4.34 | 0.729 | 2.56 | 2.47 | 0.989 | 3.73 |
| Mar | 2.47 | 2.40 | 2.90 | 1.78 | 2.61 | 1.12 | 0.225 | 1.56 | 1.54 | 0.293 | 1.41 |
| Apr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| July | 2.36 | 2.32 | 3.14 | 1.04 | 3.84 | 0.780 | 0.188 | 1.15 | 1.13 | 0.234 | 0.956 |
| Aug | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sept | 2.60 | 2.55 | 2.39 | 0.977 | 4.53 | 0.701 | 0.297 | 1.39 | 1.38 | 0.214 | 4.99 |
| Oct | 2.00 | 1.96 | 3.19 | 0.982 | 3.28 | 0.699 | 0.120 | 2.19 | 2.18 | 0.0935 | 2.52 |
| Nov | 2.70 | 2.62 | 4.08 | 1.98 | 5.23 | 1.38 | 0.226 | 4.25 | 4.22 | 0.157 | 1.85 |
| Dec | 2.59 | 2.51 | 2.27 | 1.54 | 4.74 | 1.45 | 0.362 | 3.45 | 3.41 | 0.291 | 1.08 |
| **Annual** | 22.6 | 21.8 | 24.7 | 16.2 | 31.4 | 12.8 | 3.10 | 22.9 | 22.7 | 3.86 | 16.8 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| June | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.18 Monthly results** **Site: Serpong** **Country: Indonesia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 21.0 | 20.2 | 12.9 | 18.7 | 42.6 | 13.0 | 3.51 | 7.89 | 7.61 | 2.61 | 4.64 | 5.33 | 1.25 | 203 |
| Feb | 17.1 | 16.0 | 14.9 | 15.6 | 31.1 | 17.1 | 3.48 | 6.22 | 5.85 | 1.72 | 2.82 | 5.55 | 1.24 | 375 |
| Mar | 15.8 | 15.1 | 14.8 | 8.02 | 24.5 | 10.7 | 4.20 | 5.95 | 5.72 | 1.86 | 3.96 | 5.40 | 1.12 | 321 |
| Apr | 20.6 | 20.1 | 28.8 | 10.3 | 34.7 | 8.46 | 2.87 | 13.2 | 13.0 | 2.75 | 2.28 | 5.64 | 1.52 | 262 |
| May | 35.7 | 35.0 | 36.1 | 16.6 | 59.6 | 10.7 | 3.25 | 11.7 | 11.5 | 2.15 | 14.3 | 4.84 | 2.42 | 252 |
| June | 29.1 | 28.1 | 47.4 | 22.0 | 67.9 | 16.8 | 3.34 | 19.8 | 19.4 | 3.88 | 1.25 | 5.90 | 1.92 | 226 |
| July | 27.9 | 27.2 | 36.2 | 18.1 | 66.0 | 10.4 | 5.75 | 18.4 | 18.2 | 3.64 | 0.569 | 6.25 | 1.81 | 319 |
| Aug | 65.5 | 63.9 | 90.8 | 26.2 | 87.0 | 27.1 | 5.82 | 30.3 | 29.7 | 5.45 | 33.0 | 4.48 | 4.99 | 126 |
| Sept | 26.1 | 25.3 | 33.9 | 25.7 | 58.9 | 13.4 | 7.97 | 15.9 | 15.6 | 2.66 | 4.67 | 5.33 | 2.01 | 238 |
| Oct | 26.0 | 25.6 | 37.6 | 13.5 | 64.2 | 6.35 | 1.70 | 9.80 | 9.67 | 1.37 | 7.05 | 5.15 | 1.84 | 378 |
| Nov | 25.8 | 25.2 | 33.8 | 17.7 | 48.2 | 10.8 | 2.58 | 9.98 | 9.74 | 2.22 | 12.8 | 4.89 | 2.16 | 329 |
| Dec | 18.7 | 18.1 | 16.7 | 13.9 | 44.8 | 9.80 | 2.57 | 8.69 | 8.48 | 2.19 | 1.22 | 5.91 | 1.20 | 168 |
| Annual | 25.5 | 24.8 | 31.1 | 16.4 | 50.5 | 12.1 | 3.78 | 12.1 | 11.8 | 2.51 | 6.34 | 5.20 | 1.82 | 3197 |
| Max. | 91.4 | 89.4 | 152 | 66.4 | 172 | 44.5 | 36.9 | 46.0 | 45.5 | 8.70 | 66.1 | 6.81 | 6.91 | |
| Min. | 2.70 | 2.34 | 3.30 | 3.60 | 11.9 | 2.70 | 0.800 | 2.20 | 1.85 | 0.550 | 0.155 | 4.18 | 0.440 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.26 | 4.10 | 2.62 | 3.80 | 8.65 | 2.63 | 0.713 | 1.60 | 1.54 | 0.529 | 0.941 |
| Feb | 6.39 | 6.00 | 5.59 | 5.83 | 11.6 | 6.40 | 1.30 | 2.33 | 2.19 | 0.646 | 1.05 |
| Mar | 5.07 | 4.86 | 4.76 | 2.57 | 7.87 | 3.42 | 1.35 | 1.91 | 1.84 | 0.598 | 1.27 |
| Apr | 5.40 | 5.26 | 7.56 | 2.70 | 9.10 | 2.22 | 0.753 | 3.46 | 3.41 | 0.722 | 0.599 |
| May | 8.99 | 8.83 | 9.11 | 4.20 | 15.0 | 2.70 | 0.819 | 2.95 | 2.89 | 0.542 | 3.61 |
| June | 6.56 | 6.33 | 10.7 | 4.97 | 15.3 | 3.78 | 0.754 | 4.46 | 4.38 | 0.876 | 0.283 |
| July | 8.89 | 8.69 | 11.6 | 5.79 | 21.1 | 3.33 | 1.84 | 5.89 | 5.82 | 1.16 | 0.182 |
| Aug | 8.27 | 8.06 | 11.5 | 3.31 | 11.0 | 3.42 | 0.734 | 3.82 | 3.75 | 0.688 | 4.16 |
| Sept | 6.21 | 6.02 | 8.07 | 6.11 | 14.0 | 3.20 | 1.90 | 3.77 | 3.70 | 0.632 | 1.11 |
| Oct | 9.81 | 9.67 | 14.2 | 5.11 | 24.3 | 2.40 | 0.643 | 3.71 | 3.65 | 0.517 | 2.66 |
| Nov | 8.50 | 8.29 | 11.1 | 5.83 | 15.8 | 3.54 | 0.848 | 3.28 | 3.21 | 0.731 | 4.20 |
| Dec | 3.15 | 3.05 | 2.82 | 2.34 | 7.54 | 1.65 | 0.432 | 1.46 | 1.43 | 0.368 | 0.205 |
| **Annual** | 81.5 | 79.2 | 99.6 | 52.6 | 161 | 38.7 | 12.1 | 38.6 | 37.8 | 8.01 | 20.3 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.19 Monthly results** **Site: Kototabang** **Country: Indonesia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.21 | 3.74 | 2.87 | 8.83 | 2.91 | 7.85 | 2.32 | 4.69 | 4.52 | 2.19 | 6.71 | 5.17 | 0.424 | 300 |
| Feb | 6.64 | 6.43 | 3.58 | 8.26 | 9.42 | 3.49 | 6.88 | 4.32 | 4.25 | 1.19 | 4.42 | 5.35 | 0.383 | 182 |
| Mar | 4.52 | 4.38 | 3.34 | 2.03 | 2.69 | 2.26 | 1.25 | 5.10 | 5.05 | 1.26 | 6.00 | 5.22 | 0.317 | 253 |
| Apr | 3.81 | 3.60 | 7.02 | 1.19 | 3.04 | 3.42 | 1.01 | 1.76 | 1.69 | 0.754 | 9.55 | 5.02 | 0.342 | 278 |
| May | 4.78 | 4.58 | 2.27 | 2.61 | 3.17 | 3.32 | 2.50 | 3.77 | 3.70 | 1.52 | 6.36 | 5.20 | 0.531 | 92.6 |
| June | 7.78 | 7.59 | 7.72 | 7.16 | 20.3 | 3.06 | 1.86 | 6.56 | 6.49 | 1.14 | 21.7 | 4.66 | 0.712 | 130 |
| July | 5.58 | 5.41 | 4.41 | 8.06 | 14.5 | 2.89 | 2.74 | 4.73 | 4.66 | 0.922 | 21.6 | 4.67 | 0.561 | 86.1 |
| Aug | 4.69 | 4.37 | 3.72 | 24.2 | 11.5 | 5.35 | 2.42 | 22.9 | 22.8 | 1.72 | 1.85 | 5.73 | 0.402 | 208 |
| Sept | 4.02 | 3.93 | 3.46 | 6.27 | 7.53 | 1.63 | 0.926 | 16.7 | 16.7 | 0.317 | 1.51 | 5.82 | 0.353 | 262 |
| Oct | 3.51 | 3.39 | 1.06 | 2.01 | 1.30 | 1.84 | 0.728 | 11.5 | 11.5 | 0.377 | 5.06 | 5.30 | 0.317 | 189 |
| Nov | 3.48 | 3.39 | 3.57 | 1.83 | 1.90 | 1.53 | 0.922 | 27.8 | 27.8 | 0.615 | 2.23 | 5.65 | 0.409 | 332 |
| Dec | 3.77 | 3.50 | 1.99 | 6.24 | <0.8 | 4.51 | 0.795 | 17.8 | 17.7 | 1.11 | 4.70 | 5.33 | 0.359 | 125 |
| Annual | 4.48 | 4.27 | 3.78 | 6.28 | 5.59 | 3.46 | 1.86 | 11.6 | 11.6 | 1.08 | 6.29 | 5.20 | 0.402 | 2437 |
| Max. | 19.4 | 19.0 | 12.8 | 88.2 | 92.9 | 26.3 | 25.3 | 66.7 | 66.6 | 4.29 | 37.2 | 6.23 | 1.93 | |
| Min. | 2.75 | 2.51 | <0.5 | <0.5 | <0.8 | 0.560 | 0.541 | 0.206 | <0.2 | <0.3 | 0.589 | 4.43 | 0.152 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.26 | 1.12 | 0.861 | 2.65 | 0.873 | 2.36 | 0.698 | 1.41 | 1.36 | 0.659 | 2.01 |
| Feb | 1.21 | 1.17 | 0.650 | 1.50 | 1.71 | 0.633 | 1.25 | 0.785 | 0.771 | 0.215 | 0.802 |
| Mar | 1.14 | 1.11 | 0.846 | 0.515 | 0.681 | 0.572 | 0.316 | 1.29 | 1.28 | 0.319 | 1.52 |
| Apr | 1.06 | 1.00 | 1.95 | 0.331 | 0.846 | 0.950 | 0.280 | 0.489 | 0.468 | 0.209 | 2.65 |
| May | 0.442 | 0.423 | 0.210 | 0.242 | 0.293 | 0.307 | 0.231 | 0.349 | 0.342 | 0.141 | 0.589 |
| June | 1.01 | 0.987 | 1.00 | 0.931 | 2.64 | 0.398 | 0.242 | 0.853 | 0.844 | 0.149 | 2.82 |
| July | 0.480 | 0.465 | 0.380 | 0.694 | 1.25 | 0.249 | 0.236 | 0.407 | 0.401 | 0.0794 | 1.86 |
| Aug | 0.974 | 0.907 | 0.772 | 5.02 | 2.40 | 1.11 | 0.503 | 4.76 | 4.73 | 0.358 | 0.383 |
| Sept | 1.05 | 1.03 | 0.905 | 1.64 | 1.97 | 0.426 | 0.242 | 4.37 | 4.36 | 0.0829 | 0.396 |
| Oct | 0.663 | 0.642 | 0.200 | 0.380 | 0.246 | 0.348 | 0.138 | 2.18 | 2.18 | 0.0714 | 0.957 |
| Nov | 1.15 | 1.12 | 1.19 | 0.608 | 0.630 | 0.507 | 0.306 | 9.23 | 9.22 | 0.204 | 0.739 |
| Dec | 0.472 | 0.438 | 0.250 | 0.781 | 0.0812 | 0.565 | 0.0997 | 2.23 | 2.21 | 0.139 | 0.589 |
| **Annual** | 10.9 | 10.4 | 9.21 | 15.3 | 13.6 | 8.43 | 4.54 | 28.4 | 28.2 | 2.63 | 15.3 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.20 Monthly results** **Site: Bandung** **Country: Indonesia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 24.4 | 22.8 | 12.0 | 17.1 | 44.2 | 26.5 | 4.47 | 16.7 | 16.1 | 4.19 | 0.211 | 6.67 | 1.45 | 53.0 |
| Feb | 36.8 | 35.6 | 22.5 | 14.5 | 55.8 | 19.9 | 4.09 | 16.2 | 15.8 | 3.78 | 5.75 | 5.24 | 1.91 | 119 |
| Mar | 31.1 | 30.1 | 20.8 | 9.56 | 55.1 | 16.2 | 3.00 | 12.0 | 11.7 | 2.67 | 3.60 | 5.44 | 1.69 | 366 |
| Apr | 43.3 | 42.4 | 29.3 | 10.5 | 64.0 | 14.3 | 4.21 | 15.0 | 14.7 | 3.27 | 18.8 | 4.73 | 2.47 | 218 |
| May | 27.5 | 26.6 | 15.4 | 9.50 | 44.2 | 15.2 | 2.69 | 10.7 | 10.4 | 3.04 | 5.00 | 5.30 | 1.53 | 237 |
| June | 46.8 | 45.4 | 29.5 | 15.7 | 88.5 | 22.7 | 4.75 | 15.1 | 14.6 | 3.75 | 1.97 | 5.71 | 2.22 | 30.7 |
| July | 45.8 | 44.3 | 33.7 | 17.1 | 94.6 | 25.2 | 5.26 | 16.8 | 16.3 | 4.61 | 3.06 | 5.51 | 2.12 | 38.7 |
| Aug | 69.6 | 67.5 | 46.1 | 34.9 | 151 | 36.1 | 8.90 | 24.4 | 23.6 | 6.42 | 1.10 | 5.96 | 3.30 | 37.3 |
| Sept | 27.7 | 26.7 | 25.8 | 17.9 | 60.5 | 17.7 | 6.15 | 13.8 | 13.4 | 4.79 | 1.24 | 5.90 | 1.67 | 84.1 |
| Oct | 58.5 | 55.5 | 50.9 | 39.6 | 111 | 50.1 | 9.65 | 19.6 | 18.6 | 7.08 | 6.40 | 5.19 | 3.03 | 215 |
| Nov | 25.7 | 25.2 | 22.3 | 10.2 | 47.1 | 8.45 | 2.67 | 12.1 | 11.9 | 3.09 | 3.69 | 5.43 | 1.34 | 414 |
| Dec | 27.3 | 26.9 | 23.1 | 12.1 | 53.2 | 6.75 | 3.17 | 21.4 | 21.2 | 4.40 | 2.67 | 5.57 | 1.57 | 108 |
| Annual | 35.0 | 33.9 | 25.9 | 14.9 | 62.4 | 18.7 | 4.22 | 14.4 | 14.0 | 3.80 | 5.63 | 5.25 | 1.88 | 1921 |
| Max. | 222 | 215 | 183 | 78.3 | 340 | 117 | 21.1 | 70.4 | 67.8 | 23.4 | 75.9 | 7.26 | 9.10 | |
| Min. | 4.86 | 4.69 | 1.46 | 2.31 | 7.54 | 2.23 | 1.12 | 5.45 | 4.89 | 1.13 | 0.0550 | 4.12 | 0.325 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.29 | 1.21 | 0.634 | 0.908 | 2.34 | 1.40 | 0.237 | 0.886 | 0.856 | 0.222 | 0.0112 |
| Feb | 4.39 | 4.25 | 2.68 | 1.74 | 6.66 | 2.37 | 0.488 | 1.93 | 1.88 | 0.451 | 0.686 |
| Mar | 11.4 | 11.0 | 7.60 | 3.49 | 20.1 | 5.91 | 1.09 | 4.39 | 4.26 | 0.975 | 1.32 |
| Apr | 9.43 | 9.25 | 6.39 | 2.29 | 14.0 | 3.11 | 0.919 | 3.28 | 3.21 | 0.714 | 4.10 |
| May | 6.51 | 6.29 | 3.64 | 2.25 | 10.5 | 3.60 | 0.637 | 2.54 | 2.46 | 0.719 | 1.18 |
| June | 1.43 | 1.39 | 0.903 | 0.481 | 2.72 | 0.695 | 0.146 | 0.463 | 0.448 | 0.115 | 0.0605 |
| July | 1.77 | 1.71 | 1.30 | 0.662 | 3.66 | 0.973 | 0.203 | 0.650 | 0.629 | 0.178 | 0.118 |
| Aug | 2.60 | 2.52 | 1.72 | 1.30 | 5.64 | 1.35 | 0.332 | 0.911 | 0.882 | 0.240 | 0.0409 |
| Sept | 2.33 | 2.24 | 2.17 | 1.51 | 5.09 | 1.49 | 0.517 | 1.16 | 1.13 | 0.402 | 0.105 |
| Oct | 12.6 | 11.9 | 11.0 | 8.53 | 24.0 | 10.8 | 2.08 | 4.23 | 4.00 | 1.53 | 1.38 |
| Nov | 10.6 | 10.4 | 9.22 | 4.22 | 19.5 | 3.50 | 1.11 | 4.99 | 4.91 | 1.28 | 1.53 |
| Dec | 2.94 | 2.90 | 2.49 | 1.30 | 5.74 | 0.728 | 0.341 | 2.30 | 2.29 | 0.474 | 0.287 |
| **Annual** | 67.3 | 65.1 | 49.7 | 28.7 | 120 | 35.9 | 8.10 | 27.7 | 27.0 | 7.30 | 10.8 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.21 Monthly results** **Site: Maros** **Country: Indonesia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | 6.06 | <0.3 | <0.5 | 363 | 4.31 | 344 | 13.6 | 12.6 | 5.83 | 2.52 | 9.20 | 5.04 | 4.06 | 294 |
| Mar | 8.49 | <0.3 | 1.62 | 447 | 2.83 | 393 | 11.8 | 9.41 | 1.37 | 3.23 | 6.23 | 5.21 | 4.86 | 243 |
| Apr | 4.68 | <0.3 | <0.5 | 126 | 0.805 | 125 | 1.84 | 6.36 | 3.65 | 1.23 | 8.21 | 5.09 | 2.16 | 147 |
| May | 10.8 | 9.21 | 11.9 | 26.3 | 51.5 | 26.4 | 3.37 | 31.3 | 30.8 | 3.63 | 0.656 | 6.18 | 1.49 | 73.0 |
| June | 3.80 | 2.85 | 3.99 | 9.87 | 12.8 | 15.8 | 5.88 | 13.2 | 12.8 | 3.17 | 1.29 | 5.89 | 0.518 | 119 |
| July | 12.6 | 10.5 | 13.9 | 23.0 | 32.0 | 34.8 | 8.58 | 110 | 109 | 2.35 | 0.534 | 6.27 | 2.06 | 38.5 |
| Aug | 16.9 | 15.8 | 1.29 | 48.0 | 0.981 | 17.0 | 34.6 | 44.7 | 44.3 | 0.956 | 8.91 | 5.05 | 1.53 | 21.7 |
| Sept | 4.23 | 1.94 | 1.68 | 38.6 | <0.8 | 38.0 | 2.65 | 18.6 | 17.7 | 0.458 | 12.3 | 4.91 | 0.885 | 90.1 |
| Oct | 6.83 | 5.87 | <0.5 | 23.4 | 7.06 | 15.8 | 7.82 | 19.3 | 19.0 | 1.60 | 8.50 | 5.07 | 1.12 | 91.9 |
| Nov | 5.80 | 5.07 | 6.41 | 15.9 | 1.81 | 12.1 | 7.39 | 19.2 | 19.0 | 2.19 | 2.97 | 5.53 | 0.653 | 326 |
| Dec | 5.91 | 5.15 | 4.03 | 14.9 | 2.52 | 12.7 | 2.22 | 8.54 | 8.27 | 2.10 | 2.95 | 5.53 | 0.504 | 856 |
| Annual | 6.34 | 3.71 | 3.48 | 114 | 5.22 | 104 | 6.27 | 14.4 | 12.2 | 2.24 | 4.88 | 5.31 | 1.65 | 2301 |
| Max. | 19.0 | 16.5 | 20.7 | 606 | 127 | 526 | 48.6 | 125 | 124 | 8.41 | 13.5 | 6.47 | 6.43 | |
| Min. | 2.65 | <0.3 | <0.5 | 5.90 | <0.8 | 6.38 | 1.60 | 3.68 | <0.2 | 0.458 | 0.339 | 4.87 | 0.387 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 1.78 | <0.01 | <0.01 | 107 | 1.27 | 101 | 3.99 | 3.72 | 1.72 | 0.741 | 2.71 |
| Mar | 2.06 | <0.01 | 0.393 | 108 | 0.688 | 95.5 | 2.85 | 2.29 | 0.334 | 0.785 | 1.51 |
| Apr | 0.689 | <0.01 | 0.0108 | 18.6 | 0.119 | 18.4 | 0.271 | 0.936 | 0.538 | 0.182 | 1.21 |
| May | 0.789 | 0.673 | 0.867 | 1.92 | 3.76 | 1.93 | 0.246 | 2.29 | 2.25 | 0.265 | 0.0479 |
| June | 0.453 | 0.339 | 0.474 | 1.17 | 1.52 | 1.88 | 0.700 | 1.57 | 1.53 | 0.377 | 0.154 |
| July | 0.484 | 0.403 | 0.536 | 0.885 | 1.23 | 1.34 | 0.330 | 4.22 | 4.20 | 0.0904 | 0.0205 |
| Aug | 0.366 | 0.344 | 0.0280 | 1.04 | 0.0213 | 0.369 | 0.750 | 0.970 | 0.962 | 0.0207 | 0.193 |
| Sept | 0.381 | 0.175 | 0.151 | 3.48 | <0.01 | 3.42 | 0.238 | 1.67 | 1.60 | 0.0413 | 1.11 |
| Oct | 0.627 | 0.540 | <0.01 | 2.15 | 0.649 | 1.45 | 0.719 | 1.78 | 1.75 | 0.147 | 0.782 |
| Nov | 1.89 | 1.65 | 2.09 | 5.20 | 0.592 | 3.94 | 2.41 | 6.27 | 6.19 | 0.716 | 0.971 |
| Dec | 5.06 | 4.41 | 3.45 | 12.8 | 2.16 | 10.9 | 1.90 | 7.31 | 7.08 | 1.80 | 2.53 |
| **Annual** | 14.6 | 8.53 | 8.00 | 262 | 12.0 | 240 | 14.4 | 33.0 | 28.1 | 5.16 | 11.2 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.22 Monthly results** **Site: Rishiri** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 49.0 | 20.1 | 17.4 | 542 | 20.9 | 480 | 10.8 | 12.1 | 1.81 | 53.7 | 29.7 | 4.53 | 9.22 | 56.8 |
| Feb | 36.8 | 19.8 | 40.2 | 321 | 41.0 | 281 | 7.57 | 13.1 | 7.01 | 32.3 | 25.4 | 4.60 | 6.47 | 32.0 |
| Mar | 36.6 | 25.6 | 43.8 | 211 | 47.8 | 184 | 5.74 | 11.4 | 7.44 | 22.1 | 33.9 | 4.47 | 5.46 | 33.8 |
| Apr | 13.6 | 9.87 | 17.3 | 63.7 | 17.9 | 62.1 | 2.64 | 8.99 | 7.65 | 7.54 | 11.4 | 4.94 | 2.03 | 91.0 |
| May | 40.1 | 36.0 | 47.1 | 78.8 | 61.7 | 68.3 | 2.45 | 12.1 | 10.6 | 8.93 | 43.5 | 4.36 | 4.13 | 25.2 |
| June | 19.8 | 14.3 | 20.8 | 105 | 29.5 | 91.9 | 3.92 | 3.88 | 1.90 | 11.9 | 19.1 | 4.72 | 2.95 | 94.0 |
| July | 12.0 | 10.6 | 15.8 | 25.2 | 26.9 | 23.2 | 1.06 | 1.59 | 1.09 | 2.86 | 14.3 | 4.85 | 1.48 | 148 |
| Aug | 6.05 | 4.75 | 6.79 | 24.6 | 9.99 | 21.6 | 0.833 | 1.35 | 0.888 | 2.57 | 6.26 | 5.20 | 0.813 | 64.9 |
| Sept | 9.02 | 3.78 | 3.90 | 98.0 | 3.53 | 87.0 | 3.13 | 3.35 | 1.47 | 11.1 | 7.77 | 5.11 | 1.75 | 134 |
| Oct | 31.1 | 14.7 | 21.6 | 315 | 34.8 | 273 | 8.89 | 12.2 | 6.31 | 34.1 | 16.3 | 4.79 | 5.71 | 50.1 |
| Nov | 51.3 | 15.3 | 31.9 | 682 | 28.0 | 600 | 16.7 | 20.4 | 7.45 | 69.1 | 25.2 | 4.60 | 11.2 | 103 |
| Dec | 34.7 | 9.79 | 14.0 | 465 | 11.8 | 413 | 10.5 | 11.2 | 2.28 | 47.0 | 16.7 | 4.78 | 7.30 | 105 |
| Annual | 24.6 | 12.2 | 18.7 | 234 | 22.3 | 207 | 6.01 | 8.15 | 3.68 | 24.2 | 17.3 | 4.76 | 4.47 | 938 |
| Max. | 290 | 102 | 347 | 5178 | 345 | 4607 | 114 | 136 | 130 | 517 | 110 | 6.73 | 69.0 | |
| Min. | 0.800 | <0.3 | <0.5 | 2.10 | <0.8 | 1.40 | <0.3 | 0.300 | <0.2 | <0.3 | 0.186 | 3.96 | 0.240 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 2.78 | 1.14 | 0.987 | 30.8 | 1.19 | 27.2 | 0.616 | 0.690 | 0.103 | 3.05 | 1.69 |
| Feb | 1.18 | 0.636 | 1.29 | 10.3 | 1.31 | 9.00 | 0.243 | 0.419 | 0.224 | 1.03 | 0.813 |
| Mar | 1.24 | 0.863 | 1.48 | 7.13 | 1.61 | 6.21 | 0.194 | 0.385 | 0.251 | 0.748 | 1.14 |
| Apr | 1.24 | 0.898 | 1.58 | 5.80 | 1.63 | 5.65 | 0.240 | 0.818 | 0.696 | 0.686 | 1.04 |
| May | 1.01 | 0.906 | 1.19 | 1.98 | 1.55 | 1.72 | 0.0617 | 0.304 | 0.267 | 0.225 | 1.09 |
| June | 1.86 | 1.34 | 1.95 | 9.85 | 2.77 | 8.64 | 0.368 | 0.365 | 0.178 | 1.12 | 1.79 |
| July | 1.76 | 1.56 | 2.33 | 3.72 | 3.97 | 3.43 | 0.157 | 0.234 | 0.160 | 0.422 | 2.11 |
| Aug | 0.392 | 0.308 | 0.440 | 1.60 | 0.648 | 1.40 | 0.0540 | 0.0879 | 0.0576 | 0.166 | 0.406 |
| Sept | 1.20 | 0.504 | 0.520 | 13.1 | 0.472 | 11.6 | 0.418 | 0.447 | 0.196 | 1.48 | 1.04 |
| Oct | 1.56 | 0.735 | 1.08 | 15.8 | 1.75 | 13.7 | 0.446 | 0.612 | 0.316 | 1.71 | 0.817 |
| Nov | 5.31 | 1.58 | 3.30 | 70.6 | 2.90 | 62.1 | 1.73 | 2.11 | 0.770 | 7.15 | 2.60 |
| Dec | 3.65 | 1.03 | 1.47 | 49.0 | 1.25 | 43.5 | 1.11 | 1.18 | 0.240 | 4.95 | 1.76 |
| **Annual** | 23.1 | 11.4 | 17.5 | 219 | 20.9 | 194 | 5.63 | 7.64 | 3.45 | 22.7 | 16.2 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 84.8 |
| Feb | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 100 |
| Mar | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 100 |
| Apr | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 100 |
| May | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 93.4 | 100 |
| June | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 100 |
| July | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 98.6 | 100 |
| Aug | 98.8 | 98.8 | 98.8 | 98.8 | 98.8 | 98.8 | 98.8 | 98.8 | 98.8 | 98.8 | 97.9 | 97.9 | 97.9 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 100 |
| Nov | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 100 |
| Dec | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 98.8 | 98.8 | 98.8 | 100 |
| **Annual** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.5** | **98.5** | **98.5** | **98.6** |

Terms and abbreviations are given in Table 3.5.

**Table 3.23 Monthly results** **Site: Ochiishi** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 17.3 | 6.60 | 6.71 | 208 | 2.28 | 177 | 6.33 | 5.46 | 1.64 | 19.1 | 10.2 | 4.99 | 3.77 | 7.2 |
| Feb | 25.2 | 9.91 | 19.2 | 290 | 14.0 | 254 | 6.03 | 8.56 | 3.06 | 28.9 | 16.7 | 4.78 | 5.34 | 11.3 |
| Mar | 18.7 | 5.90 | 13.0 | 246 | 5.52 | 213 | 4.15 | 8.85 | 4.25 | 25.2 | 8.91 | 5.05 | 5.19 | 9.1 |
| Apr | 35.6 | 8.80 | 15.8 | 523 | 12.6 | 445 | 9.93 | 12.4 | 2.84 | 48.6 | 6.81 | 5.17 | 8.39 | 25.3 |
| May | 11.4 | 10.4 | 15.6 | 21.5 | 13.7 | 17.9 | 0.799 | 3.67 | 3.29 | 2.10 | 15.1 | 4.82 | 1.44 | 55.2 |
| June | 8.04 | 6.62 | 7.30 | 29.4 | 9.77 | 23.5 | 1.51 | 1.48 | 0.969 | 2.80 | 8.86 | 5.05 | 1.04 | 146 |
| July | 3.77 | 3.57 | 5.84 | 5.67 | 3.60 | 3.31 | 0.336 | 1.07 | 0.998 | 1.14 | 6.93 | 5.16 | 0.510 | 132 |
| Aug | 8.54 | 6.65 | 9.84 | 35.9 | 6.04 | 31.5 | 1.39 | 1.58 | 0.905 | 4.04 | 11.8 | 4.93 | 1.36 | 31.0 |
| Sept | 38.7 | 3.50 | 5.30 | 693 | 5.36 | 585 | 13.9 | 14.4 | 1.72 | 68.7 | 5.57 | 5.25 | 9.49 | 155 |
| Oct | 15.6 | 2.47 | 2.88 | 254 | 1.72 | 218 | 5.04 | 5.75 | 1.04 | 24.8 | 5.26 | 5.28 | 3.83 | 161 |
| Nov | 28.5 | 4.55 | 6.45 | 471 | 5.55 | 398 | 8.97 | 10.4 | 1.80 | 46.3 | 5.37 | 5.27 | 7.16 | 56.6 |
| Dec | 20.7 | 5.61 | 7.39 | 294 | 9.60 | 250 | 5.63 | 6.64 | 1.23 | 28.2 | 7.09 | 5.15 | 4.53 | 47.0 |
| Annual | 18.0 | 4.87 | 6.83 | 258 | 6.26 | 219 | 5.36 | 6.18 | 1.46 | 25.4 | 7.42 | 5.13 | 4.02 | 836 |
| Max. | 363 | 61.4 | 134 | 7236 | 126 | 6032 | 134 | 140 | 33.0 | 712 | 37.2 | 6.06 | 94.4 | |
| Min. | 1.10 | <0.3 | <0.5 | 2.40 | <0.8 | 0.900 | <0.3 | <0.2 | <0.2 | 0.400 | 0.871 | 4.43 | 0.250 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.124 | 0.0476 | 0.0484 | 1.50 | 0.0164 | 1.27 | 0.0456 | 0.0394 | 0.0118 | 0.138 | 0.0738 |
| Feb | 0.286 | 0.112 | 0.217 | 3.28 | 0.159 | 2.88 | 0.0682 | 0.0968 | 0.0346 | 0.327 | 0.189 |
| Mar | 0.170 | 0.0535 | 0.118 | 2.24 | 0.0501 | 1.93 | 0.0377 | 0.0803 | 0.0386 | 0.229 | 0.0809 |
| Apr | 0.901 | 0.222 | 0.398 | 13.2 | 0.318 | 11.3 | 0.251 | 0.312 | 0.0717 | 1.23 | 0.172 |
| May | 0.631 | 0.572 | 0.860 | 1.19 | 0.758 | 0.986 | 0.0441 | 0.203 | 0.181 | 0.116 | 0.831 |
| June | 1.17 | 0.964 | 1.06 | 4.29 | 1.42 | 3.43 | 0.221 | 0.215 | 0.141 | 0.407 | 1.29 |
| July | 0.497 | 0.470 | 0.769 | 0.746 | 0.474 | 0.436 | 0.0442 | 0.140 | 0.131 | 0.149 | 0.912 |
| Aug | 0.265 | 0.206 | 0.305 | 1.11 | 0.187 | 0.974 | 0.0431 | 0.0491 | 0.0280 | 0.125 | 0.365 |
| Sept | 6.01 | 0.545 | 0.824 | 108 | 0.833 | 90.9 | 2.16 | 2.23 | 0.267 | 10.7 | 0.866 |
| Oct | 2.51 | 0.397 | 0.463 | 40.9 | 0.276 | 35.1 | 0.811 | 0.925 | 0.167 | 3.99 | 0.846 |
| Nov | 1.62 | 0.258 | 0.365 | 26.7 | 0.314 | 22.5 | 0.508 | 0.589 | 0.102 | 2.62 | 0.304 |
| Dec | 0.973 | 0.263 | 0.347 | 13.8 | 0.451 | 11.8 | 0.264 | 0.312 | 0.0577 | 1.33 | 0.333 |
| **Annual** | 15.1 | 4.07 | 5.71 | 216 | 5.24 | 183 | 4.48 | 5.17 | 1.22 | 21.3 | 6.21 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 48.5 | 48.5 | 48.5 | 100 |
| Feb | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 61.9 | 100 |
| Mar | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 93.7 | 27.6 | 27.6 | 27.6 | 100 |
| Apr | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 91.0 | 91.0 | 91.0 | 100 |
| May | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 100 |
| June | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 100 |
| July | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 97.6 | 97.6 | 97.6 | 100 |
| Aug | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 93.6 | 80.7 | 80.7 | 80.7 | 100 |
| Sept | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 98.1 | 98.1 | 98.1 | 100 |
| Oct | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 97.3 | 97.3 | 97.3 | 100 |
| Nov | 85.7 | 85.7 | 85.7 | 85.7 | 85.7 | 85.7 | 85.7 | 85.7 | 85.7 | 85.7 | 80.4 | 80.4 | 80.4 | 93.3 |
| Dec | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 96.8 | 96.8 | 96.8 | 100 |
| **Annual** | **96.7** | **96.7** | **96.7** | **96.7** | **96.7** | **96.7** | **96.7** | **96.7** | **96.7** | **96.7** | **94.1** | **94.1** | **94.1** | **99.5** |

Terms and abbreviations are given in Table 3.5.

**Table 3.24 Monthly results** **Site: Tappi** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 49.5 | 15.5 | 26.4 | 638 | 17.1 | 563 | 12.6 | 17.5 | 5.30 | 62.8 | 22.1 | 4.66 | 8.40 | 44.8 |
| Feb | 28.0 | 13.6 | 26.8 | 275 | 16.7 | 238 | 5.80 | 8.17 | 3.02 | 27.3 | 21.5 | 4.67 | 5.27 | 52.0 |
| Mar | 59.2 | 34.7 | 69.6 | 473 | 69.9 | 407 | 11.6 | 20.2 | 11.4 | 46.9 | 44.7 | 4.35 | 9.53 | 25.7 |
| Apr | 30.1 | 12.2 | 23.0 | 351 | 16.7 | 297 | 7.00 | 10.7 | 4.27 | 34.2 | 15.4 | 4.81 | 4.72 | 64.6 |
| May | 14.2 | 10.2 | 18.3 | 76.0 | 14.1 | 66.7 | 1.82 | 4.92 | 3.48 | 8.04 | 15.5 | 4.81 | 2.11 | 79.3 |
| June | 14.1 | 10.4 | 20.1 | 71.0 | 21.3 | 61.4 | 2.12 | 4.02 | 2.70 | 7.11 | 15.6 | 4.81 | 2.02 | 115 |
| July | 14.7 | 13.1 | 20.2 | 31.3 | 31.8 | 27.4 | 1.10 | 1.53 | 0.942 | 3.21 | 18.8 | 4.73 | 1.81 | 106 |
| Aug | 10.9 | 8.36 | 10.9 | 46.8 | 6.63 | 41.5 | 1.22 | 1.45 | 0.581 | 4.56 | 17.7 | 4.75 | 1.64 | 135 |
| Sept | 20.2 | 5.63 | 11.3 | 271 | 10.0 | 242 | 6.00 | 7.63 | 2.40 | 27.6 | 9.89 | 5.00 | 4.64 | 112 |
| Oct | 14.6 | 5.36 | 9.60 | 173 | 5.44 | 154 | 3.76 | 5.01 | 1.69 | 17.8 | 11.9 | 4.92 | 3.21 | 124 |
| Nov | 31.2 | 13.0 | 27.5 | 341 | 16.3 | 303 | 7.45 | 10.3 | 3.79 | 35.1 | 25.2 | 4.60 | 6.19 | 157 |
| Dec | 27.4 | 10.4 | 18.4 | 323 | 11.2 | 282 | 6.64 | 8.49 | 2.39 | 33.2 | 19.6 | 4.71 | 4.85 | 113 |
| Annual | 22.1 | 10.7 | 19.5 | 215 | 15.9 | 189 | 4.72 | 6.78 | 2.71 | 21.7 | 18.0 | 4.74 | 3.91 | 1129 |
| Max. | 1295 | 126 | 480 | 23883 | 355 | 20828 | 457 | 501 | 195 | 2446 | 139 | 5.84 | 52.6 | |
| Min. | 2.80 | <0.3 | 2.10 | 3.80 | <0.8 | 3.30 | 0.300 | 0.400 | <0.2 | 0.700 | 1.46 | 3.86 | 0.517 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 2.22 | 0.695 | 1.18 | 28.6 | 0.768 | 25.2 | 0.565 | 0.783 | 0.238 | 2.81 | 0.991 |
| Feb | 1.45 | 0.707 | 1.39 | 14.3 | 0.866 | 12.4 | 0.302 | 0.425 | 0.157 | 1.42 | 1.12 |
| Mar | 1.52 | 0.891 | 1.79 | 12.2 | 1.80 | 10.4 | 0.297 | 0.519 | 0.294 | 1.21 | 1.15 |
| Apr | 1.94 | 0.786 | 1.48 | 22.7 | 1.08 | 19.2 | 0.452 | 0.690 | 0.276 | 2.21 | 0.994 |
| May | 1.13 | 0.810 | 1.45 | 6.02 | 1.12 | 5.29 | 0.145 | 0.390 | 0.276 | 0.638 | 1.23 |
| June | 1.63 | 1.20 | 2.32 | 8.18 | 2.45 | 7.08 | 0.244 | 0.464 | 0.311 | 0.820 | 1.80 |
| July | 1.56 | 1.39 | 2.14 | 3.32 | 3.38 | 2.91 | 0.117 | 0.163 | 0.0999 | 0.341 | 1.99 |
| Aug | 1.47 | 1.13 | 1.47 | 6.34 | 0.897 | 5.62 | 0.165 | 0.196 | 0.0787 | 0.618 | 2.39 |
| Sept | 2.27 | 0.631 | 1.27 | 30.4 | 1.13 | 27.1 | 0.673 | 0.856 | 0.269 | 3.10 | 1.11 |
| Oct | 1.82 | 0.666 | 1.19 | 21.5 | 0.676 | 19.1 | 0.467 | 0.623 | 0.210 | 2.21 | 1.48 |
| Nov | 4.88 | 2.03 | 4.30 | 53.4 | 2.56 | 47.5 | 1.17 | 1.62 | 0.593 | 5.49 | 3.94 |
| Dec | 3.10 | 1.17 | 2.09 | 36.6 | 1.26 | 32.0 | 0.752 | 0.962 | 0.271 | 3.76 | 2.22 |
| **Annual** | 24.9 | 12.1 | 22.0 | 242 | 17.9 | 213 | 5.33 | 7.66 | 3.06 | 24.5 | 20.4 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 97.9 | 90.4 | 90.4 | 90.4 | 100 |
| Feb | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 95.2 | 95.2 | 95.2 | 100 |
| Mar | 97.2 | 97.2 | 97.2 | 97.2 | 97.2 | 97.2 | 97.2 | 97.2 | 97.2 | 97.2 | 91.5 | 91.5 | 91.5 | 100 |
| Apr | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 90.6 | 90.6 | 90.6 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98.4 | 98.4 | 98.4 | 100 |
| June | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 98.0 | 98.0 | 98.0 | 100 |
| July | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 93.5 |
| Aug | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 98.2 | 98.2 | 98.2 | 100 |
| Sept | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.4 | 99.4 | 99.4 | 100 |
| Oct | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 97.8 | 97.8 | 97.8 | 100 |
| Nov | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 98.3 | 98.3 | 98.3 | 100 |
| Dec | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 97.5 | 97.5 | 97.5 | 100 |
| **Annual** | **99.2** | **99.2** | **99.2** | **99.2** | **99.2** | **99.2** | **99.2** | **99.2** | **99.2** | **99.2** | **97.3** | **97.3** | **97.3** | **99.5** |

Terms and abbreviations are given in Table 3.5.

**Table 3.25 Monthly results** **Site: Sado-seki** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 58.3 | 19.4 | 30.1 | 715 | 34.3 | 648 | 18.5 | 18.1 | 4.12 | 69.4 | 26.3 | 4.58 | 10.1 | 83.9 |
| Feb | 44.5 | 12.4 | 17.8 | 609 | 15.9 | 533 | 12.7 | 15.6 | 4.06 | 58.4 | 16.6 | 4.78 | 9.31 | 54.4 |
| Mar | 51.1 | 30.5 | 58.5 | 391 | 68.1 | 342 | 11.0 | 17.8 | 10.4 | 39.2 | 34.1 | 4.47 | 7.99 | 28.4 |
| Apr | 20.8 | 15.4 | 25.4 | 108 | 31.4 | 91.1 | 3.29 | 10.1 | 8.15 | 12.1 | 6.62 | 5.18 | 2.04 | 76.5 |
| May | 25.3 | 22.6 | 39.5 | 55.1 | 33.9 | 45.1 | 2.45 | 11.6 | 10.6 | 7.54 | 27.6 | 4.56 | 2.98 | 26.3 |
| June | 16.4 | 12.9 | 26.4 | 66.2 | 29.8 | 57.4 | 2.36 | 6.09 | 4.85 | 8.04 | 10.9 | 4.96 | 1.78 | 34.5 |
| July | 7.95 | 6.95 | 11.6 | 20.0 | 15.8 | 16.5 | 1.58 | 2.05 | 1.70 | 2.29 | 8.02 | 5.10 | 1.04 | 283 |
| Aug | 6.59 | 5.07 | 12.5 | 31.1 | 4.60 | 25.3 | 0.484 | 1.47 | 0.923 | 2.99 | 13.2 | 4.88 | 1.20 | 147 |
| Sept | 13.0 | 5.10 | 11.5 | 151 | 9.18 | 131 | 4.14 | 4.90 | 2.07 | 15.7 | 7.94 | 5.10 | 2.76 | 94.1 |
| Oct | 14.4 | 10.4 | 20.3 | 68.1 | 13.0 | 65.2 | 2.04 | 4.55 | 3.14 | 8.71 | 21.1 | 4.68 | 2.20 | 167 |
| Nov | * | * | * | * | * | * | * | * | * | * | * | * | * | 80.5 |
| Dec | * | * | * | * | * | * | * | * | * | * | * | * | * | 186 |
| Annual | 19.6 | 10.6 | 18.6 | 170 | 20.0 | 150 | 4.71 | 6.67 | 3.43 | 17.1 | 12.7 | 4.90 | 3.11 | 1262 |
| Max. | 307 | 109 | 219 | 4610 | 249 | 4244 | 161 | 134 | 72.4 | 444 | 89.1 | 5.94 | 61.5 | |
| Min. | 2.30 | <0.3 | 2.90 | 4.00 | <0.8 | 4.10 | <0.3 | 0.900 | <0.2 | 1.00 | 1.15 | 4.05 | 0.460 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.89 | 1.63 | 2.53 | 60.0 | 2.88 | 54.4 | 1.55 | 1.52 | 0.346 | 5.82 | 2.21 |
| Feb | 2.42 | 0.675 | 0.970 | 33.1 | 0.864 | 29.0 | 0.689 | 0.846 | 0.221 | 3.18 | 0.904 |
| Mar | 1.45 | 0.865 | 1.66 | 11.1 | 1.93 | 9.71 | 0.313 | 0.504 | 0.294 | 1.11 | 0.968 |
| Apr | 1.59 | 1.18 | 1.94 | 8.30 | 2.40 | 6.97 | 0.252 | 0.774 | 0.623 | 0.926 | 0.506 |
| May | 0.666 | 0.595 | 1.04 | 1.45 | 0.892 | 1.19 | 0.0643 | 0.305 | 0.279 | 0.198 | 0.726 |
| June | 0.565 | 0.445 | 0.912 | 2.29 | 1.03 | 1.98 | 0.0816 | 0.210 | 0.168 | 0.277 | 0.376 |
| July | 2.25 | 1.97 | 3.28 | 5.67 | 4.49 | 4.67 | 0.449 | 0.582 | 0.481 | 0.648 | 2.27 |
| Aug | 0.972 | 0.747 | 1.85 | 4.58 | 0.679 | 3.73 | 0.0713 | 0.217 | 0.136 | 0.442 | 1.95 |
| Sept | 1.22 | 0.480 | 1.08 | 14.2 | 0.864 | 12.3 | 0.390 | 0.461 | 0.195 | 1.48 | 0.748 |
| Oct | 2.40 | 1.74 | 3.39 | 11.4 | 2.17 | 10.9 | 0.340 | 0.760 | 0.525 | 1.45 | 3.52 |
| Nov | * | * | * | * | * | * | * | * | * | * | * |
| Dec | * | * | * | * | * | * | * | * | * | * | * |
| **Annual** | 24.7 | 13.3 | 23.5 | 214 | 25.2 | 189 | 5.95 | 8.41 | 4.33 | 21.6 | 16.0 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 81.3 | 81.3 | 81.3 | 96.8 |
| Feb | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 93.8 | 93.8 | 93.8 | 100 |
| Mar | 95.6 | 95.6 | 95.6 | 95.6 | 95.6 | 95.6 | 95.6 | 95.6 | 95.6 | 95.6 | 82.7 | 82.7 | 82.7 | 100 |
| Apr | 93.9 | 93.9 | 93.9 | 93.9 | 93.9 | 93.9 | 93.9 | 93.9 | 93.9 | 93.9 | 90.2 | 90.2 | 90.2 | 93.3 |
| May | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 89.3 | 89.3 | 89.3 | 100 |
| June | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 95.3 | 85.4 | 85.4 | 85.4 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.5 | 99.5 | 99.5 | 96.8 |
| Aug | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 57.1 | 56.3 | 56.3 | 56.3 | 77.4 |
| Sept | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 97.7 | 97.7 | 97.7 | 100 |
| Oct | 14.4 | 14.4 | 14.4 | 14.4 | 14.4 | 14.4 | 14.4 | 14.4 | 14.4 | 14.4 | 13.8 | 13.8 | 13.8 | 100 |
| Nov | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Dec | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 83.9 |
| **Annual** | **60.9** | **60.9** | **60.9** | **60.9** | **60.9** | **60.9** | **60.9** | **60.9** | **60.9** | **60.9** | **59.0** | **59.0** | **59.0** | **95.6** |

Terms and abbreviations are given in Table 3.5.

**Table 3.26 Monthly results** **Site: Happo** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | * | * | * | * | * | * | * | * | * | * | * | * | * | 194 |
| Feb | * | * | * | * | * | * | * | * | * | * | * | * | * | 162 |
| Mar | * | * | * | * | * | * | * | * | * | * | * | * | * | 53.0 |
| Apr | * | * | * | * | * | * | * | * | * | * | * | * | * | 158 |
| May | * | * | * | * | * | * | * | * | * | * | * | * | * | 145 |
| June | * | * | * | * | * | * | * | * | * | * | * | * | * | 250 |
| July | 7.11 | 7.03 | 10.5 | 2.45 | 13.7 | 1.26 | 0.361 | 1.53 | 1.50 | 0.801 | 8.81 | 5.05 | 0.699 | 585 |
| Aug | 4.01 | 3.92 | 6.10 | 2.09 | 3.60 | 1.50 | <0.3 | 1.06 | 1.03 | 0.612 | 8.93 | 5.05 | 0.514 | 447 |
| Sept | 1.81 | 1.75 | 3.42 | 1.07 | 0.973 | 0.989 | <0.3 | 1.52 | 1.50 | 0.873 | 4.04 | 5.39 | 0.273 | 301 |
| Oct | 3.32 | 2.89 | 3.17 | 8.61 | 1.05 | 7.04 | 0.483 | 1.81 | 1.66 | 1.57 | 6.24 | 5.20 | 0.467 | 434 |
| Nov | 9.68 | 8.94 | 11.6 | 14.8 | 10.1 | 12.3 | 0.636 | 3.31 | 3.05 | 2.13 | 13.1 | 4.88 | 1.05 | 205 |
| Dec | 6.65 | 5.95 | 6.30 | 14.0 | 3.91 | 11.5 | 0.432 | 2.56 | 2.31 | 2.00 | 10.5 | 4.98 | 0.825 | 190 |
| Annual | 4.66 | 4.36 | 5.96 | 6.18 | 4.33 | 4.96 | 0.376 | 1.77 | 1.67 | 1.23 | 7.96 | 5.10 | 0.569 | 3121 |
| Max. | 29.2 | 26.5 | 40.5 | 416 | 44.4 | 342 | 27.9 | 14.0 | 13.7 | 38.8 | 38.9 | 5.96 | 6.23 | |
| Min. | 0.700 | 0.628 | 1.20 | <0.5 | <0.8 | 0.600 | <0.3 | 0.900 | 0.790 | 0.500 | 1.10 | 4.41 | 0.160 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | * | * | * | * | * | * | * | * | * | * | * |
| Feb | * | * | * | * | * | * | * | * | * | * | * |
| Mar | * | * | * | * | * | * | * | * | * | * | * |
| Apr | * | * | * | * | * | * | * | * | * | * | * |
| May | * | * | * | * | * | * | * | * | * | * | * |
| June | * | * | * | * | * | * | * | * | * | * | * |
| July | 4.15 | 4.11 | 6.12 | 1.43 | 8.02 | 0.735 | 0.211 | 0.893 | 0.877 | 0.468 | 5.15 |
| Aug | 1.79 | 1.75 | 2.73 | 0.934 | 1.61 | 0.671 | 0.115 | 0.475 | 0.461 | 0.274 | 3.99 |
| Sept | 0.544 | 0.527 | 1.03 | 0.323 | 0.292 | 0.297 | 0.0655 | 0.458 | 0.451 | 0.263 | 1.21 |
| Oct | 1.44 | 1.26 | 1.37 | 3.74 | 0.455 | 3.06 | 0.209 | 0.785 | 0.719 | 0.683 | 2.71 |
| Nov | 1.99 | 1.83 | 2.38 | 3.04 | 2.06 | 2.52 | 0.130 | 0.679 | 0.624 | 0.437 | 2.68 |
| Dec | 1.26 | 1.13 | 1.19 | 2.64 | 0.741 | 2.18 | 0.0819 | 0.485 | 0.438 | 0.380 | 1.99 |
| **Annual** | 14.5 | 13.6 | 18.6 | 19.3 | 13.5 | 15.5 | 1.17 | 5.54 | 5.20 | 3.83 | 24.9 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Feb | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Mar | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Apr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| May | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96.8 |
| June | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80.0 |
| July | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 33.4 | 67.7 |
| Aug | 94.2 | 94.2 | 94.2 | 94.2 | 94.2 | 94.2 | 94.2 | 94.2 | 94.2 | 94.2 | 93.9 | 93.9 | 93.9 | 100 |
| Sept | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.5 | 99.5 | 99.5 | 100 |
| Oct | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.1 | 99.1 | 99.1 | 100 |
| Nov | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 100 |
| Dec | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 97.6 | 97.6 | 97.6 | 100 |
| **Annual** | **54.7** | **54.7** | **54.7** | **54.7** | **54.7** | **54.7** | **54.7** | **54.7** | **54.7** | **54.7** | **54.5** | **54.5** | **54.5** | **95.3** |

Terms and abbreviations are given in Table 3.5.

**Table 3.27 Monthly results** **Site: Ijira** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | | mS $m^{-1}$ | mm $month^{-1}$ or mm $year^{-1}$ |
| Jan | 12.5 | 8.62 | 14.0 | 76.8 | 9.58 | 64.2 | 1.47 | 2.83 | 1.44 | 7.38 | 18.2 | 4.74 | 2.15 | 130 |
| Feb | 14.2 | 12.9 | 15.1 | 26.7 | 13.1 | 21.4 | 1.16 | 2.71 | 2.25 | 2.65 | 27.5 | 4.56 | 1.69 | 123 |
| Mar | 13.5 | 12.3 | 22.3 | 23.0 | 22.3 | 18.4 | 1.27 | 4.04 | 3.64 | 2.73 | 20.3 | 4.69 | 1.56 | 119 |
| Apr | 8.59 | 8.07 | 12.0 | 10.3 | 11.4 | 8.54 | 0.533 | 1.74 | 1.55 | 1.13 | 15.8 | 4.80 | 1.01 | 390 |
| May | 20.7 | 20.3 | 41.1 | 8.03 | 34.4 | 6.35 | 0.760 | 7.02 | 6.88 | 1.81 | 30.5 | 4.52 | 2.29 | 113 |
| June | 12.4 | 12.1 | 20.3 | 7.23 | 16.3 | 5.35 | 0.322 | 0.859 | 0.753 | 0.735 | 24.9 | 4.60 | 1.56 | 246 |
| July | 14.2 | 14.0 | 24.0 | 5.89 | 23.5 | 3.72 | <0.3 | 1.29 | 1.22 | 0.323 | 26.8 | 4.57 | 1.70 | 317 |
| Aug | 9.86 | 9.62 | 15.3 | 5.60 | 11.5 | 3.94 | <0.3 | 1.04 | 0.950 | 0.552 | 21.6 | 4.67 | 1.28 | 479 |
| Sept | 9.38 | 7.48 | 13.8 | 37.0 | 8.95 | 31.4 | 0.673 | 1.72 | 1.04 | 3.37 | 17.4 | 4.76 | 1.47 | 280 |
| Oct | 2.35 | 2.04 | 2.93 | 5.53 | 1.18 | 5.11 | 0.509 | 1.89 | 1.79 | 0.867 | 4.68 | 5.33 | 0.371 | 523 |
| Nov | 14.6 | 11.5 | 21.5 | 59.3 | 11.9 | 52.7 | 1.54 | 8.81 | 7.67 | 6.54 | 14.2 | 4.85 | 1.87 | 90.5 |
| Dec | 12.1 | 9.45 | 18.7 | 52.9 | 12.7 | 44.6 | 1.23 | 3.44 | 2.48 | 5.38 | 19.8 | 4.70 | 1.87 | 110 |
| Annual | 10.1 | 9.20 | 15.4 | 17.7 | 12.5 | 14.6 | 0.576 | 2.20 | 1.88 | 1.84 | 18.3 | 4.74 | 1.32 | 2919 |
| Max. | 60.4 | 58.7 | 126 | 123 | 78.1 | 105 | 9.30 | 42.9 | 42.3 | 16.5 | 85.1 | 6.02 | 6.56 | |
| Min. | 1.40 | 1.16 | 2.00 | 0.800 | <0.8 | 0.700 | <0.3 | <0.2 | <0.2 | <0.3 | 0.948 | 4.07 | 0.286 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 1.62 | 1.12 | 1.81 | 9.99 | 1.25 | 8.34 | 0.191 | 0.368 | 0.188 | 0.959 | 2.37 |
| Feb | 1.74 | 1.58 | 1.85 | 3.27 | 1.60 | 2.62 | 0.143 | 0.332 | 0.276 | 0.325 | 3.37 |
| Mar | 1.60 | 1.47 | 2.66 | 2.74 | 2.66 | 2.19 | 0.152 | 0.481 | 0.434 | 0.325 | 2.41 |
| Apr | 3.35 | 3.15 | 4.70 | 4.01 | 4.44 | 3.33 | 0.208 | 0.678 | 0.606 | 0.439 | 6.17 |
| May | 2.33 | 2.29 | 4.63 | 0.904 | 3.87 | 0.715 | 0.0855 | 0.789 | 0.774 | 0.204 | 3.43 |
| June | 3.05 | 2.97 | 5.00 | 1.78 | 4.01 | 1.32 | 0.0791 | 0.211 | 0.185 | 0.181 | 6.12 |
| July | 4.49 | 4.42 | 7.59 | 1.87 | 7.44 | 1.18 | 0.0577 | 0.410 | 0.386 | 0.102 | 8.49 |
| Aug | 4.72 | 4.61 | 7.32 | 2.68 | 5.53 | 1.89 | 0.0376 | 0.496 | 0.455 | 0.264 | 10.3 |
| Sept | 2.62 | 2.09 | 3.85 | 10.3 | 2.50 | 8.79 | 0.188 | 0.481 | 0.291 | 0.943 | 4.86 |
| Oct | 1.23 | 1.07 | 1.53 | 2.89 | 0.618 | 2.67 | 0.266 | 0.987 | 0.933 | 0.453 | 2.44 |
| Nov | 1.32 | 1.04 | 1.95 | 5.36 | 1.08 | 4.77 | 0.139 | 0.798 | 0.694 | 0.592 | 1.29 |
| Dec | 1.33 | 1.04 | 2.05 | 5.82 | 1.39 | 4.90 | 0.136 | 0.378 | 0.272 | 0.591 | 2.18 |
| **Annual** | 29.4 | 26.8 | 44.9 | 51.7 | 36.4 | 42.7 | 1.68 | 6.41 | 5.49 | 5.38 | 53.5 |

**Data completeness**

| 2017 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %PCL |
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.6 | 99.6 | 99.6 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.28 Monthly results** **Site: Oki** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 131 | 35.8 | 60.0 | 1900 | 41.8 | 1576 | 38.4 | 51.0 | 16.9 | 186 | 16.6 | 4.78 | 27.6 | 63.7 |
| Feb | 82.1 | 15.9 | 21.1 | 1253 | 19.7 | 1097 | 23.7 | 26.1 | 2.66 | 127 | 21.3 | 4.67 | 18.0 | 127 |
| Mar | 62.3 | 51.1 | 94.8 | 220 | 105 | 187 | 10.6 | 12.2 | 8.19 | 24.0 | 71.5 | 4.15 | 8.12 | 31.0 |
| Apr | 17.8 | 13.7 | 19.8 | 81.3 | 19.5 | 67.2 | 2.86 | 9.97 | 8.51 | 8.48 | 15.9 | 4.80 | 2.32 | 69.2 |
| May | 25.6 | 21.6 | 45.1 | 78.6 | 42.0 | 65.5 | 3.06 | 17.8 | 16.3 | 10.2 | 13.0 | 4.89 | 1.84 | 12.2 |
| June | 27.0 | 21.0 | 31.7 | 114 | 38.8 | 99.5 | 3.83 | 6.89 | 4.74 | 12.1 | 18.4 | 4.74 | 3.12 | 53.6 |
| July | 13.8 | 11.7 | 18.6 | 41.0 | 28.7 | 35.4 | 1.43 | 1.77 | 1.00 | 4.07 | 16.1 | 4.79 | 1.66 | 61.1 |
| Aug | 14.1 | 5.86 | 10.4 | 153 | 9.43 | 137 | 4.03 | 3.53 | 1.03 | 13.5 | 13.7 | 4.86 | 2.93 | 125 |
| Sept | 7.85 | 2.67 | 5.70 | 98.9 | 2.63 | 85.9 | 2.61 | 2.31 | 0.455 | 9.16 | 8.29 | 5.08 | 1.77 | 185 |
| Oct | 42.3 | 4.61 | 7.72 | 723 | 4.40 | 625 | 15.3 | 17.8 | 4.29 | 72.0 | 7.65 | 5.12 | 10.5 | 140 |
| Nov | 99.9 | 25.8 | 51.0 | 1408 | 36.0 | 1229 | 26.9 | 41.8 | 15.2 | 139 | 31.6 | 4.50 | 21.0 | 49.4 |
| Dec | 182 | 35.1 | 88.6 | 2755 | 56.8 | 2458 | 54.4 | 72.3 | 19.2 | 277 | 32.3 | 4.49 | 35.1 | 75.4 |
| Annual | 40.7 | 11.5 | 21.0 | 555 | 17.7 | 486 | 11.6 | 15.1 | 4.72 | 55.2 | 14.9 | 4.83 | 7.96 | 992 |
| Max. | 1202 | 288 | 1004 | 20623 | 510 | 17742 | 373 | 433 | 198 | 2038 | 132 | 6.69 | 157 | |
| Min. | 1.50 | <0.3 | 1.80 | 1.80 | <0.8 | 1.50 | <0.3 | 0.300 | <0.2 | 0.400 | 0.204 | 3.88 | 0.280 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 8.34 | 2.28 | 3.82 | 121 | 2.67 | 100 | 2.44 | 3.25 | 1.08 | 11.9 | 1.06 |
| Feb | 10.4 | 2.02 | 2.68 | 159 | 2.50 | 139 | 3.01 | 3.32 | 0.337 | 16.2 | 2.70 |
| Mar | 1.93 | 1.58 | 2.94 | 6.83 | 3.26 | 5.80 | 0.327 | 0.379 | 0.254 | 0.744 | 2.22 |
| Apr | 1.23 | 0.951 | 1.37 | 5.62 | 1.35 | 4.65 | 0.198 | 0.690 | 0.589 | 0.587 | 1.10 |
| May | 0.311 | 0.263 | 0.549 | 0.957 | 0.511 | 0.797 | 0.0373 | 0.216 | 0.199 | 0.124 | 0.158 |
| June | 1.45 | 1.12 | 1.70 | 6.11 | 2.08 | 5.33 | 0.205 | 0.369 | 0.254 | 0.649 | 0.986 |
| July | 0.844 | 0.714 | 1.14 | 2.50 | 1.75 | 2.16 | 0.0875 | 0.108 | 0.0612 | 0.249 | 0.983 |
| Aug | 1.76 | 0.731 | 1.30 | 19.1 | 1.18 | 17.1 | 0.502 | 0.441 | 0.128 | 1.69 | 1.70 |
| Sept | 1.45 | 0.494 | 1.05 | 18.3 | 0.486 | 15.9 | 0.483 | 0.428 | 0.0842 | 1.70 | 1.54 |
| Oct | 5.90 | 0.643 | 1.08 | 101 | 0.614 | 87.2 | 2.14 | 2.48 | 0.599 | 10.0 | 1.07 |
| Nov | 4.94 | 1.28 | 2.52 | 69.6 | 1.78 | 60.8 | 1.33 | 2.06 | 0.751 | 6.87 | 1.56 |
| Dec | 13.7 | 2.65 | 6.68 | 208 | 4.28 | 185 | 4.11 | 5.45 | 1.45 | 20.9 | 2.43 |
| **Annual** | 40.4 | 11.4 | 20.8 | 551 | 17.6 | 482 | 11.5 | 15.0 | 4.68 | 54.8 | 14.8 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 19.2 | 18.0 | 18.0 | 18.0 | 100 |
| Feb | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.5 | 55.1 | 55.1 | 55.1 | 100 |
| Mar | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 11.3 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.7 | 99.7 | 99.7 | 100 |
| May | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 86.3 | 86.3 | 86.3 | 100 |
| June | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 98.9 | 98.9 | 98.9 | 100 |
| July | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 98.2 | 98.2 | 98.2 | 100 |
| Aug | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 97.8 | 97.8 | 97.8 | 100 |
| Sept | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.7 | 99.7 | 99.7 | 100 |
| Oct | 93.0 | 93.0 | 93.0 | 93.0 | 93.0 | 93.0 | 93.0 | 93.0 | 93.0 | 93.0 | 91.0 | 91.0 | 91.0 | 100 |
| Nov | 73.5 | 73.5 | 73.5 | 73.5 | 73.5 | 73.5 | 73.5 | 73.5 | 73.5 | 73.5 | 72.8 | 72.8 | 72.8 | 90.0 |
| Dec | 66.6 | 66.6 | 66.6 | 66.6 | 66.6 | 66.6 | 66.6 | 66.6 | 66.6 | 66.6 | 55.0 | 55.0 | 55.0 | 100 |
| **Annual** | **81.4** | **81.4** | **81.4** | **81.4** | **81.4** | **81.4** | **81.4** | **81.4** | **81.4** | **81.4** | **79.5** | **79.5** | **79.5** | **99.2** |

Terms and abbreviations are given in Table 3.5.

**Table 3.29 Monthly results** **Site: Banryu** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 45.2 | 20.0 | 48.5 | 460 | 43.8 | 417 | 9.80 | 14.3 | 5.28 | 45.0 | 27.1 | 4.57 | 8.00 | 89.5 |
| Feb | * | * | * | * | * | * | * | * | * | * | * | * | * | 117 |
| Mar | * | * | * | * | * | * | * | * | * | * | * | * | * | 84.0 |
| Apr | * | * | * | * | * | * | * | * | * | * | * | * | * | 122 |
| May | * | * | * | * | * | * | * | * | * | * | * | * | * | 28.0 |
| June | * | * | * | * | * | * | * | * | * | * | * | * | * | 168 |
| July | 94.0 | 87.5 | 199 | 113 | 293 | 108 | 7.30 | 41.8 | 39.5 | 16.6 | 9.55 | 5.02 | 7.66 | 169 |
| Aug | 9.67 | 7.24 | 13.9 | 44.2 | 12.6 | 40.3 | 1.44 | 2.20 | 1.33 | 4.48 | 11.4 | 4.94 | 1.30 | 127 |
| Sept | 9.46 | 7.03 | 12.2 | 46.2 | 9.62 | 40.4 | 1.25 | 2.00 | 1.13 | 4.52 | 12.8 | 4.89 | 1.38 | 274 |
| Oct | 9.59 | 5.83 | 5.82 | 72.5 | 3.12 | 62.4 | 1.67 | 2.49 | 1.14 | 6.95 | 11.3 | 4.95 | 1.60 | 231 |
| Nov | 48.5 | 38.4 | 93.4 | 189 | 62.0 | 168 | 4.39 | 19.4 | 15.8 | 20.6 | 53.2 | 4.27 | 6.49 | 24.0 |
| Dec | 67.0 | 46.2 | 131 | 395 | 90.3 | 345 | 9.46 | 29.8 | 22.3 | 40.6 | 59.5 | 4.23 | 10.0 | 39.0 |
| Annual | 16.2 | 10.9 | 22.2 | 99.8 | 16.3 | 87.8 | 2.41 | 5.13 | 3.23 | 9.94 | 17.1 | 4.77 | 2.46 | 1471 |
| Max. | 212 | 112 | 270 | 2599 | 293 | 2353 | 51.2 | 114 | 78.2 | 248 | 102 | 5.50 | 40.0 | |
| Min. | 2.80 | 2.53 | 2.80 | 5.10 | <0.8 | 4.40 | 0.300 | 0.700 | 0.458 | 0.600 | 3.16 | 3.99 | 0.370 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.04 | 1.79 | 4.34 | 41.2 | 3.92 | 37.3 | 0.877 | 1.28 | 0.473 | 4.03 | 2.42 |
| Feb | * | * | * | * | * | * | * | * | * | * | * |
| Mar | * | * | * | * | * | * | * | * | * | * | * |
| Apr | * | * | * | * | * | * | * | * | * | * | * |
| May | * | * | * | * | * | * | * | * | * | * | * |
| June | * | * | * | * | * | * | * | * | * | * | * |
| July | 15.9 | 14.8 | 33.6 | 19.0 | 49.5 | 18.1 | 1.23 | 7.05 | 6.66 | 2.80 | 1.61 |
| Aug | 1.23 | 0.919 | 1.77 | 5.61 | 1.60 | 5.12 | 0.182 | 0.280 | 0.169 | 0.569 | 1.45 |
| Sept | 2.59 | 1.92 | 3.34 | 12.6 | 2.63 | 11.0 | 0.341 | 0.547 | 0.308 | 1.24 | 3.50 |
| Oct | 2.21 | 1.34 | 1.34 | 16.7 | 0.718 | 14.4 | 0.385 | 0.575 | 0.264 | 1.60 | 2.60 |
| Nov | 1.16 | 0.921 | 2.24 | 4.54 | 1.49 | 4.03 | 0.105 | 0.466 | 0.379 | 0.495 | 1.28 |
| Dec | 2.61 | 1.80 | 5.10 | 15.4 | 3.52 | 13.5 | 0.369 | 1.16 | 0.870 | 1.58 | 2.32 |
| **Annual** | 23.8 | 16.0 | 32.6 | 147 | 24.0 | 129 | 3.54 | 7.55 | 4.75 | 14.6 | 25.2 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 30.7 | 100 |
| Feb | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Mar | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80.0 |
| Apr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| May | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| June | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| July | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 100 |
| Aug | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 36.6 | 80.0 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **43.7** | **96.2** |

Terms and abbreviations are given in Table 3.5.

**Table 3.30 Monthly results** **Site: Yusuhara** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 27.7 | 22.2 | 45.2 | 106 | 35.5 | 77.9 | 3.17 | 5.86 | 4.18 | 10.0 | 48.4 | 4.32 | 4.02 | 70.5 |
| Feb | 20.3 | 16.2 | 25.7 | 85.3 | 22.1 | 67.5 | 2.19 | 5.69 | 4.24 | 8.13 | 34.5 | 4.46 | 3.02 | 139 |
| Mar | 18.9 | 17.3 | 27.0 | 30.0 | 25.0 | 26.5 | 1.27 | 4.39 | 3.82 | 3.53 | 25.9 | 4.59 | 2.31 | 105 |
| Apr | 3.75 | 3.09 | 3.75 | 12.5 | 3.34 | 10.9 | 0.614 | 0.623 | 0.388 | 1.11 | 7.08 | 5.15 | 0.610 | 277 |
| May | * | * | * | * | * | * | * | * | * | * | * | * | * | 130 |
| June | * | * | * | * | * | * | * | * | * | * | * | * | * | 280 |
| July | * | * | * | * | * | * | * | * | * | * | * | * | * | 260 |
| Aug | * | * | * | * | * | * | * | * | * | * | * | * | * | 340 |
| Sept | * | * | * | * | * | * | * | * | * | * | * | * | * | 370 |
| Oct | * | * | * | * | * | * | * | * | * | * | * | * | * | 487 |
| Nov | 15.9 | 14.7 | 13.9 | 16.3 | 8.66 | 18.6 | 0.730 | 8.50 | 8.09 | 2.31 | 21.5 | 4.67 | 1.60 | 84.6 |
| Dec | 31.9 | 27.5 | 37.2 | 84.1 | 29.6 | 72.5 | 2.47 | 7.52 | 5.95 | 8.62 | 45.6 | 4.34 | 3.98 | 52.4 |
| Annual | 19.8 | 16.7 | 26.3 | 60.4 | 21.9 | 48.7 | 1.83 | 5.19 | 4.14 | 6.01 | 31.1 | 4.51 | 2.68 | 2594 |
| Max. | 156 | 144 | 385 | 1108 | 398 | 603 | 32.6 | 105 | 101 | 66.9 | 324 | 6.42 | 18.7 | |
| Min. | 0.563 | 0.541 | 1.10 | 0.598 | <0.8 | 0.361 | <0.3 | 0.409 | 0.377 | 0.477 | 0.380 | 3.49 | 0.243 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.95 | 1.57 | 3.19 | 7.48 | 2.50 | 5.49 | 0.223 | 0.413 | 0.295 | 0.708 | 3.41 |
| Feb | 2.82 | 2.26 | 3.59 | 11.9 | 3.08 | 9.41 | 0.306 | 0.794 | 0.591 | 1.13 | 4.80 |
| Mar | 1.98 | 1.81 | 2.83 | 3.14 | 2.62 | 2.78 | 0.133 | 0.460 | 0.400 | 0.369 | 2.71 |
| Apr | 1.04 | 0.856 | 1.04 | 3.46 | 0.926 | 3.01 | 0.170 | 0.173 | 0.107 | 0.307 | 1.96 |
| May | * | * | * | * | * | * | * | * | * | * | * |
| June | * | * | * | * | * | * | * | * | * | * | * |
| July | * | * | * | * | * | * | * | * | * | * | * |
| Aug | * | * | * | * | * | * | * | * | * | * | * |
| Sept | * | * | * | * | * | * | * | * | * | * | * |
| Oct | * | * | * | * | * | * | * | * | * | * | * |
| Nov | 1.34 | 1.25 | 1.18 | 1.38 | 0.732 | 1.58 | 0.0617 | 0.718 | 0.684 | 0.196 | 1.82 |
| Dec | 1.67 | 1.44 | 1.95 | 4.41 | 1.55 | 3.80 | 0.129 | 0.394 | 0.312 | 0.452 | 2.39 |
| **Annual** | 51.3 | 43.4 | 68.2 | 157 | 56.9 | 126 | 4.74 | 13.5 | 10.7 | 15.6 | 80.7 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 99.3 | 100 | 100 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.9 | 99.9 | 99.9 | 100 |
| Apr | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.7 | 22.6 | 22.6 | 22.6 | 100 |
| May | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| June | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| July | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Aug | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Sept | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Oct | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96.8 |
| Nov | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 46.8 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.6 | 99.6 | 99.6 | 100 |
| **Annual** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **18.1** | **99.7** |

Terms and abbreviations are given in Table 3.5.

**Table 3.31 Monthly results** **Site: Hedo** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 26.1 | 15.4 | 15.7 | 204 | 13.9 | 178 | 4.50 | 5.35 | 1.55 | 21.1 | 21.8 | 4.66 | 3.48 | 53.9 |
| Feb | 34.1 | 10.7 | 13.7 | 454 | 13.1 | 387 | 8.45 | 12.3 | 3.98 | 48.9 | 8.39 | 5.08 | 3.01 | 97.7 |
| Mar | 29.7 | 16.9 | 21.1 | 246 | 27.7 | 211 | 6.00 | 8.41 | 3.85 | 25.3 | 15.7 | 4.80 | 4.56 | 98.0 |
| Apr | 15.1 | 9.59 | 16.6 | 107 | 19.0 | 92.1 | 2.58 | 4.72 | 2.73 | 11.3 | 10.0 | 5.00 | 2.36 | 103 |
| May | 8.10 | 4.59 | 5.88 | 66.7 | 4.51 | 58.4 | 1.58 | 1.88 | 0.649 | 7.29 | 8.83 | 5.05 | 1.48 | 337 |
| June | 5.44 | 2.69 | 4.26 | 52.0 | 2.45 | 45.7 | 0.582 | 1.36 | 0.479 | 5.70 | 7.64 | 5.12 | 1.11 | 479 |
| July | 8.29 | 6.86 | 15.5 | 28.0 | 5.52 | 23.7 | <0.3 | 7.52 | 7.01 | 2.29 | 7.74 | 5.11 | 1.19 | 5.8 |
| Aug | 31.3 | 19.8 | 34.5 | 229 | 37.8 | 191 | 4.13 | 7.23 | 3.10 | 22.2 | 34.4 | 4.46 | 5.42 | 51.5 |
| Sept | 17.9 | 2.27 | 4.10 | 302 | 1.84 | 260 | 5.60 | 7.58 | 1.96 | 32.1 | 7.21 | 5.14 | 4.39 | 122 |
| Oct | 109 | 1.88 | 2.04 | 2095 | <0.8 | 1787 | 38.2 | 40.3 | 4.18 | 200 | 4.15 | 5.38 | 28.1 | 185 |
| Nov | 87.8 | 9.47 | 17.0 | 1502 | 4.25 | 1300 | 29.9 | 36.0 | 7.86 | 154 | 11.5 | 4.94 | 19.7 | 53.6 |
| Dec | 65.4 | 13.6 | 28.1 | 993 | 7.59 | 859 | 18.2 | 25.4 | 6.87 | 102 | 25.6 | 4.59 | 15.4 | 37.4 |
| Annual | 28.0 | 5.94 | 8.76 | 429 | 7.04 | 368 | 8.02 | 9.70 | 2.08 | 42.6 | 9.90 | 5.00 | 6.15 | 1623 |
| Max. | 3394 | 129 | 257 | 63480 | 233 | 54562 | 1219 | 1409 | 230 | 6401 | 93.3 | 6.94 | 730 | |
| Min. | 0.800 | <0.3 | <0.5 | 6.10 | <0.8 | 5.00 | <0.3 | <0.2 | <0.2 | 0.700 | 0.115 | 4.03 | 0.250 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.41 | 0.829 | 0.846 | 11.0 | 0.749 | 9.60 | 0.242 | 0.288 | 0.0832 | 1.14 | 1.17 |
| Feb | 3.33 | 1.05 | 1.34 | 44.3 | 1.28 | 37.8 | 0.826 | 1.21 | 0.389 | 4.78 | 0.821 |
| Mar | 2.91 | 1.66 | 2.07 | 24.1 | 2.71 | 20.7 | 0.588 | 0.824 | 0.377 | 2.48 | 1.54 |
| Apr | 1.55 | 0.983 | 1.71 | 10.9 | 1.95 | 9.44 | 0.265 | 0.484 | 0.280 | 1.16 | 1.03 |
| May | 2.73 | 1.54 | 1.98 | 22.4 | 1.52 | 19.6 | 0.531 | 0.634 | 0.218 | 2.45 | 2.97 |
| June | 2.61 | 1.29 | 2.04 | 24.9 | 1.17 | 21.9 | 0.279 | 0.654 | 0.230 | 2.73 | 3.66 |
| July | 0.0478 | 0.0395 | 0.0895 | 0.161 | 0.0318 | 0.137 | <0.01 | 0.0433 | 0.0404 | 0.0132 | 0.0446 |
| Aug | 1.62 | 1.02 | 1.78 | 11.8 | 1.95 | 9.83 | 0.213 | 0.372 | 0.160 | 1.15 | 1.77 |
| Sept | 2.18 | 0.276 | 0.499 | 36.7 | 0.224 | 31.6 | 0.681 | 0.922 | 0.238 | 3.91 | 0.877 |
| Oct | 20.1 | 0.348 | 0.377 | 387 | 0.0618 | 330 | 7.06 | 7.45 | 0.772 | 36.9 | 0.768 |
| Nov | 4.71 | 0.508 | 0.910 | 80.5 | 0.228 | 69.7 | 1.60 | 1.93 | 0.421 | 8.25 | 0.616 |
| Dec | 2.44 | 0.510 | 1.05 | 37.1 | 0.284 | 32.1 | 0.681 | 0.950 | 0.257 | 3.80 | 0.958 |
| **Annual** | 45.5 | 9.63 | 14.2 | 696 | 11.4 | 597 | 13.0 | 15.7 | 3.38 | 69.2 | 16.1 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 95.6 | 95.6 | 95.6 | 100 |
| Feb | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 80.1 | 75.2 | 75.2 | 75.2 | 100 |
| Mar | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 69.9 | 74.2 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.9 | 99.9 | 99.9 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.9 | 99.9 | 99.9 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **96.9** | **96.9** | **96.9** | **96.9** | **96.9** | **96.9** | **96.9** | **96.9** | **96.9** | **96.9** | **96.5** | **96.5** | **96.5** | **97.8** |

Terms and abbreviations are given in Table 3.5.

**Table 3.32 Monthly results** **Site: Ogasawara** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 9.15 | 3.00 | 3.98 | 116 | 1.63 | 102 | 2.36 | 2.64 | 0.429 | 11.8 | 8.37 | 5.08 | 1.88 | 58.0 |
| Feb | 6.17 | 2.76 | 2.80 | 65.0 | 2.75 | 56.5 | 2.20 | 2.04 | 0.821 | 6.50 | 5.24 | 5.28 | 0.930 | 47.6 |
| Mar | 23.6 | 11.5 | 13.9 | 244 | 17.4 | 200 | 5.99 | 7.12 | 2.81 | 24.0 | 13.9 | 4.86 | 4.39 | 27.7 |
| Apr | 9.16 | 4.48 | 5.39 | 91.1 | 3.60 | 77.6 | 2.17 | 2.55 | 0.868 | 9.08 | 10.3 | 4.99 | 1.78 | 77.0 |
| May | 3.33 | 1.31 | 2.54 | 40.4 | <0.8 | 33.6 | 1.05 | 0.955 | 0.230 | 3.87 | 6.17 | 5.21 | 0.841 | 285 |
| June | 4.38 | 2.52 | 2.13 | 35.3 | 3.05 | 30.9 | 0.840 | 1.04 | 0.376 | 3.69 | 5.96 | 5.23 | 0.834 | 260 |
| July | 14.0 | 0.741 | 1.39 | 257 | 1.54 | 221 | 5.73 | 5.81 | 1.03 | 25.7 | 4.83 | 5.32 | 3.88 | 137 |
| Aug | 38.8 | 0.937 | 2.21 | 739 | 1.55 | 644 | 13.2 | 14.9 | 0.975 | 76.3 | 4.00 | 5.40 | 10.7 | 201 |
| Sept | * | * | * | * | * | * | * | * | * | * | * | * | * | 90.5 |
| Oct | * | * | * | * | * | * | * | * | * | * | * | * | * | 126 |
| Nov | * | * | * | * | * | * | * | * | * | * | * | * | * | 172 |
| Dec | * | * | * | * | * | * | * | * | * | * | * | * | * | 173 |
| Annual | 12.8 | 2.09 | 2.81 | 208 | 2.30 | 180 | 4.14 | 4.54 | 0.647 | 21.3 | 6.09 | 5.22 | 3.25 | 1654 |
| Max. | 98.9 | 47.9 | 41.8 | 1967 | 47.9 | 1684 | 34.5 | 38.9 | 8.25 | 201 | 26.9 | 6.09 | 27.5 | |
| Min. | 0.800 | <0.3 | <0.5 | 3.40 | <0.8 | 3.20 | <0.3 | 0.300 | <0.2 | 0.500 | 0.813 | 4.57 | 0.250 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.531 | 0.174 | 0.231 | 6.75 | 0.0944 | 5.92 | 0.137 | 0.153 | 0.0249 | 0.686 | 0.485 |
| Feb | 0.294 | 0.131 | 0.133 | 3.10 | 0.131 | 2.69 | 0.105 | 0.0972 | 0.0391 | 0.309 | 0.249 |
| Mar | 0.653 | 0.319 | 0.385 | 6.75 | 0.483 | 5.54 | 0.166 | 0.197 | 0.0778 | 0.666 | 0.387 |
| Apr | 0.705 | 0.345 | 0.415 | 7.01 | 0.277 | 5.97 | 0.167 | 0.196 | 0.0668 | 0.699 | 0.791 |
| May | 0.950 | 0.374 | 0.724 | 11.5 | 0.215 | 9.56 | 0.300 | 0.272 | 0.0655 | 1.10 | 1.76 |
| June | 1.14 | 0.655 | 0.554 | 9.19 | 0.793 | 8.03 | 0.219 | 0.271 | 0.0979 | 0.960 | 1.55 |
| July | 1.91 | 0.101 | 0.191 | 35.2 | 0.211 | 30.3 | 0.784 | 0.795 | 0.141 | 3.51 | 0.661 |
| Aug | 7.82 | 0.189 | 0.445 | 149 | 0.313 | 130 | 2.66 | 3.00 | 0.196 | 15.4 | 0.806 |
| Sept | * | * | * | * | * | * | * | * | * | * | * |
| Oct | * | * | * | * | * | * | * | * | * | * | * |
| Nov | * | * | * | * | * | * | * | * | * | * | * |
| Dec | * | * | * | * | * | * | * | * | * | * | * |
| **Annual** | 21.1 | 3.45 | 4.65 | 344 | 3.80 | 298 | 6.84 | 7.51 | 1.07 | 35.2 | 10.1 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 98.4 | 98.4 | 98.4 | 100 |
| Feb | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 99.7 | 93.5 | 93.5 | 93.5 | 100 |
| Mar | 97.8 | 97.8 | 97.8 | 97.8 | 97.8 | 97.8 | 97.8 | 97.8 | 97.8 | 97.8 | 92.0 | 92.0 | 92.0 | 100 |
| Apr | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 96.2 | 96.2 | 96.2 | 100 |
| May | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.0 | 99.0 | 99.0 | 100 |
| July | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 98.7 | 98.7 | 98.7 | 96.8 |
| Aug | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.2 | 99.2 | 99.2 | 100 |
| Sept | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96.7 |
| Oct | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Nov | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Dec | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| **Annual** | **65.9** | **65.9** | **65.9** | **65.9** | **65.9** | **65.9** | **65.9** | **65.9** | **65.9** | **65.9** | **65.2** | **65.2** | **65.2** | **99.5** |

Terms and abbreviations are given in Table 3.5.

**Table 3.33 Monthly results** **Site: Tokyo** **Country: Japan**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 9.59 | 8.98 | 9.71 | 12.3 | 22.4 | 10.1 | 0.595 | 1.48 | 1.26 | 1.29 | 7.94 | 5.10 | 0.920 | 22.0 |
| Feb | 19.9 | 14.3 | 20.0 | 108 | 38.1 | 91.8 | 2.39 | 8.86 | 6.88 | 11.0 | 5.86 | 5.23 | 2.59 | 13.0 |
| Mar | 16.9 | 16.0 | 26.9 | 19.4 | 37.7 | 15.3 | 1.12 | 5.89 | 5.56 | 2.38 | 15.6 | 4.81 | 1.66 | 84.5 |
| Apr | 13.2 | 11.8 | 19.7 | 28.0 | 26.1 | 22.9 | 1.10 | 4.82 | 4.32 | 3.21 | 12.1 | 4.92 | 1.48 | 106 |
| May | 18.3 | 17.8 | 23.1 | 11.8 | 32.0 | 9.67 | 0.548 | 6.72 | 6.51 | 1.90 | 15.6 | 4.81 | 1.39 | 55.5 |
| June | 18.2 | 16.3 | 27.1 | 35.2 | 34.2 | 30.5 | 0.854 | 5.82 | 5.16 | 4.02 | 19.3 | 4.71 | 1.95 | 85.5 |
| July | 11.7 | 11.1 | 19.0 | 12.6 | 26.6 | 9.85 | 1.22 | 2.77 | 2.56 | 1.39 | 17.1 | 4.77 | 1.39 | 73.0 |
| Aug | 16.3 | 15.6 | 19.6 | 12.8 | 22.9 | 10.6 | 0.419 | 2.46 | 2.23 | 1.50 | 28.6 | 4.54 | 1.91 | 124 |
| Sept | 10.1 | 7.78 | 13.2 | 45.0 | 13.9 | 38.0 | 0.828 | 2.54 | 1.72 | 4.40 | 11.6 | 4.94 | 1.48 | 182 |
| Oct | 7.03 | 2.70 | 4.46 | 83.9 | 6.45 | 71.7 | 1.60 | 2.33 | 0.777 | 8.44 | 6.33 | 5.20 | 1.64 | 478 |
| Nov | 7.43 | 6.61 | 14.7 | 15.4 | 16.6 | 13.5 | 0.301 | 2.82 | 2.53 | 1.79 | 14.3 | 4.84 | 1.05 | 42.2 |
| Dec | 9.96 | 9.58 | 18.8 | 8.17 | 23.7 | 6.21 | <0.3 | 2.10 | 1.97 | 0.914 | 15.3 | 4.82 | 1.15 | 14.0 |
| Annual | 11.3 | 8.89 | 14.0 | 47.5 | 18.2 | 40.3 | 1.11 | 3.34 | 2.47 | 4.92 | 12.7 | 4.90 | 1.60 | 1280 |
| Max. | 94.7 | 93.7 | 156 | 516 | 208 | 441 | 9.50 | 63.3 | 62.9 | 51.5 | 110 | 5.75 | 7.69 | |
| Min. | 0.800 | 0.690 | 1.30 | 0.600 | 2.70 | 0.400 | <0.3 | 0.500 | 0.274 | <0.3 | 1.78 | 3.96 | 0.260 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.211 | 0.198 | 0.214 | 0.270 | 0.493 | 0.223 | 0.0131 | 0.0326 | 0.0278 | 0.0284 | 0.175 |
| Feb | 0.258 | 0.186 | 0.261 | 1.40 | 0.496 | 1.19 | 0.0311 | 0.115 | 0.0894 | 0.142 | 0.0762 |
| Mar | 1.43 | 1.35 | 2.28 | 1.64 | 3.18 | 1.30 | 0.0947 | 0.498 | 0.470 | 0.201 | 1.32 |
| Apr | 1.40 | 1.25 | 2.09 | 2.97 | 2.77 | 2.42 | 0.117 | 0.511 | 0.458 | 0.340 | 1.28 |
| May | 1.02 | 0.986 | 1.28 | 0.657 | 1.77 | 0.537 | 0.0304 | 0.373 | 0.361 | 0.105 | 0.864 |
| June | 1.55 | 1.40 | 2.32 | 3.01 | 2.92 | 2.61 | 0.0731 | 0.497 | 0.441 | 0.344 | 1.65 |
| July | 0.852 | 0.809 | 1.39 | 0.921 | 1.94 | 0.719 | 0.0891 | 0.202 | 0.187 | 0.102 | 1.25 |
| Aug | 2.02 | 1.94 | 2.43 | 1.58 | 2.84 | 1.31 | 0.0520 | 0.305 | 0.277 | 0.185 | 3.55 |
| Sept | 1.83 | 1.42 | 2.39 | 8.18 | 2.53 | 6.92 | 0.151 | 0.462 | 0.313 | 0.801 | 2.11 |
| Oct | 3.36 | 1.29 | 2.13 | 40.1 | 3.08 | 34.3 | 0.764 | 1.11 | 0.371 | 4.04 | 3.03 |
| Nov | 0.314 | 0.279 | 0.622 | 0.649 | 0.699 | 0.569 | 0.0127 | 0.119 | 0.107 | 0.0757 | 0.604 |
| Dec | 0.139 | 0.134 | 0.263 | 0.114 | 0.332 | 0.0870 | <0.01 | 0.0294 | 0.0275 | 0.0128 | 0.214 |
| **Annual** | 14.5 | 11.4 | 17.9 | 60.8 | 23.3 | 51.5 | 1.42 | 4.27 | 3.16 | 6.30 | 16.3 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95.5 | 95.5 | 95.5 | 93.5 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 98.8 | 98.8 | 98.8 | 100 |
| Apr | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 92.9 | 96.7 |
| May | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 96.4 | 96.4 | 96.4 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 96.5 | 96.5 | 96.5 | 100 |
| July | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 96.8 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.6 | 99.6 | 99.6 | 100 |
| Sept | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 97.5 | 97.5 | 97.5 | 100 |
| Oct | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.6 | 94.4 | 94.4 | 94.4 | 100 |
| Nov | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 99.5 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **97.1** | **97.1** | **97.1** | **97.1** | **97.1** | **97.1** | **97.1** | **97.1** | **97.1** | **97.1** | **96.3** | **96.3** | **96.3** | **98.9** |

Terms and abbreviations are given in Table 3.5.

**Table 3.34 Monthly results** **Site: Vientiane** **Country: Lao PDR**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Feb | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Mar | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Apr | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| May | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| June | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| July | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Aug | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Sept | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Oct | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Nov | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Dec | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Annual | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Max. | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | |
| Min. | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Feb | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Mar | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Apr | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| May | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| June | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| July | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Aug | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Sept | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Oct | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Nov | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Dec | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| **Annual** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Feb | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Mar | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Apr | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| May | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| June | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| July | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Aug | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Sept | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Oct | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Nov | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Dec | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| **Annual** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | **0** |

Terms and abbreviations are given in Table 3.5.

**Table 3.35 Monthly results** **Site: Petaling Jaya** **Country: Malaysia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 11.5 | 11.2 | 29.0 | 7.08 | 14.4 | 4.65 | 1.06 | 3.75 | 3.65 | 0.401 | 26.6 | 4.58 | 1.71 | 331 |
| Feb | 20.5 | 19.6 | 42.0 | 17.5 | 27.4 | 14.7 | 2.99 | 7.64 | 7.32 | 0.900 | 46.8 | 4.33 | 2.65 | 116 |
| Mar | 21.7 | 21.4 | 43.6 | 10.8 | 24.1 | 6.15 | 1.66 | 4.69 | 4.56 | 0.706 | 57.8 | 4.24 | 3.10 | 372 |
| Apr | 9.17 | 8.96 | 21.8 | 6.16 | 13.5 | 3.48 | 1.24 | 4.67 | 4.59 | <0.3 | 23.2 | 4.63 | 1.51 | 270 |
| May | 13.7 | 13.5 | 32.0 | 8.29 | 17.1 | 4.06 | 1.28 | 3.39 | 3.30 | 0.337 | 36.3 | 4.44 | 2.17 | 250 |
| June | 17.5 | 17.3 | 39.0 | 9.26 | 20.2 | 3.84 | 2.10 | 5.95 | 5.87 | 0.694 | 45.6 | 4.34 | 2.76 | 256 |
| July | 17.7 | 17.4 | 28.8 | 10.7 | 29.3 | 5.55 | 1.63 | 4.49 | 4.37 | 0.832 | 24.4 | 4.61 | 1.81 | 150 |
| Aug | 18.5 | 18.0 | 29.0 | 13.3 | 18.3 | 8.57 | 1.97 | 4.48 | 4.29 | 0.592 | 31.7 | 4.50 | 2.21 | 224 |
| Sept | 9.99 | 9.77 | 13.4 | 6.92 | 12.3 | 3.70 | 1.09 | 3.19 | 3.11 | <0.3 | 13.5 | 4.87 | 0.969 | 360 |
| Oct | 7.14 | 6.43 | 21.6 | 15.9 | 8.15 | 11.8 | 1.56 | 2.70 | 2.45 | 0.996 | 21.2 | 4.67 | 1.40 | 350 |
| Nov | 6.93 | 6.74 | 18.1 | 5.94 | 9.96 | 3.07 | 1.18 | 3.21 | 3.14 | <0.3 | 17.6 | 4.75 | 1.07 | 264 |
| Dec | 13.7 | 13.3 | 36.8 | 12.6 | 25.9 | 6.11 | 2.00 | 4.88 | 4.75 | 1.09 | 26.6 | 4.57 | 2.02 | 183 |
| Annual | 13.5 | 13.2 | 28.8 | 10.0 | 17.0 | 6.04 | 1.55 | 4.18 | 4.05 | 0.565 | 30.9 | 4.51 | 1.92 | 3125 |
| Max. | 29.4 | 28.9 | 66.0 | 33.2 | 60.3 | 19.3 | 4.98 | 15.0 | 14.7 | 2.23 | 67.6 | 5.19 | 4.09 | |
| Min. | 3.38 | 3.22 | 4.53 | 2.52 | <0.8 | <0.3 | 0.420 | 1.01 | 0.934 | <0.3 | 6.46 | 4.17 | 0.450 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 3.81 | 3.71 | 9.59 | 2.34 | 4.77 | 1.54 | 0.351 | 1.24 | 1.21 | 0.133 | 8.79 |
| Feb | 2.38 | 2.27 | 4.87 | 2.03 | 3.17 | 1.70 | 0.347 | 0.886 | 0.850 | 0.104 | 5.43 |
| Mar | 8.09 | 7.95 | 16.2 | 4.02 | 8.96 | 2.29 | 0.619 | 1.74 | 1.70 | 0.263 | 21.5 |
| Apr | 2.48 | 2.42 | 5.89 | 1.66 | 3.65 | 0.938 | 0.334 | 1.26 | 1.24 | 0.0735 | 6.26 |
| May | 3.43 | 3.37 | 8.00 | 2.08 | 4.29 | 1.02 | 0.320 | 0.849 | 0.827 | 0.0844 | 9.08 |
| June | 4.47 | 4.41 | 9.97 | 2.37 | 5.18 | 0.981 | 0.537 | 1.52 | 1.50 | 0.177 | 11.6 |
| July | 2.65 | 2.60 | 4.31 | 1.60 | 4.39 | 0.830 | 0.243 | 0.672 | 0.654 | 0.124 | 3.65 |
| Aug | 4.13 | 4.01 | 6.48 | 2.96 | 4.09 | 1.92 | 0.439 | 1.00 | 0.960 | 0.132 | 7.10 |
| Sept | 3.59 | 3.51 | 4.82 | 2.49 | 4.44 | 1.33 | 0.391 | 1.15 | 1.12 | 0.0693 | 4.85 |
| Oct | 2.50 | 2.25 | 7.56 | 5.55 | 2.85 | 4.12 | 0.547 | 0.945 | 0.856 | 0.348 | 7.40 |
| Nov | 1.83 | 1.78 | 4.79 | 1.57 | 2.63 | 0.811 | 0.312 | 0.848 | 0.831 | 0.0296 | 4.66 |
| Dec | 2.50 | 2.43 | 6.74 | 2.31 | 4.75 | 1.12 | 0.367 | 0.894 | 0.869 | 0.199 | 4.88 |
| **Annual** | 42.2 | 41.1 | 90.1 | 31.3 | 53.3 | 18.9 | 4.83 | 13.1 | 12.7 | 1.77 | 96.6 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 100 |
| July | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 71.8 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| Nov | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 67.0 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **95.7** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.36 Monthly results** **Site: Tanah Rata** **Country: Malaysia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 2.14 | 2.05 | 5.67 | 1.86 | 2.94 | 1.52 | 1.06 | 2.07 | 2.04 | <0.3 | 9.38 | 5.03 | 0.565 | 238 |
| Feb | 1.92 | 1.81 | 14.9 | 1.46 | 2.02 | 1.84 | 0.896 | 1.87 | 1.83 | <0.3 | 15.8 | 4.80 | 0.865 | 128 |
| Mar | 3.83 | 3.68 | 10.4 | 2.86 | 1.34 | 2.45 | 0.942 | 1.93 | 1.87 | <0.3 | 17.1 | 4.77 | 0.907 | 390 |
| Apr | 4.08 | 3.79 | 10.4 | 5.29 | 8.80 | 4.71 | 3.34 | 1.95 | 1.85 | <0.3 | 14.6 | 4.83 | 0.882 | 456 |
| May | 3.56 | 3.46 | 7.43 | 2.35 | 5.36 | 1.62 | 2.52 | 2.36 | 2.32 | <0.3 | 16.1 | 4.79 | 0.941 | 294 |
| June | 6.43 | 6.32 | 7.14 | 5.25 | 3.14 | 1.71 | 1.82 | 3.14 | 3.10 | <0.3 | 15.0 | 4.82 | 0.944 | 266 |
| July | 4.67 | 4.61 | <0.5 | 4.04 | <0.8 | 0.866 | 0.622 | 1.78 | 1.76 | <0.3 | 10.7 | 4.97 | 0.615 | 119 |
| Aug | 2.86 | 2.74 | 9.82 | 3.09 | <0.8 | 1.97 | 1.07 | 2.93 | 2.89 | <0.3 | 12.2 | 4.91 | 0.814 | 172 |
| Sept | 5.20 | 4.99 | 7.27 | 3.88 | <0.8 | 3.44 | 1.13 | 4.53 | 4.45 | <0.3 | 11.8 | 4.93 | 0.728 | 266 |
| Oct | 1.66 | 1.49 | 6.56 | 2.73 | 2.17 | 2.80 | 1.31 | 1.72 | 1.66 | <0.3 | 9.56 | 5.02 | 0.627 | 180 |
| Nov | 2.49 | 2.39 | 4.51 | 2.68 | <0.8 | 1.80 | 2.63 | 1.57 | 1.53 | <0.3 | 15.1 | 4.82 | 0.738 | 337 |
| Dec | 1.18 | 1.08 | 6.92 | 2.59 | 3.81 | 1.72 | 3.96 | 0.577 | 0.557 | <0.3 | 12.4 | 4.91 | 0.598 | 168 |
| Annual | 3.53 | 3.38 | 7.89 | 3.35 | 3.13 | 2.47 | 1.93 | 2.25 | 2.20 | <0.3 | 13.9 | 4.86 | 0.798 | 3016 |
| Max. | 9.12 | 8.97 | 32.0 | 10.6 | 26.3 | 11.4 | 13.4 | 11.6 | 11.6 | 1.14 | 36.3 | 5.33 | 1.65 | |
| Min. | 0.370 | <0.3 | <0.5 | <0.5 | <0.8 | 0.510 | 0.480 | <0.2 | <0.2 | <0.3 | 4.68 | 4.44 | 0.390 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.510 | 0.488 | 1.35 | 0.443 | 0.700 | 0.362 | 0.252 | 0.493 | 0.485 | 0.0228 | 2.23 |
| Feb | 0.247 | 0.232 | 1.92 | 0.187 | 0.259 | 0.237 | 0.115 | 0.240 | 0.235 | <0.01 | 2.03 |
| Mar | 1.49 | 1.44 | 4.05 | 1.11 | 0.522 | 0.956 | 0.367 | 0.750 | 0.730 | 0.0632 | 6.68 |
| Apr | 1.86 | 1.73 | 4.73 | 2.41 | 4.01 | 2.15 | 1.53 | 0.890 | 0.843 | 0.0410 | 6.67 |
| May | 1.05 | 1.02 | 2.19 | 0.690 | 1.58 | 0.476 | 0.742 | 0.693 | 0.683 | 0.0380 | 4.75 |
| June | 1.71 | 1.68 | 1.90 | 1.40 | 0.834 | 0.456 | 0.484 | 0.834 | 0.824 | 0.0692 | 4.00 |
| July | 0.557 | 0.551 | 0.0541 | 0.482 | <0.01 | 0.103 | 0.0742 | 0.213 | 0.211 | 0.0152 | 1.28 |
| Aug | 0.494 | 0.473 | 1.69 | 0.532 | 0.0724 | 0.340 | 0.185 | 0.505 | 0.498 | 0.0358 | 2.11 |
| Sept | 1.38 | 1.33 | 1.93 | 1.03 | 0.159 | 0.914 | 0.301 | 1.20 | 1.18 | <0.01 | 3.13 |
| Oct | 0.300 | 0.269 | 1.18 | 0.492 | 0.391 | 0.506 | 0.237 | 0.310 | 0.299 | 0.0327 | 1.72 |
| Nov | 0.842 | 0.805 | 1.52 | 0.903 | 0.235 | 0.608 | 0.887 | 0.529 | 0.516 | <0.01 | 5.11 |
| Dec | 0.199 | 0.181 | 1.16 | 0.435 | 0.640 | 0.288 | 0.665 | 0.0969 | 0.0936 | <0.01 | 2.08 |
| **Annual** | 10.7 | 10.2 | 23.8 | 10.1 | 9.45 | 7.45 | 5.82 | 6.80 | 6.64 | 0.327 | 41.9 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 97.5 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 96.6 | 100 |
| July | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 86.1 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 100 |
| **Annual** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **98.2** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.37 Monthly results** **Site: Danum Valley** **Country: Malaysia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | * | * | * | * | * | * | * | * | * | * | * | * | * | 328 |
| Feb | * | * | * | * | * | * | * | * | * | * | * | * | * | 173 |
| Mar | 0.943 | 0.693 | <0.5 | 6.06 | <0.8 | 5.77 | 1.80 | 2.34 | 2.22 | 1.22 | 1.84 | 5.73 | 0.320 | 267 |
| Apr | 1.92 | 1.73 | <0.5 | 4.56 | <0.8 | 3.09 | <0.3 | 1.04 | 0.973 | <0.3 | 3.55 | 5.45 | 0.260 | 189 |
| May | 2.19 | 2.14 | <0.5 | 4.92 | 0.812 | 0.764 | 0.969 | 1.56 | 1.54 | <0.3 | 6.77 | 5.17 | 0.399 | 210 |
| June | 0.984 | 0.949 | <0.5 | 3.03 | <0.8 | 0.576 | 0.411 | 0.352 | 0.344 | <0.3 | 3.99 | 5.40 | 0.247 | 272 |
| July | 2.16 | 2.07 | <0.5 | 4.68 | <0.8 | 1.57 | 1.23 | 0.898 | 0.864 | <0.3 | 6.05 | 5.22 | 0.373 | 120 |
| Aug | 2.27 | 2.11 | <0.5 | 0.905 | <0.8 | 2.67 | 1.45 | 1.36 | 1.30 | <0.3 | 4.30 | 5.37 | 0.274 | 267 |
| Sept | 2.91 | 2.73 | <0.5 | 3.36 | <0.8 | 3.00 | 1.50 | 0.703 | 0.665 | <0.3 | 3.25 | 5.49 | 0.270 | 247 |
| Oct | 1.65 | 1.54 | <0.5 | 5.37 | <0.8 | 1.70 | 1.60 | 1.14 | 1.11 | <0.3 | 5.25 | 5.28 | 0.326 | 177 |
| Nov | 2.47 | 2.32 | <0.5 | 4.75 | <0.8 | 2.45 | 1.33 | 1.89 | 1.84 | <0.3 | 5.90 | 5.23 | 0.358 | 304 |
| Dec | 5.96 | 5.81 | 0.554 | 6.58 | <0.8 | 2.36 | 1.40 | 2.15 | 2.12 | 0.798 | 13.3 | 4.88 | 0.456 | 410 |
| Annual | 2.70 | 2.56 | <0.5 | 4.60 | <0.8 | 2.52 | 1.29 | 1.48 | 1.43 | 0.379 | 6.08 | 5.22 | 0.339 | 2964 |
| Max. | 12.7 | 12.3 | 3.61 | 21.1 | 3.64 | 27.4 | 13.8 | 9.36 | 9.28 | 3.71 | 28.8 | 6.09 | 0.990 | |
| Min. | <0.3 | <0.3 | <0.5 | <0.5 | <0.8 | <0.3 | <0.3 | <0.2 | <0.2 | <0.3 | 0.813 | 4.54 | 0.190 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | * | * | * | * | * | * | * | * | * | * | * |
| Feb | * | * | * | * | * | * | * | * | * | * | * |
| Mar | 0.252 | 0.185 | 0.0423 | 1.62 | 0.127 | 1.54 | 0.481 | 0.626 | 0.593 | 0.327 | 0.493 |
| Apr | 0.362 | 0.327 | <0.01 | 0.860 | 0.0415 | 0.583 | 0.0472 | 0.196 | 0.184 | <0.01 | 0.670 |
| May | 0.460 | 0.450 | <0.01 | 1.03 | 0.171 | 0.160 | 0.204 | 0.328 | 0.324 | 0.0574 | 1.42 |
| June | 0.267 | 0.258 | 0.0102 | 0.822 | <0.01 | 0.157 | 0.112 | 0.0958 | 0.0935 | <0.01 | 1.09 |
| July | 0.259 | 0.247 | 0.0184 | 0.561 | <0.01 | 0.189 | 0.147 | 0.108 | 0.104 | <0.01 | 0.725 |
| Aug | 0.608 | 0.565 | <0.01 | 0.242 | 0.0614 | 0.715 | 0.388 | 0.364 | 0.349 | <0.01 | 1.15 |
| Sept | 0.720 | 0.675 | 0.0362 | 0.830 | 0.0382 | 0.742 | 0.371 | 0.174 | 0.165 | 0.0237 | 0.805 |
| Oct | 0.290 | 0.272 | 0.0462 | 0.947 | 0.0762 | 0.300 | 0.282 | 0.202 | 0.195 | 0.0425 | 0.927 |
| Nov | 0.750 | 0.705 | <0.01 | 1.44 | <0.01 | 0.745 | 0.403 | 0.575 | 0.559 | 0.0432 | 1.79 |
| Dec | 2.44 | 2.38 | 0.227 | 2.70 | <0.01 | 0.966 | 0.575 | 0.880 | 0.870 | 0.327 | 5.43 |
| **Annual** | 7.99 | 7.58 | 0.545 | 13.6 | 0.590 | 7.47 | 3.83 | 4.38 | 4.24 | 1.12 | 18.0 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Feb | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 32.4 | 100 |
| May | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 70.4 | 100 |
| June | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 88.4 | 100 |
| July | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 83.4 | 100 |
| Aug | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 74.9 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 86.7 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **71.3** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.38 Monthly results** **Site: Kuching** **Country: Malaysia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.47 | 3.86 | 4.82 | 10.9 | <0.8 | 10.1 | 2.86 | 3.56 | 3.35 | 0.865 | 11.1 | 4.96 | 0.785 | 406 |
| Feb | 3.58 | 2.22 | 2.36 | 29.7 | 0.838 | 22.5 | 1.23 | 2.45 | 1.96 | 2.29 | 9.59 | 5.02 | 0.842 | 469 |
| Mar | 2.97 | 2.64 | 3.89 | 4.48 | 4.31 | 5.54 | 1.56 | 3.31 | 3.19 | <0.3 | 5.48 | 5.26 | 0.432 | 272 |
| Apr | 3.27 | 3.14 | 3.24 | 3.21 | 1.93 | 2.25 | 0.517 | 5.60 | 5.55 | <0.3 | 4.99 | 5.30 | 0.420 | 459 |
| May | 2.61 | 2.36 | 4.47 | 4.06 | 2.18 | 4.01 | 1.29 | 2.74 | 2.65 | <0.3 | 4.54 | 5.34 | 0.403 | 191 |
| June | 3.35 | 3.20 | 6.61 | 3.57 | 2.98 | 2.45 | 0.673 | 5.71 | 5.66 | <0.3 | 5.72 | 5.24 | 0.539 | 300 |
| July | 4.89 | 4.69 | 4.01 | 5.09 | 6.36 | 3.31 | 1.66 | 4.28 | 4.20 | <0.3 | 3.84 | 5.42 | 0.479 | 252 |
| Aug | 3.44 | 3.23 | 5.66 | 4.57 | 4.28 | 3.51 | 0.992 | 3.04 | 2.96 | <0.3 | 5.70 | 5.24 | 0.506 | 352 |
| Sept | 8.40 | 8.05 | 7.64 | 5.53 | 10.6 | 5.88 | 2.52 | 3.84 | 3.71 | <0.3 | 2.34 | 5.63 | 0.480 | 252 |
| Oct | 5.98 | 5.40 | 7.26 | 9.71 | 12.2 | 9.53 | 3.36 | 8.72 | 8.52 | 0.439 | 2.14 | 5.67 | 0.603 | 163 |
| Nov | 3.63 | 3.38 | 6.04 | 6.56 | 4.57 | 4.12 | 1.42 | 8.26 | 8.18 | <0.3 | 3.48 | 5.46 | 0.486 | 200 |
| Dec | 3.44 | 2.16 | 3.92 | 27.3 | 1.37 | 21.3 | 0.775 | 0.539 | 0.489 | 1.78 | 6.62 | 5.18 | 0.724 | 512 |
| Annual | 4.00 | 3.44 | 4.64 | 11.5 | 3.48 | 9.28 | 1.43 | 3.86 | 3.71 | 0.718 | 6.10 | 5.21 | 0.588 | 3828 |
| Max. | 39.8 | 39.5 | 19.9 | 125 | 25.0 | 98.2 | 5.78 | 17.0 | 16.5 | 9.93 | 20.0 | 6.43 | 2.04 | |
| Min. | 1.17 | 0.579 | <0.5 | 1.72 | <0.8 | <0.3 | <0.3 | <0.2 | <0.2 | <0.3 | 0.372 | 4.70 | 0.270 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.82 | 1.57 | 1.96 | 4.42 | 0.198 | 4.10 | 1.16 | 1.45 | 1.36 | 0.351 | 4.50 |
| Feb | 1.68 | 1.04 | 1.11 | 13.9 | 0.393 | 10.5 | 0.578 | 1.15 | 0.921 | 1.08 | 4.50 |
| Mar | 0.808 | 0.717 | 1.06 | 1.22 | 1.17 | 1.51 | 0.425 | 0.900 | 0.867 | 0.0814 | 1.49 |
| Apr | 1.50 | 1.44 | 1.49 | 1.47 | 0.887 | 1.03 | 0.238 | 2.57 | 2.55 | 0.0883 | 2.29 |
| May | 0.498 | 0.451 | 0.854 | 0.776 | 0.416 | 0.766 | 0.246 | 0.523 | 0.507 | <0.01 | 0.867 |
| June | 1.00 | 0.959 | 1.98 | 1.07 | 0.893 | 0.733 | 0.202 | 1.71 | 1.70 | 0.0221 | 1.72 |
| July | 1.23 | 1.18 | 1.01 | 1.28 | 1.60 | 0.834 | 0.419 | 1.08 | 1.06 | 0.0528 | 0.968 |
| Aug | 1.21 | 1.14 | 1.99 | 1.61 | 1.51 | 1.24 | 0.349 | 1.07 | 1.04 | 0.0421 | 2.01 |
| Sept | 2.11 | 2.02 | 1.92 | 1.39 | 2.66 | 1.48 | 0.633 | 0.966 | 0.934 | 0.0313 | 0.589 |
| Oct | 0.976 | 0.882 | 1.18 | 1.59 | 1.99 | 1.56 | 0.549 | 1.42 | 1.39 | 0.0717 | 0.349 |
| Nov | 0.725 | 0.675 | 1.21 | 1.31 | 0.913 | 0.822 | 0.284 | 1.65 | 1.63 | 0.0114 | 0.694 |
| Dec | 1.76 | 1.10 | 2.01 | 14.0 | 0.702 | 10.9 | 0.397 | 0.276 | 0.251 | 0.913 | 3.39 |
| **Annual** | 15.3 | 13.2 | 17.8 | 44.0 | 13.3 | 35.5 | 5.48 | 14.8 | 14.2 | 2.75 | 23.4 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.39 Monthly results** **Site: Ulaanbaatar** **Country: Mongolia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| June | 25.6 | 24.3 | 13.2 | 2.73 | 33.2 | 22.7 | 0.707 | 12.9 | 12.4 | 1.55 | 3.90 | 5.41 | 0.839 | 27.9 |
| July | 98.7 | 94.0 | 90.6 | 8.12 | 93.3 | 77.9 | 3.52 | 43.3 | 41.7 | 5.44 | 1.49 | 5.83 | 2.33 | 35.2 |
| Aug | 13.5 | 13.4 | 12.7 | 1.70 | 37.7 | 1.18 | 0.529 | 61.7 | 61.7 | 2.72 | 3.95 | 5.40 | 0.998 | 69.7 |
| Sept | 15.6 | 15.5 | 16.3 | 3.33 | 36.6 | 1.99 | 0.994 | 18.2 | 18.2 | 2.43 | 1.28 | 5.89 | 0.947 | 27.1 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 34.6 | 33.3 | 30.4 | 3.56 | 48.9 | 21.9 | 1.29 | 41.8 | 41.3 | 3.06 | 2.95 | 5.53 | 1.26 | 160 |
| Max. | 201 | 194 | 407 | 48.5 | 192 | 172 | 20.8 | 287 | 287 | 21.8 | 6.03 | 8.36 | 7.01 | |
| Min. | 4.58 | 4.50 | 6.13 | 1.13 | <0.8 | 0.440 | <0.3 | 4.99 | 4.97 | 0.820 | 0.0044 | 5.22 | 0.380 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 0.714 | 0.676 | 0.367 | 0.0760 | 0.924 | 0.634 | 0.0197 | 0.360 | 0.347 | 0.0431 | 0.109 |
| July | 3.48 | 3.31 | 3.19 | 0.286 | 3.28 | 2.74 | 0.124 | 1.53 | 1.47 | 0.191 | 0.0523 |
| Aug | 0.939 | 0.934 | 0.881 | 0.119 | 2.62 | 0.0824 | 0.0368 | 4.30 | 4.30 | 0.189 | 0.275 |
| Sept | 0.424 | 0.420 | 0.441 | 0.0902 | 0.991 | 0.0538 | 0.0269 | 0.493 | 0.492 | 0.0659 | 0.0346 |
| Oct | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 5.54 | 5.32 | 4.86 | 0.569 | 7.81 | 3.50 | 0.207 | 6.68 | 6.60 | 0.489 | 0.471 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.40 Monthly results** **Site: Terelj** **Country: Mongolia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| June | 7.74 | 7.25 | 21.7 | 7.53 | 27.0 | 8.06 | 3.35 | 48.4 | 48.3 | 2.04 | 3.78 | 5.42 | 1.37 | 10.5 |
| July | 29.6 | 28.1 | 111 | 14.5 | 70.2 | 24.8 | 5.71 | 26.8 | 26.3 | 2.57 | 1.46 | 5.84 | 1.92 | 33.5 |
| Aug | 5.87 | 5.34 | 10.5 | 5.85 | 27.8 | 8.74 | 2.24 | 4.40 | 4.21 | 0.531 | 15.1 | 4.82 | 1.10 | 56.9 |
| Sept | 4.37 | 4.19 | 11.1 | 3.38 | 43.8 | 3.04 | 1.02 | 3.50 | 3.43 | 0.410 | 3.55 | 5.45 | 0.910 | 4.4 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 13.5 | 12.7 | 43.5 | 8.67 | 41.9 | 13.5 | 3.40 | 15.9 | 15.6 | 1.32 | 9.14 | 5.04 | 1.38 | 105 |
| Max. | 139 | 129 | 267 | 93.9 | 128 | 156 | 36.9 | 83.8 | 83.5 | 8.22 | 74.1 | 6.13 | 4.79 | |
| Min. | 0.520 | 0.442 | 2.60 | 0.560 | 3.88 | 0.870 | <0.3 | 1.50 | 1.47 | 0.410 | 0.741 | 4.13 | 0.196 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 0.0812 | 0.0761 | 0.228 | 0.0790 | 0.283 | 0.0846 | 0.0352 | 0.508 | 0.506 | 0.0214 | 0.0396 |
| July | 0.989 | 0.939 | 3.70 | 0.486 | 2.35 | 0.830 | 0.191 | 0.899 | 0.881 | 0.0860 | 0.0487 |
| Aug | 0.334 | 0.304 | 0.600 | 0.333 | 1.58 | 0.497 | 0.127 | 0.251 | 0.240 | 0.0302 | 0.858 |
| Sept | 0.0190 | 0.0182 | 0.0484 | 0.0147 | 0.191 | 0.0132 | <0.01 | 0.0152 | 0.0149 | <0.01 | 0.0154 |
| Oct | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 1.42 | 1.34 | 4.58 | 0.913 | 4.40 | 1.42 | 0.358 | 1.67 | 1.64 | 0.139 | 0.962 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.41 Monthly results** **Site: Yangon** **Country: Myanmar**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | 11.0 | 9.05 | 17.1 | 37.5 | 34.6 | 32.9 | 4.17 | 13.7 | 13.0 | 5.51 | 0.107 | 6.97 | 0.993 | 77.8 |
| May | 11.0 | 9.95 | 19.3 | 38.8 | 15.8 | 16.9 | 2.12 | 10.3 | 9.97 | 4.00 | 0.203 | 6.69 | 0.461 | 400 |
| June | 12.3 | 11.5 | 17.2 | 34.8 | 12.0 | 13.2 | 41.0 | 6.27 | 5.99 | 2.46 | 0.189 | 6.72 | 0.337 | 547 |
| July | 10.3 | 9.59 | 17.5 | 34.6 | 10.4 | 11.1 | 1.61 | 6.56 | 6.32 | 2.38 | 0.194 | 6.71 | 0.352 | 774 |
| Aug | 9.03 | 8.15 | 19.2 | 38.0 | 9.21 | 14.9 | 2.49 | 8.60 | 8.28 | 2.75 | 0.245 | 6.61 | 0.348 | 196 |
| Sept | 12.0 | 10.0 | 13.1 | 30.1 | 8.67 | 32.1 | 7.70 | 23.3 | 22.6 | 7.45 | 0.239 | 6.62 | 0.520 | 314 |
| Oct | 14.9 | 14.4 | 22.7 | 33.8 | 13.7 | 8.36 | 2.40 | 10.6 | 10.4 | 2.85 | 0.218 | 6.66 | 1.10 | 382 |
| Nov | 11.7 | 11.3 | 23.9 | 41.6 | 39.1 | 6.88 | 5.67 | 22.8 | 22.7 | 4.56 | 0.205 | 6.69 | 0.389 | 121 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 11.6 | 10.7 | 18.3 | 35.2 | 13.6 | 15.0 | 10.4 | 10.5 | 10.2 | 3.46 | 0.204 | 6.69 | 0.504 | 2813 |
| Max. | 19.6 | 19.1 | 29.8 | 43.4 | 81.2 | 36.5 | 127 | 67.8 | 67.6 | 14.4 | 0.316 | 6.97 | 2.99 | |
| Min. | <0.3 | <0.3 | 10.8 | 21.4 | 1.05 | 1.52 | <0.3 | 1.12 | 1.09 | 0.329 | 0.107 | 6.50 | 0.229 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 0.858 | 0.704 | 1.33 | 2.92 | 2.69 | 2.56 | 0.324 | 1.06 | 1.01 | 0.429 | <0.01 |
| May | 4.39 | 3.98 | 7.75 | 15.5 | 6.32 | 6.78 | 0.847 | 4.14 | 3.99 | 1.60 | 0.0814 |
| June | 6.70 | 6.27 | 9.41 | 19.0 | 6.59 | 7.24 | 22.4 | 3.43 | 3.28 | 1.35 | 0.104 |
| July | 7.95 | 7.43 | 13.5 | 26.8 | 8.06 | 8.60 | 1.24 | 5.08 | 4.89 | 1.85 | 0.150 |
| Aug | 1.77 | 1.60 | 3.76 | 7.46 | 1.80 | 2.92 | 0.489 | 1.69 | 1.62 | 0.539 | 0.0479 |
| Sept | 3.76 | 3.15 | 4.12 | 9.45 | 2.72 | 10.1 | 2.42 | 7.33 | 7.11 | 2.34 | 0.0752 |
| Oct | 5.71 | 5.52 | 8.66 | 12.9 | 5.25 | 3.20 | 0.919 | 4.04 | 3.97 | 1.09 | 0.0832 |
| Nov | 1.41 | 1.36 | 2.90 | 5.04 | 4.73 | 0.834 | 0.687 | 2.76 | 2.75 | 0.553 | 0.0249 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 32.6 | 30.0 | 51.4 | 99.1 | 38.2 | 42.2 | 29.4 | 29.5 | 28.6 | 9.75 | 0.575 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.42 Monthly results** **Site: Metro Manila** **Country: Philippines**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Annual | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Max. | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | |
| Min. | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| **Annual** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| **Annual** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

Terms and abbreviations are given in Table 3.5.

**Table 3.43 Monthly results** **Site: Los Baños** **Country: Philippines**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Annual | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Max. | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | |
| Min. | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| **Annual** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| **Annual** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

Terms and abbreviations are given in Table 3.5.

**Table 3.44 Monthly results** **Site: Mt. Sto. Tomas** **Country: Philippines**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Annual | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Max. | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | |
| Min. | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| **Annual** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Feb | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mar | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Apr | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| May | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| June | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| July | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Aug | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Sept | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Oct | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Nov | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Dec | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| **Annual** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |

Terms and abbreviations are given in Table 3.5.

**Table 3.45 Monthly results** **Site: Kanghwa** **Country: R of Korea**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 8.79 | 3.77 | 107 | 88.7 | 42.1 | 97.3 | 18.7 | 3.85 | 2.84 | 29.4 | 23.6 | 4.63 | 4.95 | 7.0 |
| Feb | 126 | 119 | 186 | 173 | 249 | 119 | 34.4 | 35.9 | 33.3 | 17.1 | 206 | 3.69 | 12.8 | 11.5 |
| Mar | 101 | 94.7 | 247 | 161 | 287 | 109 | 15.7 | 54.1 | 51.8 | 21.8 | 269 | 3.57 | 11.7 | 7.0 |
| Apr | 42.8 | 40.4 | 61.4 | 68.5 | 120 | 39.8 | 23.1 | 25.3 | 24.4 | 3.92 | 72.2 | 4.14 | 3.27 | 49.0 |
| May | 49.8 | 45.9 | 52.3 | 151 | 136 | 65.4 | 63.5 | 19.0 | 17.6 | 7.70 | 23.9 | 4.62 | 4.64 | 28.0 |
| June | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| July | 18.7 | 17.6 | 29.0 | 80.8 | 107 | 19.1 | 38.6 | 1.67 | 1.25 | 0.310 | 25.0 | 4.60 | 2.13 | 147 |
| Aug | 12.8 | 12.1 | 22.5 | 19.8 | 54.2 | 12.2 | 0.580 | 1.84 | 1.58 | <0.3 | 20.0 | 4.70 | 1.23 | 271 |
| Sept | 12.1 | 11.7 | 32.0 | 9.36 | 31.6 | 6.45 | 0.839 | 1.72 | 1.58 | <0.3 | 120 | 3.92 | 1.63 | 18.5 |
| Oct | 16.2 | 14.7 | 40.2 | 26.4 | 41.7 | 24.7 | 1.64 | 3.30 | 2.77 | 0.918 | 35.5 | 4.45 | 2.15 | 9.0 |
| Nov | 51.6 | 45.5 | 142 | 131 | 140 | 101 | 8.37 | 17.4 | 15.2 | 8.72 | 33.5 | 4.47 | 5.77 | 15.5 |
| Dec | 29.4 | 25.3 | 80.0 | 71.1 | 51.3 | 68.8 | 7.45 | 11.8 | 10.3 | 6.84 | 25.4 | 4.60 | 3.86 | 25.0 |
| Annual | 23.5 | 21.9 | 41.9 | 55.7 | 84.4 | 27.8 | 16.5 | 6.73 | 6.15 | 2.33 | 36.4 | 4.44 | 2.44 | 588 |
| Max. | 287 | 271 | 626 | 389 | 574 | 332 | 72.0 | 99.6 | 94.9 | 86.0 | 562 | 6.47 | 30.0 | |
| Min. | 3.68 | <0.3 | 8.97 | 9.36 | 19.8 | 6.37 | <0.3 | 0.230 | <0.2 | <0.3 | 0.339 | 3.25 | 0.518 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.0615 | 0.0264 | 0.752 | 0.621 | 0.295 | 0.681 | 0.131 | 0.0270 | 0.0199 | 0.206 | 0.165 |
| Feb | 1.45 | 1.37 | 2.14 | 1.99 | 2.86 | 1.37 | 0.395 | 0.412 | 0.383 | 0.196 | 2.37 |
| Mar | 0.709 | 0.663 | 1.73 | 1.13 | 2.01 | 0.761 | 0.110 | 0.379 | 0.362 | 0.153 | 1.89 |
| Apr | 2.10 | 1.98 | 3.01 | 3.35 | 5.86 | 1.95 | 1.13 | 1.24 | 1.20 | 0.192 | 3.54 |
| May | 1.39 | 1.28 | 1.46 | 4.23 | 3.80 | 1.83 | 1.78 | 0.533 | 0.493 | 0.216 | 0.668 |
| June | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| July | 2.75 | 2.58 | 4.26 | 11.9 | 15.7 | 2.81 | 5.67 | 0.245 | 0.184 | 0.0455 | 3.68 |
| Aug | 3.46 | 3.27 | 6.09 | 5.35 | 14.7 | 3.30 | 0.157 | 0.497 | 0.426 | 0.0456 | 5.41 |
| Sept | 0.224 | 0.216 | 0.593 | 0.173 | 0.584 | 0.119 | 0.0155 | 0.0318 | 0.0292 | <0.01 | 2.22 |
| Oct | 0.145 | 0.132 | 0.362 | 0.238 | 0.375 | 0.222 | 0.0148 | 0.0297 | 0.0249 | <0.01 | 0.319 |
| Nov | 0.800 | 0.706 | 2.20 | 2.03 | 2.18 | 1.56 | 0.130 | 0.270 | 0.236 | 0.135 | 0.519 |
| Dec | 0.736 | 0.632 | 2.00 | 1.78 | 1.28 | 1.72 | 0.186 | 0.294 | 0.257 | 0.171 | 0.634 |
| **Annual** | 13.8 | 12.9 | 24.6 | 32.8 | 49.6 | 16.3 | 9.72 | 3.96 | 3.61 | 1.37 | 21.4 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.46 Monthly results** **Site: Cheju** **Country: R of Korea**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 250 | 64.7 | 302 | 3382 | 73.2 | 3071 | 69.5 | 161 | 95.1 | 302 | 0.479 | 6.32 | 51.1 | 4.0 |
| Feb | 204 | 52.0 | 144 | 2866 | 48.9 | 2520 | 66.0 | 111 | 56.9 | 258 | 2.86 | 5.54 | 41.2 | 35.9 |
| Mar | 121 | 73.3 | 244 | 807 | 149 | 783 | 39.9 | 96.3 | 79.3 | 82.8 | 0.881 | 6.06 | 17.1 | 12.9 |
| Apr | 30.4 | 22.3 | 36.1 | 121 | 35.7 | 135 | 5.13 | 8.13 | 5.22 | 7.64 | 10.5 | 4.98 | 3.19 | 85.1 |
| May | 23.7 | 15.6 | 36.5 | 107 | 46.2 | 135 | 6.14 | 2.50 | <0.2 | 2.78 | 4.48 | 5.35 | 2.66 | 29.7 |
| June | 21.8 | 16.6 | 38.7 | 66.8 | 40.3 | 85.8 | 4.05 | 7.24 | 5.42 | 4.56 | 3.00 | 5.52 | 2.23 | 115 |
| July | 22.9 | 13.7 | 45.2 | 142 | 46.0 | 154 | 3.64 | 9.71 | 6.39 | 6.20 | 2.67 | 5.57 | 3.21 | 26.6 |
| Aug | 12.3 | 7.13 | 17.8 | 86.4 | 27.6 | 85.0 | 1.45 | 0.965 | <0.2 | 2.08 | 3.55 | 5.45 | 1.73 | 259 |
| Sept | 17.6 | 9.44 | 32.3 | 131 | 51.4 | 135 | 5.83 | 2.51 | 0.412 | 4.63 | 1.77 | 5.75 | 2.85 | 51.9 |
| Oct | 16.9 | 11.9 | 18.0 | 114 | 34.3 | 84.2 | 0.811 | 3.58 | 1.78 | 7.90 | 13.0 | 4.89 | 2.67 | 91.7 |
| Nov | 282 | 93.1 | 454 | 3602 | 60.2 | 3132 | 88.7 | 292 | 224 | 359 | 0.631 | 6.20 | 56.6 | 2.4 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 31.6 | 15.9 | 39.7 | 280 | 38.3 | 261 | 7.43 | 12.8 | 7.59 | 21.5 | 5.27 | 5.28 | 5.00 | 714 |
| Max. | 285 | 118 | 454 | 3781 | 193 | 3384 | 105 | 292 | 224 | 359 | 16.6 | 6.85 | 56.6 | |
| Min. | 4.23 | 2.25 | 6.19 | 20.1 | 18.0 | 30.3 | 0.691 | 0.507 | <0.2 | 0.477 | 0.141 | 4.78 | 0.814 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.999 | 0.259 | 1.21 | 13.5 | 0.293 | 12.3 | 0.278 | 0.646 | 0.380 | 1.21 | <0.01 |
| Feb | 7.32 | 1.87 | 5.17 | 103 | 1.76 | 90.5 | 2.37 | 4.00 | 2.04 | 9.27 | 0.103 |
| Mar | 1.55 | 0.945 | 3.15 | 10.4 | 1.92 | 10.1 | 0.515 | 1.24 | 1.02 | 1.07 | 0.0114 |
| Apr | 2.59 | 1.89 | 3.07 | 10.3 | 3.04 | 11.5 | 0.436 | 0.692 | 0.444 | 0.650 | 0.891 |
| May | 0.703 | 0.462 | 1.09 | 3.19 | 1.37 | 4.00 | 0.183 | 0.0742 | <0.01 | 0.0824 | 0.133 |
| June | 2.50 | 1.91 | 4.44 | 7.64 | 4.61 | 9.83 | 0.464 | 0.829 | 0.620 | 0.523 | 0.343 |
| July | 0.610 | 0.364 | 1.20 | 3.77 | 1.22 | 4.09 | 0.0967 | 0.258 | 0.170 | 0.165 | 0.0709 |
| Aug | 3.18 | 1.85 | 4.61 | 22.4 | 7.15 | 22.0 | 0.376 | 0.250 | <0.01 | 0.539 | 0.921 |
| Sept | 0.912 | 0.490 | 1.68 | 6.79 | 2.67 | 7.00 | 0.303 | 0.130 | 0.0214 | 0.240 | 0.0919 |
| Oct | 1.55 | 1.09 | 1.65 | 10.5 | 3.14 | 7.72 | 0.0744 | 0.328 | 0.164 | 0.724 | 1.19 |
| Nov | 0.676 | 0.223 | 1.09 | 8.64 | 0.145 | 7.52 | 0.213 | 0.701 | 0.538 | 0.861 | <0.01 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 22.6 | 11.3 | 28.4 | 200 | 27.3 | 187 | 5.31 | 9.15 | 5.42 | 15.3 | 3.76 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.47 Monthly results** **Site: Imsil** **Country: R of Korea**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 114 | 103 | 205 | 164 | 234 | 182 | 14.4 | 18.0 | 14.0 | 13.8 | 80.4 | 4.09 | 10.4 | 9.0 |
| Feb | 56.1 | 52.2 | 89.3 | 51.4 | 144 | 64.6 | 4.66 | 10.1 | 8.68 | 4.26 | 5.84 | 5.23 | 3.72 | 23.6 |
| Mar | 56.1 | 53.0 | 119 | 49.9 | 189 | 52.6 | 16.4 | 7.78 | 6.66 | 2.24 | 19.9 | 4.70 | 4.65 | 24.0 |
| Apr | 25.8 | 23.3 | 36.3 | 19.7 | 45.4 | 40.9 | 2.38 | 18.1 | 17.2 | 2.10 | 0.659 | 6.18 | 1.87 | 30.3 |
| May | 13.7 | 12.4 | 26.3 | 15.2 | 46.0 | 22.9 | 2.11 | 0.875 | 0.381 | 1.23 | 2.88 | 5.54 | 1.15 | 49.1 |
| June | 56.8 | 55.1 | 66.6 | 15.6 | 102 | 28.2 | 1.48 | 5.30 | 4.69 | 1.50 | 41.0 | 4.39 | 3.75 | 27.2 |
| July | 13.4 | 11.6 | 25.3 | 27.8 | 51.2 | 28.8 | 13.5 | 2.08 | 1.50 | <0.3 | 1.06 | 5.97 | 1.29 | 247 |
| Aug | 7.65 | 6.32 | 17.4 | 16.8 | 24.4 | 22.0 | 3.76 | 0.481 | <0.2 | 0.881 | 2.33 | 5.63 | 0.784 | 150 |
| Sept | 7.05 | 5.82 | 12.6 | 10.3 | 10.6 | 20.4 | 0.875 | 1.48 | 1.04 | 1.79 | 3.42 | 5.47 | 0.685 | 106 |
| Oct | 7.40 | 6.41 | 10.4 | 10.5 | 12.3 | 16.4 | 0.785 | 1.10 | 0.749 | 4.86 | 1.00 | 6.00 | 0.660 | 46.0 |
| Nov | 49.7 | 34.8 | 105 | 256 | 121 | 247 | 9.11 | 23.3 | 18.0 | 17.2 | 2.01 | 5.70 | 6.48 | 12.0 |
| Dec | 36.6 | 30.6 | 96.4 | 127 | 91.2 | 99.6 | 46.5 | 11.6 | 9.41 | 5.04 | 4.70 | 5.33 | 4.41 | 37.0 |
| Annual | 18.6 | 16.5 | 34.8 | 32.1 | 51.6 | 36.2 | 8.80 | 3.71 | 2.98 | 1.91 | 5.04 | 5.30 | 1.69 | 761 |
| Max. | 308 | 289 | 362 | 484 | 445 | 357 | 469 | 749 | 742 | 52.3 | 182 | 7.69 | 23.4 | |
| Min. | 2.09 | 0.917 | 6.92 | 6.43 | 5.40 | 9.49 | 0.458 | <0.2 | <0.2 | <0.3 | 0.0204 | 3.74 | 0.490 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 1.02 | 0.925 | 1.85 | 1.48 | 2.10 | 1.64 | 0.129 | 0.162 | 0.126 | 0.125 | 0.723 |
| Feb | 1.32 | 1.23 | 2.11 | 1.21 | 3.40 | 1.52 | 0.110 | 0.238 | 0.205 | 0.101 | 0.138 |
| Mar | 1.35 | 1.27 | 2.85 | 1.20 | 4.53 | 1.26 | 0.395 | 0.187 | 0.160 | 0.0539 | 0.478 |
| Apr | 0.782 | 0.707 | 1.10 | 0.597 | 1.38 | 1.24 | 0.0722 | 0.549 | 0.522 | 0.0636 | 0.0200 |
| May | 0.675 | 0.607 | 1.29 | 0.744 | 2.26 | 1.12 | 0.104 | 0.0430 | 0.0187 | 0.0605 | 0.141 |
| June | 1.54 | 1.50 | 1.81 | 0.424 | 2.78 | 0.767 | 0.0403 | 0.144 | 0.128 | 0.0407 | 1.11 |
| July | 3.30 | 2.87 | 6.23 | 6.85 | 12.6 | 7.10 | 3.32 | 0.512 | 0.371 | 0.0712 | 0.262 |
| Aug | 1.15 | 0.948 | 2.61 | 2.51 | 3.66 | 3.29 | 0.564 | 0.0721 | 0.0240 | 0.132 | 0.350 |
| Sept | 0.749 | 0.618 | 1.34 | 1.10 | 1.12 | 2.17 | 0.0929 | 0.158 | 0.111 | 0.190 | 0.363 |
| Oct | 0.340 | 0.295 | 0.479 | 0.484 | 0.565 | 0.756 | 0.0361 | 0.0508 | 0.0345 | 0.224 | 0.0461 |
| Nov | 0.596 | 0.417 | 1.26 | 3.08 | 1.45 | 2.96 | 0.109 | 0.280 | 0.216 | 0.207 | 0.0241 |
| Dec | 1.36 | 1.13 | 3.57 | 4.71 | 3.38 | 3.69 | 1.72 | 0.428 | 0.348 | 0.187 | 0.174 |
| **Annual** | 14.2 | 12.5 | 26.5 | 24.4 | 39.2 | 27.5 | 6.70 | 2.82 | 2.26 | 1.45 | 3.83 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.48 Monthly results** **Site: Mondy** **Country: Russia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 3.30 | 3.10 | 5.63 | 2.26 | 2.05 | 3.27 | 1.74 | 7.56 | 7.49 | 1.48 | 0.850 | 6.07 | 0.411 | 7.4 |
| Feb | 14.1 | 13.6 | 10.7 | 11.1 | 8.86 | 9.29 | 7.11 | 22.2 | 22.0 | 4.00 | 0.605 | 6.22 | 0.933 | 2.4 |
| Mar | 17.6 | 17.3 | 16.0 | 5.40 | 10.5 | 5.22 | 2.60 | 16.2 | 16.1 | 4.90 | 3.72 | 5.43 | 1.03 | 2.5 |
| Apr | 48.1 | 47.1 | 66.9 | 28.8 | 47.2 | 16.1 | 3.30 | 56.1 | 55.8 | 9.90 | 26.3 | 4.58 | 3.86 | 1.8 |
| May | 18.4 | 18.1 | 28.4 | 16.9 | 26.1 | 4.78 | 3.30 | 41.2 | 41.1 | 7.40 | 0.589 | 6.23 | 1.77 | 2.8 |
| June | 25.0 | 24.2 | 24.7 | 23.7 | 39.3 | 13.8 | 3.07 | 21.5 | 21.2 | 6.89 | 7.43 | 5.13 | 1.85 | 12.2 |
| July | 3.13 | 3.03 | 7.30 | 4.83 | 10.2 | 1.68 | 1.26 | 4.55 | 4.51 | 0.847 | 4.32 | 5.36 | 0.439 | 50.7 |
| Aug | 3.93 | 3.86 | 7.63 | 2.53 | 7.40 | 1.30 | 0.890 | 4.86 | 4.83 | 0.982 | 5.81 | 5.24 | 0.509 | 82.0 |
| Sept | 10.6 | 10.5 | 12.6 | 7.05 | 11.7 | 1.74 | 10.2 | 11.5 | 11.5 | 2.10 | 4.37 | 5.36 | 0.790 | 11.7 |
| Oct | 3.69 | 3.67 | 2.91 | 1.51 | 1.58 | 0.388 | 0.956 | 5.55 | 5.54 | 1.09 | 2.06 | 5.69 | 0.425 | 11.2 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | 5.60 | 5.55 | 12.1 | 2.10 | 2.20 | 0.870 | 2.30 | 31.4 | 31.4 | 2.90 | 0.302 | 6.52 | 0.880 | 6.4 |
| Annual | 6.43 | 6.27 | 9.75 | 5.29 | 10.4 | 2.58 | 1.94 | 8.67 | 8.61 | 1.75 | 4.86 | 5.31 | 0.659 | 191 |
| Max. | 48.1 | 47.1 | 66.9 | 39.8 | 83.3 | 26.1 | 10.2 | 56.1 | 55.8 | 11.5 | 33.1 | 6.52 | 3.86 | |
| Min. | 0.729 | 0.729 | 1.13 | 1.13 | <0.8 | <0.3 | <0.3 | 0.700 | 0.700 | 0.400 | 0.302 | 4.48 | 0.180 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.0244 | 0.0229 | 0.0417 | 0.0168 | 0.0152 | 0.0242 | 0.0129 | 0.0560 | 0.0555 | 0.0110 | <0.01 |
| Feb | 0.0339 | 0.0326 | 0.0257 | 0.0267 | 0.0213 | 0.0223 | 0.0171 | 0.0533 | 0.0528 | <0.01 | <0.01 |
| Mar | 0.0440 | 0.0432 | 0.0400 | 0.0135 | 0.0263 | 0.0130 | <0.01 | 0.0405 | 0.0402 | 0.0123 | <0.01 |
| Apr | 0.0866 | 0.0848 | 0.120 | 0.0518 | 0.0850 | 0.0290 | <0.01 | 0.101 | 0.100 | 0.0178 | 0.0473 |
| May | 0.0516 | 0.0508 | 0.0795 | 0.0473 | 0.0731 | 0.0134 | <0.01 | 0.115 | 0.115 | 0.0207 | <0.01 |
| June | 0.305 | 0.295 | 0.302 | 0.289 | 0.480 | 0.168 | 0.0375 | 0.263 | 0.259 | 0.0841 | 0.0907 |
| July | 0.159 | 0.154 | 0.370 | 0.245 | 0.516 | 0.0854 | 0.0641 | 0.231 | 0.229 | 0.0429 | 0.219 |
| Aug | 0.322 | 0.316 | 0.625 | 0.208 | 0.607 | 0.107 | 0.0729 | 0.399 | 0.396 | 0.0805 | 0.476 |
| Sept | 0.124 | 0.123 | 0.147 | 0.0825 | 0.137 | 0.0204 | 0.119 | 0.135 | 0.134 | 0.0246 | 0.0511 |
| Oct | 0.0414 | 0.0411 | 0.0326 | 0.0170 | 0.0177 | <0.01 | 0.0107 | 0.0622 | 0.0621 | 0.0122 | 0.0231 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.0358 | 0.0355 | 0.0774 | 0.0134 | 0.0141 | <0.01 | 0.0147 | 0.201 | 0.201 | 0.0186 | <0.01 |
| **Annual** | 1.23 | 1.20 | 1.86 | 1.01 | 1.99 | 0.493 | 0.371 | 1.66 | 1.65 | 0.334 | 0.928 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.49 Monthly results** **Site: Listvyanka** **Country: Russia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 20.2 | 19.8 | 53.1 | 3.61 | 6.43 | 6.84 | 3.96 | 29.3 | 29.2 | 7.56 | 4.48 | 5.35 | 1.64 | 5.7 |
| Feb | 47.3 | 46.7 | 73.7 | 6.95 | 27.6 | 9.28 | 5.67 | 37.8 | 37.6 | 9.44 | 20.2 | 4.69 | 3.24 | 14.6 |
| Mar | 27.7 | 27.1 | 29.0 | 5.76 | 17.8 | 8.83 | 2.59 | 15.4 | 15.2 | 3.29 | 10.9 | 4.96 | 1.88 | 10.8 |
| Apr | 37.6 | 37.3 | 22.8 | 3.44 | 33.4 | 4.85 | 3.06 | 21.6 | 21.5 | 5.30 | 15.9 | 4.80 | 2.00 | 6.0 |
| May | 36.2 | 36.0 | 23.2 | 3.32 | 40.4 | 4.37 | 6.19 | 19.7 | 19.6 | 5.27 | 13.4 | 4.87 | 1.89 | 60.5 |
| June | 21.9 | 21.7 | 16.0 | 6.38 | 24.7 | 3.61 | 2.88 | 9.04 | 8.96 | 3.07 | 23.1 | 4.64 | 1.69 | 23.0 |
| July | 11.5 | 11.3 | 15.5 | 7.27 | 22.0 | 2.49 | 5.04 | 6.41 | 6.36 | 1.90 | 10.3 | 4.99 | 1.11 | 75.5 |
| Aug | 15.0 | 14.9 | 5.35 | 0.773 | 5.13 | 1.07 | 0.409 | 3.27 | 3.25 | 0.856 | 26.1 | 4.58 | 1.10 | 68.0 |
| Sept | 24.3 | 24.2 | 11.1 | 2.30 | 17.9 | 1.61 | 2.21 | 6.35 | 6.31 | 1.73 | 26.2 | 4.58 | 1.76 | 33.0 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Nov | 25.8 | 25.5 | 35.6 | 4.82 | 3.93 | 3.82 | 3.89 | 38.8 | 38.7 | 8.69 | 1.29 | 5.89 | 1.74 | 3.8 |
| Dec | 19.4 | 19.2 | 30.7 | 3.53 | 2.76 | 3.71 | 4.16 | 25.5 | 25.4 | 4.40 | 5.60 | 5.25 | 1.35 | 14.7 |
| Annual | 22.5 | 22.3 | 19.3 | 4.12 | 20.6 | 3.26 | 3.64 | 12.2 | 12.1 | 3.15 | 17.0 | 4.77 | 1.54 | 315 |
| Max. | 96.1 | 95.2 | 139 | 17.8 | 89.2 | 14.8 | 12.8 | 80.3 | 80.0 | 16.8 | 53.7 | 6.13 | 6.10 | |
| Min. | 3.74 | 3.61 | 3.23 | <0.5 | 1.00 | 0.435 | <0.3 | 1.50 | 1.49 | 0.410 | 0.741 | 4.27 | 0.540 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.116 | 0.113 | 0.304 | 0.0206 | 0.0368 | 0.0391 | 0.0227 | 0.168 | 0.167 | 0.0432 | 0.0256 |
| Feb | 0.691 | 0.683 | 1.08 | 0.102 | 0.403 | 0.136 | 0.0828 | 0.553 | 0.550 | 0.138 | 0.296 |
| Mar | 0.297 | 0.292 | 0.312 | 0.0619 | 0.191 | 0.0950 | 0.0278 | 0.166 | 0.164 | 0.0354 | 0.117 |
| Apr | 0.224 | 0.222 | 0.136 | 0.0204 | 0.199 | 0.0288 | 0.0182 | 0.128 | 0.128 | 0.0315 | 0.0944 |
| May | 2.19 | 2.18 | 1.40 | 0.201 | 2.44 | 0.264 | 0.374 | 1.19 | 1.19 | 0.319 | 0.809 |
| June | 0.504 | 0.499 | 0.368 | 0.147 | 0.569 | 0.0831 | 0.0663 | 0.208 | 0.206 | 0.0706 | 0.531 |
| July | 0.864 | 0.853 | 1.17 | 0.548 | 1.66 | 0.188 | 0.380 | 0.484 | 0.480 | 0.143 | 0.779 |
| Aug | 1.02 | 1.01 | 0.364 | 0.0525 | 0.349 | 0.0726 | 0.0278 | 0.222 | 0.221 | 0.0582 | 1.77 |
| Sept | 0.802 | 0.798 | 0.365 | 0.0757 | 0.591 | 0.0531 | 0.0731 | 0.210 | 0.208 | 0.0571 | 0.865 |
| Oct | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nov | 0.0980 | 0.0971 | 0.135 | 0.0183 | 0.0149 | 0.0145 | 0.0148 | 0.147 | 0.147 | 0.0330 | <0.01 |
| Dec | 0.285 | 0.282 | 0.451 | 0.0518 | 0.0406 | 0.0545 | 0.0611 | 0.374 | 0.373 | 0.0647 | 0.0823 |
| **Annual** | 7.09 | 7.03 | 6.08 | 1.30 | 6.50 | 1.03 | 1.15 | 3.86 | 3.83 | 0.993 | 5.38 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.50 Monthly results** **Site: Irkutsk** **Country: Russia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 48.3 | 47.4 | 39.2 | 16.9 | 38.8 | 15.9 | 7.78 | 72.3 | 72.0 | 12.9 | 0.713 | 6.15 | 2.98 | 11.6 |
| Feb | 110 | 107 | 51.0 | 58.0 | 55.9 | 52.0 | 11.3 | 104 | 103 | 22.1 | 1.11 | 5.96 | 4.98 | 11.7 |
| Mar | 82.4 | 78.0 | 35.1 | 86.0 | 24.9 | 73.5 | 6.65 | 97.0 | 95.4 | 20.8 | 0.633 | 6.20 | 4.54 | 7.2 |
| Apr | 38.3 | 37.1 | 16.9 | 21.4 | 35.9 | 19.8 | 4.05 | 36.4 | 35.9 | 8.60 | 3.44 | 5.46 | 2.02 | 52.2 |
| May | 38.2 | 37.9 | 16.9 | 8.71 | 40.7 | 4.77 | 3.25 | 22.3 | 22.2 | 4.81 | 11.5 | 4.94 | 1.87 | 37.8 |
| June | 22.8 | 22.4 | 14.8 | 10.1 | 25.6 | 6.84 | 2.16 | 14.2 | 14.1 | 4.10 | 11.5 | 4.94 | 1.50 | 21.8 |
| July | 8.57 | 8.41 | 6.22 | 3.83 | 9.19 | 2.68 | 0.727 | 5.35 | 5.30 | 1.24 | 10.1 | 4.99 | 0.785 | 144 |
| Aug | 17.3 | 17.2 | 9.59 | 3.02 | 11.9 | 1.25 | 0.711 | 5.13 | 5.10 | 1.38 | 24.8 | 4.61 | 1.36 | 83.5 |
| Sept | 25.6 | 25.5 | 9.56 | 2.70 | 13.4 | 1.12 | 1.90 | 10.2 | 10.2 | 2.58 | 19.5 | 4.71 | 1.55 | 45.8 |
| Oct | 33.6 | 33.3 | 20.9 | 8.86 | 31.7 | 5.00 | 9.97 | 24.7 | 24.5 | 6.70 | 12.4 | 4.91 | 2.00 | 29.8 |
| Nov | 47.9 | 46.4 | 28.7 | 33.0 | 30.1 | 24.6 | 8.36 | 88.2 | 87.7 | 13.6 | 0.365 | 6.44 | 3.36 | 13.4 |
| Dec | 24.2 | 23.8 | 21.6 | 7.97 | 16.9 | 7.17 | 3.62 | 45.0 | 44.9 | 6.77 | 0.906 | 6.04 | 1.83 | 42.8 |
| Annual | 25.7 | 25.2 | 14.4 | 10.2 | 20.4 | 7.99 | 2.92 | 22.5 | 22.4 | 4.70 | 11.4 | 4.94 | 1.62 | 502 |
| Max. | 291 | 285 | 85.0 | 326 | 182 | 261 | 81.6 | 466 | 463 | 61.2 | 57.5 | 7.78 | 15.5 | |
| Min. | 2.40 | 2.29 | <0.5 | 0.564 | 2.06 | 0.435 | 0.512 | 0.749 | 0.711 | 0.411 | 0.0166 | 4.24 | 0.420 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.560 | 0.549 | 0.455 | 0.196 | 0.450 | 0.184 | 0.0902 | 0.839 | 0.835 | 0.149 | <0.01 |
| Feb | 1.28 | 1.25 | 0.595 | 0.676 | 0.652 | 0.606 | 0.132 | 1.21 | 1.20 | 0.258 | 0.0129 |
| Mar | 0.592 | 0.560 | 0.252 | 0.618 | 0.179 | 0.528 | 0.0478 | 0.696 | 0.685 | 0.149 | <0.01 |
| Apr | 2.00 | 1.93 | 0.883 | 1.12 | 1.87 | 1.04 | 0.211 | 1.90 | 1.88 | 0.449 | 0.180 |
| May | 1.44 | 1.43 | 0.639 | 0.329 | 1.54 | 0.180 | 0.123 | 0.841 | 0.837 | 0.182 | 0.435 |
| June | 0.497 | 0.488 | 0.322 | 0.221 | 0.558 | 0.149 | 0.0470 | 0.310 | 0.307 | 0.0893 | 0.251 |
| July | 1.24 | 1.21 | 0.897 | 0.553 | 1.33 | 0.387 | 0.105 | 0.773 | 0.765 | 0.179 | 1.46 |
| Aug | 1.44 | 1.44 | 0.801 | 0.252 | 0.995 | 0.105 | 0.0594 | 0.428 | 0.426 | 0.116 | 2.07 |
| Sept | 1.17 | 1.17 | 0.438 | 0.124 | 0.616 | 0.0512 | 0.0868 | 0.467 | 0.466 | 0.118 | 0.895 |
| Oct | 1.00 | 0.991 | 0.623 | 0.264 | 0.946 | 0.149 | 0.297 | 0.735 | 0.731 | 0.200 | 0.368 |
| Nov | 0.641 | 0.622 | 0.383 | 0.441 | 0.403 | 0.330 | 0.112 | 1.18 | 1.17 | 0.182 | <0.01 |
| Dec | 1.04 | 1.02 | 0.926 | 0.341 | 0.724 | 0.307 | 0.155 | 1.93 | 1.92 | 0.290 | 0.0388 |
| **Annual** | 12.9 | 12.7 | 7.22 | 5.13 | 10.3 | 4.01 | 1.47 | 11.3 | 11.2 | 2.36 | 5.73 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 99.4 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 99.3 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 99.6 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 99.5 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **99.8** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.51 Monthly results** **Site: Primorskaya** **Country: Russia**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | * | * | * | * | * | * | * | * | * | * | 0.648 | 6.19 | * | 34.0 |
| Feb | 23.8 | 22.5 | 28.9 | 65.6 | 33.5 | 21.7 | 9.20 | 32.6 | 32.1 | 8.99 | 2.91 | 5.54 | 2.01 | 13.7 |
| Mar | 52.1 | 49.6 | 55.7 | 91.2 | 101 | 41.6 | 22.1 | 40.1 | 39.2 | 14.2 | 3.00 | 5.52 | 3.60 | 18.5 |
| Apr | 60.8 | 57.1 | 55.4 | 94.0 | 61.2 | 60.7 | 24.0 | 53.8 | 52.5 | 18.8 | 0.944 | 6.03 | 3.79 | 34.2 |
| May | 32.1 | 30.8 | 26.9 | 54.1 | 57.4 | 21.7 | 10.6 | 21.8 | 21.4 | 7.24 | 1.95 | 5.71 | 2.08 | 41.8 |
| June | 37.9 | 36.5 | 33.6 | 40.5 | 57.3 | 23.6 | 12.8 | 24.9 | 24.3 | 10.1 | 1.18 | 5.93 | 2.34 | 86.2 |
| July | 23.8 | 22.9 | 36.7 | 25.2 | 44.5 | 15.6 | 10.5 | 15.8 | 15.5 | 6.53 | 2.12 | 5.67 | 1.63 | 146 |
| Aug | 25.3 | 24.3 | 29.1 | 17.2 | 21.6 | 16.8 | 5.76 | 14.5 | 14.1 | 12.5 | 2.36 | 5.63 | 1.43 | 86.5 |
| Sept | 27.1 | 25.5 | 33.1 | 27.3 | 22.6 | 27.8 | 4.07 | 10.9 | 10.3 | 20.7 | 3.66 | 5.44 | 1.64 | 81.8 |
| Oct | 37.7 | 35.4 | 32.9 | 36.0 | 26.0 | 39.1 | 11.2 | 27.8 | 26.9 | 11.2 | 2.11 | 5.68 | 2.10 | 31.2 |
| Nov | 73.2 | 70.3 | 37.7 | 47.1 | 118 | 46.9 | 9.03 | 25.1 | 24.1 | 14.4 | 2.07 | 5.68 | 3.38 | 37.7 |
| Dec | 32.9 | 30.9 | 29.5 | 29.6 | 32.1 | 33.0 | 7.64 | 18.1 | 17.4 | 11.8 | 0.957 | 6.02 | 1.89 | 23.5 |
| Annual | 34.2 | 32.6 | 35.0 | 37.1 | 46.8 | 26.0 | 10.1 | 20.9 | 20.4 | 11.9 | 2.07 | 5.69 | 2.06 | 635 |
| Max. | 160 | 156 | 109 | 174 | 176 | 146 | 42.7 | 118 | 114 | 35.4 | 6.31 | 6.88 | 6.16 | |
| Min. | 10.4 | 9.77 | 10.2 | 8.20 | 4.40 | 3.00 | 2.30 | 5.70 | 5.27 | 3.70 | 0.132 | 5.20 | 0.950 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | * | * | * | * | * | * | * | * | * | * | 0.0220 |
| Feb | 0.326 | 0.308 | 0.396 | 0.899 | 0.460 | 0.297 | 0.126 | 0.446 | 0.440 | 0.123 | 0.0398 |
| Mar | 0.964 | 0.917 | 1.03 | 1.69 | 1.87 | 0.769 | 0.408 | 0.741 | 0.725 | 0.264 | 0.0555 |
| Apr | 2.08 | 1.95 | 1.90 | 3.21 | 2.09 | 2.08 | 0.820 | 1.84 | 1.80 | 0.645 | 0.0323 |
| May | 1.34 | 1.29 | 1.13 | 2.26 | 2.40 | 0.907 | 0.441 | 0.913 | 0.893 | 0.302 | 0.0816 |
| June | 3.27 | 3.15 | 2.89 | 3.50 | 4.94 | 2.04 | 1.10 | 2.14 | 2.10 | 0.871 | 0.102 |
| July | 3.48 | 3.34 | 5.37 | 3.69 | 6.52 | 2.28 | 1.54 | 2.31 | 2.27 | 0.955 | 0.310 |
| Aug | 2.19 | 2.10 | 2.52 | 1.49 | 1.86 | 1.45 | 0.499 | 1.25 | 1.22 | 1.08 | 0.204 |
| Sept | 2.22 | 2.08 | 2.71 | 2.23 | 1.85 | 2.27 | 0.333 | 0.889 | 0.840 | 1.70 | 0.299 |
| Oct | 1.18 | 1.10 | 1.03 | 1.12 | 0.810 | 1.22 | 0.350 | 0.866 | 0.839 | 0.349 | 0.0658 |
| Nov | 2.76 | 2.65 | 1.42 | 1.77 | 4.44 | 1.77 | 0.341 | 0.946 | 0.908 | 0.541 | 0.0780 |
| Dec | 0.772 | 0.726 | 0.692 | 0.696 | 0.754 | 0.776 | 0.180 | 0.425 | 0.409 | 0.277 | 0.0225 |
| **Annual** | 21.7 | 20.7 | 22.3 | 23.6 | 29.7 | 16.5 | 6.41 | 13.3 | 12.9 | 7.57 | 1.31 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 0 | 100 |
| Feb | 70.8 | 70.8 | 70.8 | 70.8 | 70.8 | 70.8 | 70.8 | 70.8 | 70.8 | 70.8 | 100 | 100 | 70.8 | 100 |
| Mar | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 96.2 | 100 | 100 | 96.2 | 100 |
| Apr | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 73.7 | 100 | 100 | 73.7 | 100 |
| May | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 87.1 | 100 | 100 | 87.1 | 100 |
| June | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 91.4 | 100 | 100 | 91.4 | 100 |
| July | 85.5 | 85.5 | 85.5 | 85.5 | 85.5 | 85.5 | 85.5 | 85.5 | 85.5 | 85.5 | 100 | 100 | 85.5 | 100 |
| Aug | 91.1 | 91.1 | 91.1 | 91.1 | 91.1 | 91.1 | 91.1 | 91.1 | 91.1 | 91.1 | 100 | 100 | 91.1 | 100 |
| Sept | 96.5 | 96.5 | 96.5 | 96.5 | 96.5 | 96.5 | 96.5 | 96.5 | 96.5 | 96.5 | 100 | 100 | 96.5 | 100 |
| Oct | 89.1 | 89.1 | 89.1 | 89.1 | 89.1 | 89.1 | 89.1 | 89.1 | 89.1 | 89.1 | 100 | 100 | 89.1 | 100 |
| Nov | 91.8 | 91.8 | 91.8 | 91.8 | 91.8 | 91.8 | 91.8 | 91.8 | 91.8 | 91.8 | 100 | 100 | 91.8 | 100 |
| Dec | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 28.1 | 100 | 100 | 28.1 | 100 |
| **Annual** | **81.8** | **81.8** | **81.8** | **81.8** | **81.8** | **81.8** | **81.8** | **81.8** | **81.8** | **81.8** | **100** | **100** | **81.8** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.52 Monthly results** **Site: Bangkok** **Country: Thailand**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 24.7 | 24.3 | 70.1 | 21.7 | 104 | 7.04 | 4.40 | 61.4 | 61.2 | 5.88 | 0.273 | 6.56 | 3.07 | 29.8 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 35.6 | 30.9 | 104 | 65.6 | 52.8 | 77.9 | 8.84 | 127 | 125 | 17.6 | 0.0036 | 8.45 | 4.37 | 25.5 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| June | 95.7 | 95.1 | 17.0 | 11.4 | 33.1 | 10.5 | 1.02 | 11.5 | 11.3 | 2.40 | 1.21 | 5.92 | 0.810 | 151 |
| July | 6.74 | 6.41 | 11.0 | 9.23 | 36.9 | 5.49 | 0.729 | 7.92 | 7.80 | 1.27 | 0.472 | 6.33 | 0.567 | 240 |
| Aug | 6.46 | 6.17 | 11.6 | 7.05 | 48.4 | 4.74 | 1.59 | 8.72 | 8.62 | 1.41 | 0.414 | 6.38 | 0.598 | 284 |
| Sept | 7.14 | 6.96 | 18.2 | 4.84 | 55.1 | 2.87 | 0.782 | 6.08 | 6.02 | 0.899 | 1.39 | 5.86 | 0.587 | 343 |
| Oct | 9.92 | 9.71 | 23.4 | 5.78 | 68.5 | 3.52 | 1.00 | 7.35 | 7.27 | 0.851 | 1.69 | 5.77 | 0.863 | 473 |
| Nov | 3.70 | 3.56 | 23.5 | 4.82 | 68.9 | 2.41 | 0.997 | 14.0 | 14.0 | 0.928 | 0.614 | 6.21 | 0.865 | 33.9 |
| Dec | 28.5 | 28.0 | 67.2 | 15.2 | 105 | 8.91 | 4.48 | 63.0 | 62.8 | 4.92 | 0.375 | 6.43 | 2.96 | 12.4 |
| Annual | 17.0 | 16.7 | 20.2 | 8.16 | 54.6 | 5.83 | 1.24 | 11.3 | 11.2 | 1.57 | 1.08 | 5.97 | 0.821 | 1592 |
| Max. | 293 | 292 | 332 | 218 | 242 | 255 | 30.2 | 439 | 434 | 57.2 | 7.94 | 8.48 | 13.8 | |
| Min. | 1.25 | 1.17 | 2.26 | 1.69 | 7.76 | 0.435 | <0.3 | 1.75 | 1.73 | 0.411 | 0.0033 | 5.10 | 0.0400 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.735 | 0.723 | 2.09 | 0.645 | 3.11 | 0.210 | 0.131 | 1.83 | 1.82 | 0.175 | <0.01 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.909 | 0.789 | 2.65 | 1.67 | 1.35 | 1.99 | 0.225 | 3.23 | 3.19 | 0.450 | <0.01 |
| Apr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| June | 14.4 | 14.3 | 2.56 | 1.71 | 4.98 | 1.58 | 0.154 | 1.73 | 1.70 | 0.362 | 0.182 |
| July | 1.62 | 1.54 | 2.65 | 2.22 | 8.86 | 1.32 | 0.175 | 1.90 | 1.88 | 0.306 | 0.114 |
| Aug | 1.83 | 1.75 | 3.30 | 2.00 | 13.7 | 1.35 | 0.451 | 2.47 | 2.45 | 0.401 | 0.118 |
| Sept | 2.45 | 2.39 | 6.24 | 1.66 | 18.9 | 0.983 | 0.268 | 2.09 | 2.06 | 0.308 | 0.477 |
| Oct | 4.69 | 4.59 | 11.1 | 2.74 | 32.4 | 1.66 | 0.473 | 3.48 | 3.44 | 0.403 | 0.798 |
| Nov | 0.126 | 0.121 | 0.796 | 0.163 | 2.34 | 0.0816 | 0.0338 | 0.475 | 0.473 | 0.0315 | 0.0208 |
| Dec | 0.354 | 0.347 | 0.834 | 0.189 | 1.30 | 0.110 | 0.0555 | 0.782 | 0.779 | 0.0610 | <0.01 |
| **Annual** | 27.1 | 26.6 | 32.2 | 13.0 | 87.0 | 9.28 | 1.97 | 18.0 | 17.8 | 2.50 | 1.72 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| May | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.53 Monthly results** **Site: Samutprakarn** **Country: Thailand**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 11.7 | 11.3 | 20.6 | 7.33 | 48.2 | 6.52 | 1.79 | 6.99 | 6.85 | 1.23 | 0.138 | 6.86 | 0.900 | 38.2 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 20.8 | 20.0 | 27.1 | 13.0 | 106 | 13.9 | 2.30 | 6.49 | 6.19 | 1.65 | 4.37 | 5.36 | 1.46 | 27.3 |
| Apr | 12.3 | 11.8 | 26.4 | 10.6 | 112 | 8.94 | 2.10 | 11.5 | 11.3 | 2.47 | 1.80 | 5.75 | 0.858 | 42.8 |
| May | 7.77 | 7.25 | 9.71 | 9.07 | 39.7 | 8.68 | 1.18 | 5.04 | 4.85 | 1.47 | 1.40 | 5.85 | 0.673 | 425 |
| June | 11.6 | 10.8 | 8.57 | 15.6 | 27.3 | 12.3 | 1.22 | 6.26 | 6.00 | 2.12 | 1.38 | 5.86 | 0.635 | 208 |
| July | 7.93 | 7.48 | 8.30 | 9.15 | 31.9 | 7.38 | 1.28 | 8.80 | 8.64 | 1.71 | 0.471 | 6.33 | 0.612 | 163 |
| Aug | 4.78 | 4.46 | 5.90 | 5.49 | 31.8 | 5.28 | 1.33 | 5.53 | 5.42 | 1.43 | 0.524 | 6.28 | 0.455 | 280 |
| Sept | 8.38 | 8.02 | 19.8 | 7.77 | 58.6 | 6.06 | 1.50 | 10.8 | 10.7 | 1.54 | 0.680 | 6.17 | 0.894 | 253 |
| Oct | 10.4 | 10.2 | 30.4 | 4.56 | 70.8 | 3.58 | 1.33 | 10.8 | 10.7 | 1.24 | 2.82 | 5.55 | 1.17 | 356 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | 19.7 | 19.3 | 49.3 | 12.1 | 81.8 | 6.40 | 2.93 | 22.8 | 22.7 | 2.54 | 0.363 | 6.44 | 1.99 | 22.8 |
| Annual | 8.90 | 8.47 | 15.7 | 8.30 | 48.5 | 7.10 | 1.36 | 7.96 | 7.81 | 1.56 | 1.37 | 5.86 | 0.799 | 1815 |
| Max. | 206 | 204 | 86.1 | 65.7 | 154 | 55.7 | 6.65 | 34.7 | 34.5 | 9.87 | 7.76 | 8.21 | 3.01 | |
| Min. | 1.35 | 1.12 | 2.10 | 1.69 | 7.76 | 0.870 | 0.512 | 1.25 | 1.09 | 0.411 | 0.0062 | 5.11 | 0.190 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.445 | 0.430 | 0.789 | 0.280 | 1.84 | 0.249 | 0.0684 | 0.267 | 0.261 | 0.0471 | <0.01 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.568 | 0.545 | 0.740 | 0.354 | 2.91 | 0.380 | 0.0628 | 0.177 | 0.169 | 0.0449 | 0.119 |
| Apr | 0.528 | 0.505 | 1.13 | 0.453 | 4.80 | 0.383 | 0.0900 | 0.491 | 0.483 | 0.106 | 0.0769 |
| May | 3.30 | 3.08 | 4.13 | 3.86 | 16.9 | 3.69 | 0.501 | 2.14 | 2.06 | 0.625 | 0.597 |
| June | 2.40 | 2.25 | 1.78 | 3.23 | 5.67 | 2.55 | 0.254 | 1.30 | 1.25 | 0.440 | 0.286 |
| July | 1.29 | 1.22 | 1.36 | 1.49 | 5.21 | 1.20 | 0.208 | 1.44 | 1.41 | 0.279 | 0.0769 |
| Aug | 1.34 | 1.25 | 1.65 | 1.54 | 8.88 | 1.48 | 0.373 | 1.55 | 1.52 | 0.399 | 0.146 |
| Sept | 2.12 | 2.02 | 5.01 | 1.96 | 14.8 | 1.53 | 0.380 | 2.72 | 2.69 | 0.388 | 0.172 |
| Oct | 3.71 | 3.63 | 10.8 | 1.62 | 25.2 | 1.27 | 0.472 | 3.84 | 3.81 | 0.442 | 1.00 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.450 | 0.441 | 1.12 | 0.276 | 1.87 | 0.146 | 0.0667 | 0.520 | 0.517 | 0.0579 | <0.01 |
| **Annual** | 16.2 | 15.4 | 28.5 | 15.1 | 88.1 | 12.9 | 2.48 | 14.4 | 14.2 | 2.83 | 2.49 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 79.7 | 79.7 | 79.7 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97.2 | 97.2 | 97.2 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **97.4** | **97.4** | **97.4** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.54 Monthly results** **Site: Pathumthani** **Country: Thailand**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 26.4 | 25.5 | 50.8 | 17.1 | 164 | 14.2 | 3.24 | 20.6 | 20.3 | 2.86 | 0.852 | 6.07 | 2.83 | 13.2 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 21.2 | 20.3 | 118 | 21.6 | 98.5 | 15.4 | 3.53 | 50.8 | 50.5 | 4.85 | 3.11 | 5.51 | 3.23 | 72.7 |
| Apr | 17.0 | 16.7 | 61.9 | 11.6 | 103 | 5.23 | 2.78 | 26.0 | 25.8 | 2.31 | 4.25 | 5.37 | 2.27 | 26.1 |
| May | 6.98 | 6.71 | 18.6 | 5.72 | 27.9 | 4.45 | 0.501 | 6.31 | 6.21 | 0.890 | 3.20 | 5.50 | 0.843 | 269 |
| June | 6.83 | 6.32 | 20.7 | 9.29 | 32.9 | 8.47 | 1.28 | 18.1 | 17.9 | 1.94 | 0.817 | 6.09 | 1.07 | 181 |
| July | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Aug | 5.34 | 5.19 | 14.1 | 5.36 | 33.3 | 2.59 | 1.15 | 8.57 | 8.52 | 1.02 | 1.27 | 5.90 | 0.770 | 211 |
| Sept | 9.85 | 9.63 | 33.4 | 6.31 | 38.3 | 3.63 | 1.98 | 8.97 | 8.89 | 1.13 | 7.49 | 5.13 | 1.31 | 248 |
| Oct | 8.96 | 8.79 | 22.8 | 6.24 | 40.7 | 2.77 | 4.23 | 8.59 | 8.53 | 1.10 | 8.20 | 5.09 | 1.10 | 331 |
| Nov | 56.1 | 54.8 | 178 | 47.8 | 65.9 | 21.0 | 24.2 | 261 | 261 | 17.6 | 0.240 | 6.62 | 8.59 | 0.3 |
| Dec | 12.9 | 12.7 | 26.3 | 9.75 | 70.8 | 3.93 | 1.43 | 17.0 | 16.9 | 1.43 | 0.401 | 6.40 | 1.61 | 12.6 |
| Annual | 8.91 | 8.61 | 28.4 | 7.48 | 41.3 | 4.83 | 2.13 | 12.3 | 12.2 | 1.41 | 4.55 | 5.34 | 1.19 | 1365 |
| Max. | 210 | 201 | 384 | 199 | 240 | 157 | 30.2 | 271 | 270 | 34.9 | 100 | 7.23 | 13.0 | |
| Min. | 2.16 | 1.90 | 2.88 | 1.13 | <0.8 | 0.484 | <0.3 | 1.31 | 1.28 | <0.3 | 0.0589 | 4.00 | 0.311 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.349 | 0.338 | 0.672 | 0.227 | 2.17 | 0.187 | 0.0429 | 0.272 | 0.268 | 0.0378 | 0.0113 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 1.54 | 1.48 | 8.59 | 1.57 | 7.16 | 1.12 | 0.257 | 3.70 | 3.67 | 0.353 | 0.226 |
| Apr | 0.444 | 0.436 | 1.61 | 0.304 | 2.69 | 0.137 | 0.0726 | 0.678 | 0.675 | 0.0603 | 0.111 |
| May | 1.88 | 1.80 | 5.01 | 1.54 | 7.51 | 1.20 | 0.135 | 1.70 | 1.67 | 0.239 | 0.860 |
| June | 1.24 | 1.15 | 3.76 | 1.68 | 5.97 | 1.53 | 0.231 | 3.27 | 3.24 | 0.351 | 0.148 |
| July | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Aug | 1.13 | 1.09 | 2.97 | 1.13 | 7.01 | 0.545 | 0.243 | 1.81 | 1.80 | 0.214 | 0.268 |
| Sept | 2.44 | 2.39 | 8.28 | 1.57 | 9.50 | 0.900 | 0.491 | 2.23 | 2.21 | 0.280 | 1.86 |
| Oct | 2.97 | 2.91 | 7.56 | 2.07 | 13.5 | 0.918 | 1.40 | 2.85 | 2.83 | 0.363 | 2.72 |
| Nov | 0.0168 | 0.0164 | 0.0534 | 0.0143 | 0.0197 | <0.01 | <0.01 | 0.0782 | 0.0780 | <0.01 | <0.01 |
| Dec | 0.163 | 0.160 | 0.332 | 0.123 | 0.894 | 0.0495 | 0.0180 | 0.215 | 0.214 | 0.0180 | <0.01 |
| **Annual** | 12.2 | 11.8 | 38.8 | 10.2 | 56.3 | 6.60 | 2.90 | 16.8 | 16.6 | 1.92 | 6.21 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97.9 | 97.9 | 97.9 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.9 | 99.9 | 99.9 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.8 | 99.8 | 99.8 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 83.6 | 100 |
| **Annual** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **99.8** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.55 Monthly results** **Site: Khanchanaburi** **Country: Thailand**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 9.04 | 8.80 | 12.6 | 7.10 | 22.4 | 4.00 | 2.86 | 5.65 | 5.56 | 1.23 | 3.57 | 5.45 | 0.654 | 42.7 |
| Apr | 10.3 | 10.1 | 16.1 | 6.74 | 28.8 | 3.71 | 3.79 | 6.43 | 6.35 | 1.67 | 4.94 | 5.31 | 0.772 | 119 |
| May | 2.69 | 2.50 | 5.26 | 3.19 | 8.10 | 3.22 | 0.807 | 5.75 | 5.68 | 1.22 | 1.18 | 5.93 | 0.373 | 138 |
| June | 1.89 | 1.43 | 3.20 | 9.46 | 3.60 | 7.73 | 0.633 | 2.25 | 2.08 | 1.25 | 1.50 | 5.82 | 0.243 | 166 |
| July | 3.36 | 3.03 | 2.81 | 7.53 | 28.2 | 5.44 | 2.55 | 4.14 | 4.03 | 1.70 | 0.986 | 6.01 | 0.488 | 248 |
| Aug | 3.17 | 2.68 | 3.86 | 9.44 | 16.5 | 8.17 | 0.826 | 5.30 | 5.12 | 1.54 | 1.61 | 5.79 | 0.387 | 142 |
| Sept | 0.429 | 0.340 | 0.905 | 1.52 | 1.06 | 1.48 | 0.333 | 1.07 | 1.04 | <0.3 | 0.963 | 6.02 | 0.154 | 63.4 |
| Oct | 1.22 | 1.08 | 3.20 | 2.15 | 4.44 | 2.32 | 0.495 | 1.01 | 0.964 | <0.3 | 1.23 | 5.91 | 0.350 | 260 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 3.33 | 3.05 | 4.95 | 5.92 | 14.1 | 4.70 | 1.43 | 3.63 | 3.53 | 1.15 | 1.72 | 5.76 | 0.421 | 1178 |
| Max. | 33.4 | 32.8 | 29.0 | 29.3 | 520 | 19.6 | 45.0 | 37.7 | 37.4 | 18.9 | 6.31 | 7.65 | 6.34 | |
| Min. | <0.3 | <0.3 | 0.645 | 1.13 | <0.8 | 0.870 | <0.3 | 0.499 | 0.443 | <0.3 | 0.0224 | 5.20 | 0.0200 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.386 | 0.376 | 0.540 | 0.303 | 0.956 | 0.171 | 0.122 | 0.241 | 0.238 | 0.0527 | 0.152 |
| Apr | 1.22 | 1.20 | 1.90 | 0.799 | 3.41 | 0.440 | 0.449 | 0.762 | 0.752 | 0.198 | 0.586 |
| May | 0.372 | 0.345 | 0.726 | 0.440 | 1.12 | 0.445 | 0.111 | 0.794 | 0.784 | 0.168 | 0.164 |
| June | 0.314 | 0.237 | 0.531 | 1.57 | 0.598 | 1.28 | 0.105 | 0.373 | 0.345 | 0.208 | 0.249 |
| July | 0.832 | 0.751 | 0.695 | 1.87 | 6.98 | 1.35 | 0.632 | 1.03 | 0.997 | 0.422 | 0.244 |
| Aug | 0.448 | 0.379 | 0.546 | 1.34 | 2.34 | 1.16 | 0.117 | 0.750 | 0.725 | 0.218 | 0.228 |
| Sept | 0.0272 | 0.0216 | 0.0573 | 0.0965 | 0.0671 | 0.0936 | 0.0211 | 0.0677 | 0.0657 | 0.0187 | 0.0611 |
| Oct | 0.318 | 0.281 | 0.830 | 0.558 | 1.15 | 0.604 | 0.128 | 0.263 | 0.250 | 0.0675 | 0.318 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 3.92 | 3.59 | 5.83 | 6.97 | 16.6 | 5.54 | 1.69 | 4.28 | 4.16 | 1.35 | 2.02 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 68.6 | 68.6 | 68.6 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 94.5 | 94.5 | 94.5 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **94.4** | **94.4** | **94.4** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.56 Monthly results** **Site: Mae Hia** **Country: Thailand**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 13.8 | 11.0 | 20.5 | 35.6 | 115 | 45.4 | 28.9 | 17.2 | 16.3 | 7.56 | 2.15 | 5.67 | 2.66 | 26.8 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | 29.7 | 28.6 | 42.6 | 19.2 | 84.8 | 18.1 | 9.06 | 29.1 | 28.7 | 7.34 | 2.86 | 5.54 | 2.50 | 42.9 |
| May | 8.60 | 8.25 | 11.0 | 5.38 | 25.5 | 5.71 | 1.33 | 8.26 | 8.14 | 1.14 | 3.89 | 5.41 | 0.857 | 430 |
| June | 3.14 | 2.93 | 9.14 | 5.03 | 17.5 | 3.43 | 0.962 | 7.28 | 7.21 | 0.908 | 3.38 | 5.47 | 0.585 | 110 |
| July | 2.80 | 2.50 | 6.10 | 6.08 | 29.2 | 6.82 | 4.60 | 7.82 | 7.68 | 1.57 | 1.12 | 5.95 | 0.665 | 122 |
| Aug | 2.48 | 2.32 | 6.39 | 3.06 | 12.3 | 2.71 | 0.838 | 5.54 | 5.48 | 0.340 | 1.32 | 5.88 | 0.365 | 195 |
| Sept | 2.84 | 2.39 | 7.67 | 3.66 | 29.2 | 7.42 | 2.49 | 10.3 | 10.1 | 0.526 | 1.63 | 5.79 | 0.424 | 130 |
| Oct | 4.43 | 4.29 | 7.87 | 3.44 | 16.5 | 2.43 | 2.57 | 6.46 | 6.41 | 1.41 | 3.24 | 5.49 | 0.510 | 179 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 6.21 | 5.85 | 10.1 | 5.73 | 26.2 | 6.14 | 2.71 | 8.57 | 8.43 | 1.37 | 2.77 | 5.56 | 0.736 | 1234 |
| Max. | 96.8 | 94.2 | 127 | 160 | 398 | 213 | 131 | 102 | 101 | 34.5 | 50.1 | 6.37 | 9.57 | |
| Min. | 0.476 | <0.3 | 1.52 | 1.39 | 4.49 | <0.3 | <0.3 | 0.377 | 0.315 | <0.3 | 0.427 | 4.30 | 0.170 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.369 | 0.296 | 0.551 | 0.955 | 3.09 | 1.22 | 0.777 | 0.462 | 0.436 | 0.203 | 0.0578 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 1.28 | 1.23 | 1.83 | 0.824 | 3.64 | 0.778 | 0.389 | 1.25 | 1.23 | 0.315 | 0.123 |
| May | 3.70 | 3.55 | 4.74 | 2.31 | 11.0 | 2.45 | 0.573 | 3.55 | 3.50 | 0.492 | 1.68 |
| June | 0.344 | 0.322 | 1.00 | 0.552 | 1.92 | 0.376 | 0.106 | 0.799 | 0.791 | 0.0996 | 0.371 |
| July | 0.342 | 0.305 | 0.744 | 0.741 | 3.56 | 0.831 | 0.561 | 0.954 | 0.936 | 0.191 | 0.136 |
| Aug | 0.483 | 0.451 | 1.24 | 0.595 | 2.39 | 0.527 | 0.163 | 1.08 | 1.07 | 0.0661 | 0.257 |
| Sept | 0.368 | 0.310 | 0.995 | 0.474 | 3.79 | 0.963 | 0.323 | 1.33 | 1.31 | 0.0683 | 0.211 |
| Oct | 0.793 | 0.767 | 1.41 | 0.615 | 2.94 | 0.434 | 0.459 | 1.15 | 1.15 | 0.253 | 0.579 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 7.67 | 7.23 | 12.5 | 7.07 | 32.3 | 7.58 | 3.35 | 10.6 | 10.4 | 1.69 | 3.42 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.1 | 99.1 | 99.1 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 99.3 | 98.1 | 98.1 | 98.1 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| July | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 99.1 | 97.9 | 97.9 | 97.9 | 100 |
| Aug | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.5 | 99.5 | 99.5 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.6** | **99.6** | **99.6** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.57 Monthly results** **Site: Sakaerat** **Country: Thailand**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 14.5 | 13.3 | 38.3 | 20.7 | 116 | 19.4 | 10.5 | 12.5 | 12.1 | 6.47 | 6.85 | 5.16 | 2.31 | 6.1 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | 6.87 | 6.68 | 14.7 | 5.07 | 34.0 | 3.14 | 0.933 | 5.43 | 5.36 | 1.93 | 3.32 | 5.48 | 0.703 | 292 |
| Apr | 11.8 | 11.4 | 29.2 | 9.52 | 42.6 | 6.41 | 1.86 | 13.2 | 13.0 | 3.29 | 4.03 | 5.39 | 1.13 | 58.4 |
| May | 5.30 | 5.24 | 11.4 | 3.69 | 16.3 | 0.940 | <0.3 | 3.12 | 3.10 | 1.38 | 6.18 | 5.21 | 0.564 | 279 |
| June | 4.36 | 4.21 | 9.58 | 5.65 | 15.3 | 2.46 | 0.347 | 5.47 | 5.42 | 3.31 | 3.27 | 5.49 | 0.458 | 224 |
| July | 4.07 | 3.79 | 7.33 | 5.07 | 14.7 | 4.67 | 1.22 | 7.82 | 7.71 | 2.67 | 3.04 | 5.52 | 0.531 | 111 |
| Aug | 2.71 | 2.62 | 6.46 | 3.36 | 14.9 | 1.45 | 0.736 | 4.43 | 4.40 | 3.49 | 3.85 | 5.41 | 0.435 | 158 |
| Sept | 3.42 | 3.39 | 7.85 | 2.24 | 24.2 | 0.533 | <0.3 | 2.89 | 2.88 | <0.3 | 3.10 | 5.51 | 0.465 | 402 |
| Oct | 5.32 | 5.20 | 8.14 | 2.73 | 27.5 | 1.95 | <0.3 | 3.03 | 2.99 | 1.09 | 4.10 | 5.39 | 0.600 | 162 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 4.93 | 4.80 | 10.6 | 4.08 | 23.3 | 2.08 | 0.512 | 4.60 | 4.55 | 1.76 | 3.84 | 5.42 | 0.566 | 1692 |
| Max. | 48.8 | 47.6 | 81.9 | 35.8 | 134 | 30.4 | 14.8 | 55.6 | 55.2 | 9.05 | 21.4 | 6.57 | 3.24 | |
| Min. | <0.3 | <0.3 | 1.29 | 0.564 | <0.8 | <0.3 | <0.3 | 0.499 | 0.499 | <0.3 | 0.269 | 4.67 | 0.240 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.0882 | 0.0811 | 0.234 | 0.126 | 0.707 | 0.118 | 0.0639 | 0.0763 | 0.0737 | 0.0395 | 0.0418 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 2.00 | 1.95 | 4.30 | 1.48 | 9.92 | 0.916 | 0.272 | 1.58 | 1.56 | 0.564 | 0.968 |
| Apr | 0.687 | 0.664 | 1.70 | 0.556 | 2.49 | 0.374 | 0.108 | 0.769 | 0.761 | 0.192 | 0.235 |
| May | 1.48 | 1.46 | 3.18 | 1.03 | 4.56 | 0.263 | 0.0123 | 0.872 | 0.866 | 0.384 | 1.73 |
| June | 0.979 | 0.945 | 2.15 | 1.27 | 3.44 | 0.553 | 0.0778 | 1.23 | 1.22 | 0.743 | 0.733 |
| July | 0.450 | 0.419 | 0.810 | 0.560 | 1.62 | 0.516 | 0.135 | 0.864 | 0.852 | 0.295 | 0.336 |
| Aug | 0.427 | 0.413 | 1.02 | 0.530 | 2.34 | 0.228 | 0.116 | 0.698 | 0.693 | 0.550 | 0.606 |
| Sept | 1.37 | 1.36 | 3.16 | 0.900 | 9.74 | 0.214 | 0.0661 | 1.16 | 1.16 | 0.0168 | 1.24 |
| Oct | 0.860 | 0.841 | 1.32 | 0.441 | 4.45 | 0.316 | <0.01 | 0.491 | 0.484 | 0.176 | 0.663 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 8.34 | 8.13 | 17.9 | 6.90 | 39.4 | 3.53 | 0.866 | 7.78 | 7.70 | 2.97 | 6.50 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.3 | 99.3 | 99.3 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 98.0 | 98.0 | 98.0 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99.9 | 99.9 | 99.9 | 100 |
| Oct | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.6 | 99.6 | 99.6 | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **98.5** | **98.5** | **98.5** | **98.5** | **98.5** | **98.5** | **98.5** | **98.5** | **98.5** | **98.5** | **98.2** | **98.2** | **98.2** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.58 Monthly results** **Site: Hanoi** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 215 | 215 | 180 | 44.6 | 428 | 12.6 | 11.5 | 149 | 148 | 15.9 | 0.162 | 6.79 | 10.6 | 82.2 |
| Feb | 129 | 127 | 164 | 51.2 | 219 | 33.1 | 12.6 | 137 | 136 | 13.5 | 0.178 | 6.75 | 7.52 | 5.4 |
| Mar | 106 | 103 | 83.3 | 40.2 | 183 | 42.9 | 10.7 | 65.6 | 64.6 | 17.2 | 0.262 | 6.58 | 5.46 | 87.2 |
| Apr | 69.3 | 67.2 | 102 | 39.2 | 102 | 34.1 | 17.7 | 86.7 | 85.9 | 17.1 | 0.155 | 6.81 | 4.57 | 51.2 |
| May | 40.9 | 39.8 | 58.7 | 15.5 | 82.4 | 17.0 | 5.90 | 44.7 | 44.3 | 8.28 | 0.130 | 6.89 | 2.74 | 109 |
| June | 16.8 | 16.0 | 23.7 | 8.49 | 50.6 | 13.8 | 2.34 | 24.7 | 24.4 | 2.84 | 0.130 | 6.89 | 1.49 | 267 |
| July | 13.9 | 13.4 | 15.3 | 8.06 | 13.8 | 8.41 | 5.15 | 17.5 | 17.4 | 6.15 | 0.341 | 6.47 | 0.926 | 623 |
| Aug | 14.1 | 13.6 | 15.3 | 7.92 | 22.2 | 8.97 | 6.98 | 28.5 | 28.3 | 8.83 | 0.104 | 6.99 | 1.37 | 285 |
| Sept | 17.0 | 16.2 | 17.4 | 14.1 | 12.0 | 14.0 | 8.49 | 20.8 | 20.5 | 5.20 | 0.423 | 6.37 | 1.17 | 289 |
| Oct | 17.2 | 16.7 | 12.8 | 12.0 | 9.48 | 8.56 | 5.57 | 19.5 | 19.4 | 4.02 | 0.649 | 6.19 | 0.983 | 213 |
| Nov | 128 | 124 | 82.2 | 50.6 | 70.3 | 71.5 | 52.5 | 86.5 | 85.0 | 29.2 | 0.270 | 6.57 | 5.32 | 4.7 |
| Dec | 177 | 169 | 167 | 49.6 | 149 | 140 | 27.3 | 164 | 161 | 15.0 | 0.131 | 6.88 | 8.32 | 55.2 |
| Annual | 34.6 | 33.6 | 34.8 | 14.6 | 52.6 | 16.4 | 7.09 | 35.3 | 35.0 | 7.27 | 0.292 | 6.53 | 2.08 | 2071 |
| Max. | 344 | 336 | 233 | 99.9 | 432 | 150 | 91.0 | 246 | 245 | 92.8 | 0.676 | 7.10 | 13.7 | |
| Min. | 10.8 | 10.3 | 10.7 | 4.51 | 8.90 | 5.22 | 1.76 | 13.2 | 12.9 | 2.01 | 0.0789 | 6.17 | 0.860 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 17.7 | 17.6 | 14.8 | 3.67 | 35.2 | 1.03 | 0.949 | 12.2 | 12.2 | 1.31 | 0.0134 |
| Feb | 0.696 | 0.685 | 0.883 | 0.276 | 1.18 | 0.179 | 0.0680 | 0.738 | 0.734 | 0.0729 | <0.01 |
| Mar | 9.25 | 9.02 | 7.26 | 3.50 | 16.0 | 3.74 | 0.931 | 5.72 | 5.64 | 1.50 | 0.0228 |
| Apr | 3.55 | 3.44 | 5.24 | 2.00 | 5.24 | 1.74 | 0.909 | 4.44 | 4.40 | 0.875 | <0.01 |
| May | 4.46 | 4.35 | 6.41 | 1.69 | 8.99 | 1.86 | 0.644 | 4.87 | 4.83 | 0.903 | 0.0142 |
| June | 4.49 | 4.27 | 6.33 | 2.27 | 13.5 | 3.70 | 0.624 | 6.60 | 6.52 | 0.758 | 0.0347 |
| July | 8.63 | 8.32 | 9.53 | 5.02 | 8.57 | 5.23 | 3.21 | 10.9 | 10.8 | 3.83 | 0.212 |
| Aug | 4.02 | 3.87 | 4.35 | 2.26 | 6.32 | 2.56 | 1.99 | 8.12 | 8.06 | 2.51 | 0.0295 |
| Sept | 4.92 | 4.67 | 5.04 | 4.09 | 3.47 | 4.05 | 2.46 | 6.00 | 5.91 | 1.50 | 0.122 |
| Oct | 3.66 | 3.55 | 2.71 | 2.56 | 2.02 | 1.82 | 1.18 | 4.15 | 4.11 | 0.854 | 0.138 |
| Nov | 0.601 | 0.581 | 0.386 | 0.238 | 0.330 | 0.336 | 0.247 | 0.407 | 0.399 | 0.137 | <0.01 |
| Dec | 9.80 | 9.33 | 9.22 | 2.74 | 8.25 | 7.74 | 1.51 | 9.05 | 8.88 | 0.830 | <0.01 |
| **Annual** | 71.7 | 69.6 | 72.1 | 30.3 | 109 | 33.9 | 14.7 | 73.2 | 72.5 | 15.1 | 0.604 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 99.6 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 83.0 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **99.9** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.59 Monthly results** **Site: Hoa Binh** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 5.32 | 5.12 | 16.1 | 3.33 | 9.60 | 3.39 | 4.71 | 18.9 | 18.8 | 0.699 | 0.302 | 6.52 | 0.690 | 63.4 |
| Feb | 44.0 | 43.2 | 87.0 | 19.5 | 85.3 | 12.7 | 1.43 | 56.9 | 56.6 | 9.05 | 0.376 | 6.43 | 3.12 | 5.1 |
| Mar | 57.4 | 56.5 | 87.0 | 19.5 | 70.9 | 15.1 | 7.84 | 69.1 | 68.8 | 9.31 | 0.495 | 6.30 | 3.44 | 25.4 |
| Apr | 27.1 | 26.6 | 49.9 | 13.6 | 29.5 | 7.57 | 2.14 | 55.7 | 55.5 | 4.32 | 3.04 | 5.52 | 2.23 | 101 |
| May | 20.1 | 19.7 | 43.8 | 5.63 | 20.5 | 5.92 | 0.826 | 32.6 | 32.5 | 2.81 | 2.24 | 5.65 | 1.41 | 136 |
| June | 12.0 | 11.8 | 30.8 | 5.76 | 18.9 | 4.09 | 1.27 | 25.7 | 25.6 | 2.54 | 0.471 | 6.33 | 1.01 | 102 |
| July | 20.5 | 20.3 | 21.8 | 16.8 | 18.4 | 3.79 | 1.76 | 20.4 | 20.3 | 2.74 | 12.1 | 4.92 | 1.42 | 344 |
| Aug | 15.8 | 15.7 | 13.6 | 14.9 | 17.1 | 2.08 | 3.03 | 20.3 | 20.2 | 1.84 | 1.36 | 5.87 | 0.914 | 394 |
| Sept | 19.5 | 19.1 | 13.8 | 18.4 | 18.2 | 6.41 | 3.17 | 20.1 | 19.9 | 1.34 | 4.37 | 5.36 | 1.13 | 186 |
| Oct | 17.1 | 16.9 | 13.6 | 16.6 | 16.2 | 2.56 | 3.73 | 16.6 | 16.5 | 0.470 | 8.76 | 5.06 | 1.16 | 491 |
| Nov | 38.8 | 37.5 | 57.3 | 21.8 | 39.9 | 21.5 | 8.54 | 22.6 | 22.2 | 10.0 | 23.1 | 4.64 | 2.85 | 11.9 |
| Dec | 38.9 | 38.8 | 42.5 | 15.7 | 67.2 | 2.31 | 5.04 | 22.4 | 22.3 | 1.85 | 17.3 | 4.76 | 2.38 | 35.9 |
| Annual | 18.9 | 18.7 | 22.2 | 14.6 | 20.0 | 3.99 | 2.88 | 23.1 | 23.1 | 1.97 | 6.02 | 5.22 | 1.27 | 1895 |
| Max. | 180 | 179 | 230 | 60.8 | 289 | 28.4 | 18.1 | 174 | 173 | 18.8 | 36.4 | 7.52 | 10.2 | |
| Min. | 5.32 | 5.12 | 11.9 | 3.33 | 9.60 | 0.739 | 0.358 | 15.3 | 15.2 | 0.329 | 0.0303 | 4.44 | 0.690 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.337 | 0.324 | 1.02 | 0.211 | 0.609 | 0.215 | 0.298 | 1.20 | 1.19 | 0.0443 | 0.0191 |
| Feb | 0.224 | 0.220 | 0.444 | 0.0997 | 0.435 | 0.0650 | <0.01 | 0.290 | 0.289 | 0.0461 | <0.01 |
| Mar | 1.46 | 1.44 | 2.21 | 0.496 | 1.80 | 0.385 | 0.199 | 1.76 | 1.75 | 0.237 | 0.0126 |
| Apr | 2.74 | 2.69 | 5.05 | 1.37 | 2.98 | 0.766 | 0.216 | 5.64 | 5.62 | 0.437 | 0.308 |
| May | 2.72 | 2.67 | 5.93 | 0.763 | 2.77 | 0.802 | 0.112 | 4.42 | 4.40 | 0.380 | 0.303 |
| June | 1.22 | 1.20 | 3.13 | 0.586 | 1.92 | 0.417 | 0.129 | 2.61 | 2.60 | 0.259 | 0.0479 |
| July | 7.07 | 6.99 | 7.49 | 5.77 | 6.34 | 1.30 | 0.605 | 7.02 | 6.99 | 0.941 | 4.17 |
| Aug | 6.23 | 6.18 | 5.35 | 5.89 | 6.72 | 0.820 | 1.19 | 7.98 | 7.96 | 0.725 | 0.535 |
| Sept | 3.61 | 3.54 | 2.56 | 3.41 | 3.37 | 1.19 | 0.587 | 3.72 | 3.70 | 0.248 | 0.810 |
| Oct | 8.40 | 8.32 | 6.69 | 8.15 | 7.97 | 1.26 | 1.83 | 8.13 | 8.10 | 0.231 | 4.30 |
| Nov | 0.462 | 0.447 | 0.682 | 0.259 | 0.474 | 0.256 | 0.102 | 0.269 | 0.264 | 0.119 | 0.275 |
| Dec | 1.40 | 1.39 | 1.53 | 0.564 | 2.41 | 0.0828 | 0.181 | 0.803 | 0.801 | 0.0664 | 0.622 |
| **Annual** | 35.9 | 35.4 | 42.1 | 27.6 | 37.8 | 7.56 | 5.46 | 43.8 | 43.7 | 3.73 | 11.4 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.60 Monthly results** **Site: Cuc Phuong** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 32.5 | 29.1 | 25.8 | 92.8 | 12.9 | 55.1 | 5.35 | 46.7 | 45.5 | 8.96 | 12.6 | 4.90 | 2.86 | 114 |
| Feb | 76.1 | 70.2 | 106 | 89.9 | 268 | 97.9 | 15.4 | 99.9 | 97.7 | 23.3 | 0.0794 | 7.10 | 8.00 | 13.0 |
| Mar | 40.1 | 38.6 | 48.1 | 62.6 | 2.89 | 24.7 | 9.27 | 117 | 116 | 19.7 | 0.651 | 6.19 | 3.86 | 81.9 |
| Apr | 24.3 | 23.0 | 25.9 | 36.3 | 22.4 | 21.9 | 6.44 | 37.9 | 37.4 | 13.7 | 2.70 | 5.57 | 1.96 | 56.4 |
| May | 34.6 | 33.5 | 20.6 | 31.7 | 22.6 | 17.8 | 10.3 | 46.7 | 46.3 | 16.6 | 1.72 | 5.76 | 2.28 | 92.1 |
| June | 9.55 | 9.07 | 11.4 | 29.7 | 2.72 | 7.91 | 2.98 | 24.5 | 24.3 | 9.39 | 1.21 | 5.92 | 0.972 | 122 |
| July | 13.3 | 12.3 | 15.2 | 27.8 | 18.6 | 17.5 | 1.20 | 18.9 | 18.5 | 7.51 | 3.16 | 5.50 | 1.27 | 501 |
| Aug | 11.9 | 11.2 | 9.31 | 22.7 | 3.97 | 11.6 | 2.33 | 20.5 | 20.3 | 6.81 | 2.27 | 5.64 | 0.980 | 176 |
| Sept | 12.5 | 11.6 | 9.43 | 33.9 | <0.8 | 14.5 | 1.93 | 12.5 | 12.2 | 7.27 | 13.7 | 4.86 | 1.33 | 413 |
| Oct | 11.2 | 10.6 | 4.69 | 25.7 | 1.25 | 8.84 | 2.87 | 11.5 | 11.3 | 5.67 | 14.2 | 4.85 | 1.09 | 585 |
| Nov | 21.0 | 17.7 | 17.8 | 48.1 | 1.11 | 54.4 | 7.72 | 37.7 | 36.5 | 14.3 | 1.66 | 5.78 | 1.90 | 38.0 |
| Dec | 42.0 | 37.6 | 63.5 | 159 | 25.7 | 72.6 | 19.1 | 61.3 | 59.7 | 12.5 | 20.0 | 4.70 | 5.20 | 44.4 |
| Annual | 16.2 | 15.1 | 14.0 | 35.6 | 8.72 | 17.6 | 3.41 | 24.0 | 23.7 | 8.30 | 8.43 | 5.07 | 1.52 | 2236 |
| Max. | 119 | 116 | 144 | 175 | 268 | 97.9 | 19.1 | 222 | 222 | 64.1 | 200 | 7.10 | 13.0 | |
| Min. | 6.37 | 5.75 | 3.24 | 17.9 | <0.8 | 4.70 | 0.384 | 7.76 | 7.60 | 3.99 | 0.0794 | 3.70 | 0.730 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 3.69 | 3.31 | 2.93 | 10.5 | 1.47 | 6.26 | 0.607 | 5.31 | 5.17 | 1.02 | 1.43 |
| Feb | 0.989 | 0.913 | 1.37 | 1.17 | 3.49 | 1.27 | 0.200 | 1.30 | 1.27 | 0.303 | <0.01 |
| Mar | 3.28 | 3.16 | 3.94 | 5.13 | 0.237 | 2.02 | 0.759 | 9.57 | 9.53 | 1.61 | 0.0534 |
| Apr | 1.37 | 1.30 | 1.46 | 2.05 | 1.26 | 1.24 | 0.363 | 2.14 | 2.11 | 0.770 | 0.152 |
| May | 3.18 | 3.09 | 1.89 | 2.92 | 2.08 | 1.64 | 0.951 | 4.30 | 4.27 | 1.53 | 0.158 |
| June | 1.16 | 1.11 | 1.39 | 3.62 | 0.332 | 0.965 | 0.363 | 2.99 | 2.97 | 1.15 | 0.147 |
| July | 6.68 | 6.15 | 7.62 | 13.9 | 9.33 | 8.77 | 0.600 | 9.47 | 9.28 | 3.76 | 1.58 |
| Aug | 2.09 | 1.97 | 1.64 | 3.99 | 0.698 | 2.03 | 0.410 | 3.61 | 3.56 | 1.20 | 0.399 |
| Sept | 5.15 | 4.79 | 3.89 | 14.0 | 0.277 | 5.97 | 0.795 | 5.16 | 5.03 | 3.00 | 5.65 |
| Oct | 6.52 | 6.21 | 2.74 | 15.0 | 0.731 | 5.17 | 1.68 | 6.71 | 6.60 | 3.32 | 8.31 |
| Nov | 0.796 | 0.672 | 0.677 | 1.83 | 0.0421 | 2.07 | 0.294 | 1.43 | 1.39 | 0.542 | 0.0631 |
| Dec | 1.86 | 1.67 | 2.82 | 7.07 | 1.14 | 3.23 | 0.847 | 2.72 | 2.65 | 0.553 | 0.886 |
| **Annual** | 36.1 | 33.7 | 31.4 | 79.6 | 19.5 | 39.3 | 7.63 | 53.7 | 52.9 | 18.6 | 18.8 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 96.0 | 100 |
| Feb | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 57.7 | 100 |
| Mar | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 100 |
| Apr | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 92.7 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 82.4 | 100 |
| Dec | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 82.7 | 100 |
| **Annual** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **98.7** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.61 Monthly results** **Site: Da Nang** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 23.8 | 20.8 | 2.36 | 36.2 | 4.76 | 48.7 | 11.1 | 12.3 | 11.2 | 5.67 | 1.54 | 5.81 | 1.23 | 94.8 |
| Feb | 27.8 | 23.7 | 5.33 | 95.8 | 116 | 67.5 | 54.4 | 16.4 | 14.9 | 10.9 | 0.845 | 6.07 | 3.91 | 60.3 |
| Mar | 58.7 | 28.2 | 1.60 | 286 | 49.5 | 506 | 14.0 | 146 | 135 | 29.7 | 0.342 | 6.47 | 9.34 | 31.5 |
| Apr | 31.0 | 26.9 | 1.59 | 81.1 | 5.29 | 67.7 | 8.80 | 117 | 115 | 10.7 | 0.790 | 6.10 | 3.83 | 19.7 |
| May | 4.90 | 4.23 | 1.57 | 21.8 | 1.96 | 22.0 | 2.27 | 49.6 | 49.1 | 4.85 | 1.36 | 5.87 | 1.54 | 76.0 |
| June | 10.7 | 8.24 | 1.55 | 38.2 | 4.20 | 40.3 | 4.73 | 71.8 | 71.0 | 9.29 | 0.447 | 6.35 | 2.32 | 33.9 |
| July | 22.3 | 18.8 | 6.53 | 64.5 | 23.0 | 57.8 | 21.1 | 40.1 | 38.8 | 9.61 | 1.58 | 5.80 | 2.38 | 249 |
| Aug | 6.10 | 4.44 | 1.56 | 21.1 | 10.2 | 27.5 | 8.37 | 37.9 | 37.3 | 6.21 | 1.16 | 5.93 | 1.54 | 179 |
| Sept | 8.00 | 6.67 | 1.59 | 32.0 | 36.4 | 22.1 | 10.5 | 40.8 | 40.4 | 6.44 | 1.08 | 5.97 | 1.97 | 209 |
| Oct | 16.5 | 13.5 | 6.48 | 61.2 | 6.16 | 50.0 | 4.43 | 31.4 | 30.3 | 22.8 | 1.36 | 5.87 | 2.03 | 275 |
| Nov | 12.3 | 6.32 | 3.40 | 97.9 | 9.82 | 99.1 | 5.05 | 23.6 | 21.4 | 9.78 | 1.58 | 5.80 | 2.28 | 887 |
| Dec | 47.0 | 34.6 | 32.7 | 219 | 93.0 | 206 | 17.6 | 47.1 | 42.6 | 19.8 | 0.806 | 6.09 | 5.88 | 129 |
| Annual | 16.5 | 11.6 | 5.39 | 80.9 | 20.9 | 81.0 | 9.85 | 33.9 | 32.1 | 11.3 | 1.36 | 5.87 | 2.47 | 2244 |
| Max. | 202 | 167 | 209 | 667 | 660 | 924 | 93.9 | 264 | 261 | 161 | 2.09 | 6.98 | 21.4 | |
| Min. | <0.3 | <0.3 | 1.39 | 10.9 | <0.8 | 10.2 | 1.48 | 6.59 | 5.76 | 2.84 | 0.105 | 5.68 | 0.410 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 2.25 | 1.98 | 0.224 | 3.43 | 0.451 | 4.62 | 1.05 | 1.16 | 1.06 | 0.538 | 0.146 |
| Feb | 1.68 | 1.43 | 0.322 | 5.77 | 6.99 | 4.07 | 3.28 | 0.987 | 0.899 | 0.657 | 0.0509 |
| Mar | 1.85 | 0.890 | 0.0505 | 9.01 | 1.56 | 15.9 | 0.442 | 4.60 | 4.26 | 0.935 | 0.0108 |
| Apr | 0.610 | 0.530 | 0.0313 | 1.60 | 0.104 | 1.33 | 0.173 | 2.30 | 2.27 | 0.210 | 0.0156 |
| May | 0.372 | 0.321 | 0.119 | 1.66 | 0.149 | 1.67 | 0.172 | 3.77 | 3.73 | 0.368 | 0.103 |
| June | 0.362 | 0.279 | 0.0525 | 1.30 | 0.143 | 1.37 | 0.160 | 2.44 | 2.41 | 0.315 | 0.0151 |
| July | 5.54 | 4.67 | 1.62 | 16.0 | 5.71 | 14.4 | 5.25 | 9.96 | 9.65 | 2.39 | 0.392 |
| Aug | 1.09 | 0.794 | 0.279 | 3.77 | 1.82 | 4.91 | 1.50 | 6.77 | 6.66 | 1.11 | 0.208 |
| Sept | 1.67 | 1.40 | 0.332 | 6.70 | 7.62 | 4.63 | 2.21 | 8.55 | 8.45 | 1.35 | 0.226 |
| Oct | 4.55 | 3.72 | 1.78 | 16.8 | 1.69 | 13.7 | 1.22 | 8.64 | 8.35 | 6.27 | 0.375 |
| Nov | 10.9 | 5.60 | 3.01 | 86.8 | 8.71 | 87.9 | 4.48 | 20.9 | 19.0 | 8.67 | 1.40 |
| Dec | 6.07 | 4.47 | 4.22 | 28.3 | 12.0 | 26.6 | 2.27 | 6.08 | 5.50 | 2.56 | 0.104 |
| **Annual** | 37.0 | 26.1 | 12.1 | 182 | 46.8 | 182 | 22.1 | 76.0 | 72.1 | 25.4 | 3.06 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 100 |
| Feb | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 95.2 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 100 |
| June | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 83.5 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 98.9 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **99.4** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.62 Monthly results** **Site: Can Tho** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | 29.7 | 29.0 | 4.51 | 36.7 | 20.2 | 12.2 | 5.56 | 24.6 | 24.3 | 10.1 | 2.69 | 5.57 | 1.30 | 124 |
| Mar | 21.8 | 21.1 | 4.92 | 32.7 | 19.7 | 12.6 | 6.14 | 16.9 | 16.6 | 10.7 | 0.949 | 6.02 | 1.16 | 37.0 |
| Apr | 23.8 | 23.1 | 2.71 | 32.5 | 22.6 | 12.1 | 6.25 | 13.5 | 13.3 | 8.11 | 0.643 | 6.19 | 1.39 | 123 |
| May | 15.3 | 14.6 | 2.84 | 27.3 | 21.2 | 10.6 | 6.54 | 13.1 | 12.9 | 5.23 | 0.564 | 6.25 | 1.04 | 380 |
| June | 15.8 | 15.2 | 3.27 | 27.5 | 23.6 | 10.0 | 6.20 | 8.19 | 7.97 | 4.73 | 1.43 | 5.84 | 0.982 | 161 |
| July | 14.4 | 13.7 | 3.56 | 22.7 | 16.6 | 11.1 | 5.86 | 6.63 | 6.39 | 4.59 | 1.28 | 5.89 | 0.801 | 218 |
| Aug | 16.0 | 15.4 | 3.53 | 32.0 | 21.9 | 8.81 | 5.79 | 9.07 | 8.88 | 5.16 | 0.871 | 6.06 | 1.13 | 186 |
| Sept | 10.4 | 10.0 | 3.29 | 28.2 | 21.7 | 5.03 | 2.84 | 7.75 | 7.64 | 2.78 | 0.911 | 6.04 | 0.960 | 178 |
| Oct | 13.7 | 13.2 | 4.07 | 30.4 | 24.5 | 7.62 | 3.88 | 7.15 | 6.99 | 3.85 | 1.10 | 5.96 | 1.07 | 340 |
| Nov | 14.7 | 14.1 | 6.51 | 30.5 | 18.9 | 9.88 | 6.04 | 9.46 | 9.24 | 6.45 | 1.21 | 5.92 | 1.08 | 115 |
| Dec | 18.3 | 17.6 | 10.6 | 28.7 | 25.1 | 11.6 | 7.20 | 10.0 | 9.75 | 6.80 | 0.977 | 6.01 | 1.02 | 44.0 |
| Annual | 16.2 | 15.6 | 3.83 | 29.2 | 21.5 | 9.61 | 5.44 | 10.6 | 10.3 | 5.35 | 1.08 | 5.97 | 1.06 | 1907 |
| Max. | 30.2 | 29.5 | 10.6 | 38.2 | 27.8 | 15.6 | 9.10 | 25.0 | 24.7 | 12.4 | 3.55 | 6.69 | 1.45 | |
| Min. | 9.80 | 9.49 | 1.30 | 16.6 | 12.7 | 4.30 | 2.00 | 3.90 | 3.67 | 2.30 | 0.204 | 5.45 | 0.620 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 3.69 | 3.60 | 0.559 | 4.56 | 2.51 | 1.52 | 0.690 | 3.05 | 3.01 | 1.25 | 0.333 |
| Mar | 0.807 | 0.779 | 0.182 | 1.21 | 0.728 | 0.466 | 0.227 | 0.625 | 0.615 | 0.397 | 0.0351 |
| Apr | 2.93 | 2.84 | 0.333 | 3.99 | 2.77 | 1.49 | 0.768 | 1.67 | 1.63 | 0.998 | 0.0791 |
| May | 5.80 | 5.56 | 1.08 | 10.4 | 8.05 | 4.04 | 2.48 | 4.99 | 4.91 | 1.99 | 0.214 |
| June | 2.55 | 2.45 | 0.527 | 4.42 | 3.80 | 1.61 | 0.999 | 1.32 | 1.28 | 0.761 | 0.230 |
| July | 3.14 | 2.99 | 0.776 | 4.94 | 3.63 | 2.42 | 1.28 | 1.44 | 1.39 | 1.00 | 0.279 |
| Aug | 2.97 | 2.87 | 0.656 | 5.95 | 4.07 | 1.64 | 1.08 | 1.69 | 1.65 | 0.960 | 0.162 |
| Sept | 1.84 | 1.79 | 0.585 | 5.02 | 3.87 | 0.895 | 0.506 | 1.38 | 1.36 | 0.495 | 0.162 |
| Oct | 4.65 | 4.49 | 1.38 | 10.3 | 8.32 | 2.59 | 1.32 | 2.43 | 2.38 | 1.31 | 0.375 |
| Nov | 1.69 | 1.62 | 0.749 | 3.51 | 2.18 | 1.14 | 0.695 | 1.09 | 1.06 | 0.742 | 0.140 |
| Dec | 0.804 | 0.774 | 0.466 | 1.26 | 1.10 | 0.510 | 0.317 | 0.440 | 0.429 | 0.299 | 0.0430 |
| **Annual** | 30.9 | 29.8 | 7.30 | 55.6 | 41.0 | 18.3 | 10.4 | 20.1 | 19.7 | 10.2 | 2.05 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.63 Monthly results** **Site: Ho Chi Minh** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 33.5 | 32.5 | 17.2 | 70.0 | 60.5 | 16.3 | 8.30 | 19.4 | 19.0 | 12.6 | 3.16 | 5.50 | 2.50 | 124 |
| Feb | 38.1 | 37.0 | 15.7 | 65.5 | 55.4 | 18.2 | 9.00 | 21.5 | 21.1 | 10.4 | 2.75 | 5.56 | 2.44 | 224 |
| Mar | 32.2 | 31.1 | 16.5 | 61.3 | 38.8 | 17.3 | 10.9 | 17.8 | 17.4 | 9.43 | 2.72 | 5.57 | 2.23 | 68.9 |
| Apr | 23.9 | 22.8 | 6.15 | 46.5 | 39.9 | 17.5 | 10.2 | 13.7 | 13.4 | 7.32 | 1.65 | 5.78 | 1.65 | 76.2 |
| May | 22.6 | 21.5 | 5.60 | 36.7 | 43.1 | 17.4 | 9.51 | 13.9 | 13.5 | 9.45 | 0.363 | 6.44 | 1.32 | 264 |
| June | 21.0 | 19.8 | 4.00 | 46.5 | 47.4 | 19.3 | 12.1 | 11.9 | 11.5 | 7.98 | 0.370 | 6.43 | 1.65 | 421 |
| July | 18.6 | 17.6 | 9.03 | 44.6 | 42.4 | 17.2 | 10.5 | 11.5 | 11.2 | 8.40 | 0.353 | 6.45 | 1.58 | 258 |
| Aug | 21.2 | 20.0 | 13.5 | 53.8 | 38.8 | 19.2 | 12.7 | 14.2 | 13.8 | 9.91 | 0.603 | 6.22 | 1.90 | 257 |
| Sept | 20.9 | 19.8 | 12.0 | 45.7 | 32.5 | 18.3 | 11.0 | 13.0 | 12.6 | 7.90 | 0.408 | 6.39 | 1.62 | 721 |
| Oct | 24.7 | 23.8 | 11.3 | 43.4 | 32.2 | 15.8 | 11.4 | 15.9 | 15.6 | 9.11 | 0.705 | 6.15 | 1.45 | 565 |
| Nov | 20.4 | 19.5 | 12.7 | 44.0 | 26.5 | 14.9 | 6.60 | 17.3 | 16.9 | 10.3 | 0.973 | 6.01 | 1.53 | 393 |
| Dec | 23.4 | 22.5 | 14.0 | 42.0 | 34.1 | 15.3 | 7.37 | 14.9 | 14.6 | 6.95 | 0.990 | 6.00 | 1.48 | 72.4 |
| Annual | 23.4 | 22.3 | 10.8 | 47.5 | 38.4 | 17.4 | 10.4 | 14.8 | 14.4 | 9.01 | 0.861 | 6.06 | 1.68 | 3444 |
| Max. | 42.1 | 40.8 | 20.4 | 80.3 | 66.7 | 26.5 | 18.7 | 21.5 | 21.1 | 15.2 | 3.16 | 6.66 | 2.58 | |
| Min. | 14.6 | 13.4 | 1.61 | 24.3 | 19.2 | 10.2 | 5.10 | 7.60 | 7.38 | 5.20 | 0.219 | 5.50 | 1.02 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 4.16 | 4.04 | 2.13 | 8.69 | 7.51 | 2.02 | 1.03 | 2.41 | 2.36 | 1.56 | 0.392 |
| Feb | 8.54 | 8.29 | 3.52 | 14.7 | 12.4 | 4.08 | 2.02 | 4.82 | 4.73 | 2.33 | 0.617 |
| Mar | 2.22 | 2.15 | 1.14 | 4.22 | 2.67 | 1.19 | 0.749 | 1.23 | 1.20 | 0.650 | 0.187 |
| Apr | 1.82 | 1.74 | 0.469 | 3.54 | 3.04 | 1.33 | 0.779 | 1.05 | 1.02 | 0.558 | 0.126 |
| May | 5.95 | 5.67 | 1.48 | 9.68 | 11.4 | 4.60 | 2.51 | 3.66 | 3.56 | 2.49 | 0.0956 |
| June | 8.83 | 8.34 | 1.68 | 19.6 | 19.9 | 8.13 | 5.10 | 5.01 | 4.83 | 3.36 | 0.156 |
| July | 4.81 | 4.54 | 2.33 | 11.5 | 11.0 | 4.45 | 2.73 | 2.98 | 2.88 | 2.17 | 0.0911 |
| Aug | 5.45 | 5.15 | 3.46 | 13.8 | 9.96 | 4.92 | 3.27 | 3.64 | 3.53 | 2.55 | 0.155 |
| Sept | 15.1 | 14.3 | 8.64 | 32.9 | 23.4 | 13.2 | 7.95 | 9.35 | 9.06 | 5.69 | 0.294 |
| Oct | 14.0 | 13.5 | 6.41 | 24.5 | 18.2 | 8.91 | 6.43 | 9.01 | 8.82 | 5.15 | 0.399 |
| Nov | 8.01 | 7.66 | 4.98 | 17.3 | 10.4 | 5.85 | 2.59 | 6.78 | 6.66 | 4.03 | 0.382 |
| Dec | 1.69 | 1.63 | 1.01 | 3.04 | 2.47 | 1.11 | 0.533 | 1.08 | 1.06 | 0.503 | 0.0717 |
| **Annual** | 80.5 | 76.9 | 37.2 | 164 | 132 | 59.8 | 35.7 | 51.0 | 49.7 | 31.0 | 2.97 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.64 Monthly results** **Site: Yen Bai** **Country: Vietnam**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2017 | $SO_4^{2-}$ µmol $L^{-1}$ | nss-$SO_4^{2-}$ µmol $L^{-1}$ | $NO_3^-$ µmol $L^{-1}$ | $Cl^-$ µmol $L^{-1}$ | $NH_4^+$ µmol $L^{-1}$ | $Na^+$ µmol $L^{-1}$ | $K^+$ µmol $L^{-1}$ | $Ca^{2+}$ µmol $L^{-1}$ | nss-$Ca^{2+}$ µmol $L^{-1}$ | $Mg^{2+}$ µmol $L^{-1}$ | $H^+$ µmol $L^{-1}$ | pH | EC mS $m^{-1}$ | Precip. mm $month^{-1}$ or mm $year^{-1}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 19.3 | 19.2 | 16.0 | 14.2 | 24.0 | 2.68 | 1.11 | 17.7 | 17.7 | 0.825 | 6.19 | 5.21 | 1.21 | 137 |
| Feb | 20.5 | 19.9 | 31.4 | 21.3 | 45.6 | 9.96 | 4.91 | 13.1 | 12.9 | 2.01 | 7.19 | 5.14 | 1.62 | 13.7 |
| Mar | 75.0 | 74.2 | 96.6 | 26.2 | 176 | 12.6 | 7.23 | 48.1 | 47.9 | 4.78 | 3.11 | 5.51 | 4.31 | 116 |
| Apr | 27.9 | 27.6 | 32.7 | 14.1 | 54.0 | 5.58 | 2.72 | 22.0 | 21.9 | 2.61 | 7.68 | 5.11 | 1.86 | 80.2 |
| May | 17.6 | 17.3 | 18.5 | 8.14 | 26.4 | 6.09 | 3.31 | 10.5 | 10.3 | 1.32 | 8.46 | 5.07 | 1.15 | 143 |
| June | 32.8 | 32.2 | 38.1 | 15.5 | 50.4 | 8.84 | 6.42 | 18.0 | 17.8 | 6.59 | 14.3 | 4.85 | 2.10 | 240 |
| July | 19.6 | 19.4 | 17.3 | 15.3 | 19.3 | 2.10 | 6.06 | 23.1 | 23.1 | 1.16 | 1.57 | 5.80 | 1.05 | 557 |
| Aug | 25.8 | 25.7 | 18.4 | 20.8 | 22.8 | 1.57 | 6.49 | 25.4 | 25.3 | 0.670 | 6.54 | 5.18 | 1.45 | 494 |
| Sept | 23.2 | 23.1 | 19.4 | 21.0 | 22.6 | 1.64 | 7.27 | 24.9 | 24.9 | 0.455 | 7.48 | 5.13 | 1.49 | 287 |
| Oct | 25.7 | 25.5 | 17.7 | 16.6 | 23.4 | 3.42 | 8.69 | 21.6 | 21.6 | 0.585 | 5.13 | 5.29 | 1.40 | 257 |
| Nov | 28.0 | 27.8 | 32.2 | 10.2 | 28.0 | 3.86 | 10.1 | 21.4 | 21.4 | 1.94 | 10.5 | 4.98 | 1.61 | 16.4 |
| Dec | 24.2 | 24.1 | 18.6 | 15.0 | 19.2 | 0.980 | 9.03 | 20.3 | 20.3 | 0.467 | 18.4 | 4.74 | 1.67 | 56.3 |
| Annual | 26.2 | 26.0 | 24.5 | 17.3 | 33.6 | 3.68 | 6.20 | 23.1 | 23.0 | 1.66 | 6.40 | 5.19 | 1.55 | 2397 |
| Max. | 101 | 99.4 | 128 | 65.3 | 262 | 24.9 | 14.7 | 88.6 | 88.3 | 19.4 | 35.6 | 6.33 | 6.02 | |
| Min. | 7.80 | 7.58 | 5.06 | 3.22 | 12.1 | 0.609 | <0.3 | 4.12 | 4.04 | <0.3 | 0.470 | 4.45 | 0.550 | |

**Wet deposition amount**

| 2017 | $SO_4^{2-}$ mmol $m^{-2}$ | nss-$SO_4^{2-}$ mmol $m^{-2}$ | $NO_3^-$ mmol $m^{-2}$ | $Cl^-$ mmol $m^{-2}$ | $NH_4^+$ mmol $m^{-2}$ | $Na^+$ mmol $m^{-2}$ | $K^+$ mmol $m^{-2}$ | $Ca^{2+}$ mmol $m^{-2}$ | nss-$Ca^{2+}$ mmol $m^{-2}$ | $Mg^{2+}$ mmol $m^{-2}$ | $H^+$ mmol $m^{-2}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 2.65 | 2.63 | 2.19 | 1.95 | 3.29 | 0.367 | 0.152 | 2.43 | 2.42 | 0.113 | 0.848 |
| Feb | 0.281 | 0.273 | 0.430 | 0.292 | 0.625 | 0.136 | 0.0673 | 0.179 | 0.177 | 0.0276 | 0.0986 |
| Mar | 8.68 | 8.59 | 11.2 | 3.03 | 20.4 | 1.46 | 0.837 | 5.58 | 5.54 | 0.554 | 0.360 |
| Apr | 2.24 | 2.21 | 2.62 | 1.13 | 4.33 | 0.448 | 0.218 | 1.77 | 1.76 | 0.209 | 0.616 |
| May | 2.52 | 2.47 | 2.65 | 1.16 | 3.78 | 0.870 | 0.473 | 1.50 | 1.48 | 0.189 | 1.21 |
| June | 7.85 | 7.73 | 9.14 | 3.70 | 12.1 | 2.12 | 1.54 | 4.32 | 4.27 | 1.58 | 3.42 |
| July | 10.9 | 10.8 | 9.65 | 8.52 | 10.8 | 1.17 | 3.38 | 12.9 | 12.8 | 0.644 | 0.875 |
| Aug | 12.7 | 12.7 | 9.10 | 10.3 | 11.3 | 0.774 | 3.21 | 12.5 | 12.5 | 0.331 | 3.23 |
| Sept | 6.64 | 6.61 | 5.56 | 6.02 | 6.47 | 0.471 | 2.09 | 7.15 | 7.14 | 0.131 | 2.15 |
| Oct | 6.59 | 6.54 | 4.53 | 4.27 | 6.01 | 0.877 | 2.23 | 5.56 | 5.54 | 0.150 | 1.32 |
| Nov | 0.460 | 0.456 | 0.527 | 0.168 | 0.460 | 0.0632 | 0.166 | 0.352 | 0.350 | 0.0318 | 0.172 |
| Dec | 1.36 | 1.36 | 1.05 | 0.843 | 1.08 | 0.0552 | 0.508 | 1.14 | 1.14 | 0.0263 | 1.03 |
| **Annual** | 62.9 | 62.4 | 58.6 | 41.4 | 80.5 | 8.81 | 14.9 | 55.4 | 55.2 | 3.99 | 15.3 |

**Data completeness**

| 2017 | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP | Precip. %PCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mar | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Apr | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Nov | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

Terms and abbreviations are given in Table 3.5.

**Table 3.65 Annual precipitation amount and precipitation amount-weighted average concentration in 2017**

| Country | Name of sites | Precip. | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mm $y^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | | mS $m^{-1}$ |
| Cambodia | Phnom Penh | 1379 | 11.3 | 11.0 | 10.9 | 6.09 | 22.2 | 4.45 | 1.22 | 9.74 | 9.64 | 1.41 | 0.667 | 6.18 | 0.747 |
| China | Haifu | 1217 | 41.0 | 40.7 | 51.8 | 7.80 | 96.3 | 4.42 | 4.80 | 53.5 | 53.4 | 4.08 | 1.47 | 5.83 | 2.71 |
| | Jinyunshan | 1268 | 36.5 | 36.4 | 36.8 | 5.34 | 60.0 | 2.95 | 3.60 | 51.9 | 51.9 | 4.74 | 7.07 | 5.15 | 2.38 |
| | Shizhan | 577 | 72.5 | 70.8 | 25.2 | 8.93 | 147 | 28.7 | 4.60 | 68.3 | 67.7 | 11.2 | 0.256 | 6.59 | 3.53 |
| | Jiwozi | 508 | 35.8 | 33.8 | 2.55 | 16.7 | 1.07 | 33.7 | 13.0 | 95.1 | 94.4 | 19.7 | 0.203 | 6.69 | 2.64 |
| | Hongwen | 538 | 31.7 | 29.5 | 43.7 | 71.7 | 33.8 | 35.7 | 35.0 | 28.3 | 27.5 | 7.19 | 4.56 | 5.34 | 2.21 |
| | Xiaoping | 676 | 14.6 | 14.2 | 28.1 | 21.5 | 29.5 | 6.87 | 12.4 | 15.1 | 14.9 | 2.78 | 1.27 | 5.90 | 0.996 |
| | Xiang Zhou | 1905 | 14.1 | 11.0 | 18.1 | 61.1 | 24.5 | 52.2 | 2.56 | 10.0 | 8.88 | 5.64 | 10.5 | 4.98 | 1.85 |
| | Zhuxiandong | 1817 | 14.1 | 12.6 | 22.8 | 29.3 | 25.7 | 26.2 | 2.24 | 13.9 | 13.3 | 3.21 | 8.49 | 5.07 | 1.45 |
| Indonesia | Jakarta | 1307 | 17.3 | 16.7 | 18.9 | 12.4 | 24.0 | 9.76 | 2.38 | 17.6 | 17.3 | 2.95 | 12.9 | 4.89 | 1.27 |
| | Serpong | 3197 | 25.5 | 24.8 | 31.1 | 16.4 | 50.5 | 12.1 | 3.78 | 12.1 | 11.8 | 2.51 | 6.34 | 5.20 | 1.82 |
| | Kototabang | 2437 | 4.48 | 4.27 | 3.78 | 6.28 | 5.59 | 3.46 | 1.86 | 11.6 | 11.6 | 1.08 | 6.29 | 5.20 | 0.402 |
| | Bandung | 1921 | 35.0 | 33.9 | 25.9 | 14.9 | 62.4 | 18.7 | 4.22 | 14.4 | 14.0 | 3.80 | 5.63 | 5.25 | 1.88 |
| | Maros | 2301 | 6.34 | 3.71 | 3.48 | 114 | 5.22 | 104 | 6.27 | 14.4 | 12.2 | 2.24 | 4.88 | 5.31 | 1.65 |
| Japan | Rishiri | 938 | 24.6 | 12.2 | 18.7 | 234 | 22.3 | 207 | 6.01 | 8.15 | 3.68 | 24.2 | 17.3 | 4.76 | 4.47 |
| | Ochiishi | 836 | 18.0 | 4.87 | 6.83 | 258 | 6.26 | 219 | 5.36 | 6.18 | 1.46 | 25.4 | 7.42 | 5.13 | 4.02 |
| | Tappi | 1129 | 22.1 | 10.7 | 19.5 | 215 | 15.9 | 189 | 4.72 | 6.78 | 2.71 | 21.7 | 18.0 | 4.74 | 3.91 |
| | Sado-seki | 1262 | 19.6 | 10.6 | 18.6 | 170 | 20.0 | 150 | 4.71 | 6.67 | 3.43 | 17.1 | 12.7 | 4.90 | 3.11 |
| | Happo | 3121 | 4.66 | 4.36 | 5.96 | 6.18 | 4.33 | 4.96 | 0.376 | 1.77 | 1.67 | 1.23 | 7.96 | 5.10 | 0.569 |
| | Ijira | 2919 | 10.1 | 9.20 | 15.4 | 17.7 | 12.5 | 14.6 | 0.576 | 2.20 | 1.88 | 1.84 | 18.3 | 4.74 | 1.32 |
| | Oki | 992 | 40.7 | 11.5 | 21.0 | 555 | 17.7 | 486 | 11.6 | 15.1 | 4.72 | 55.2 | 14.9 | 4.83 | 7.96 |
| | Banryu | 1471 | 16.2 | 10.9 | 22.2 | 99.8 | 16.3 | 87.8 | 2.41 | 5.13 | 3.23 | 9.94 | 17.1 | 4.77 | 2.46 |
| | Yusuhara | 2594 | 19.8 | 16.7 | 26.3 | 60.4 | 21.9 | 48.7 | 1.83 | 5.19 | 4.14 | 6.01 | 31.1 | 4.51 | 2.68 |
| | Hedo | 1623 | 28.0 | 5.94 | 8.76 | 429 | 7.04 | 368 | 8.02 | 9.70 | 2.08 | 42.6 | 9.90 | 5.00 | 6.15 |
| | Ogasawara | 1654 | 12.8 | 2.09 | 2.81 | 208 | 2.30 | 180 | 4.14 | 4.54 | 0.647 | 21.3 | 6.09 | 5.22 | 3.25 |
| | Tokyo | 1280 | 11.3 | 8.89 | 14.0 | 47.5 | 18.2 | 40.3 | 1.11 | 3.34 | 2.47 | 4.92 | 12.7 | 4.90 | 1.60 |
| Lao PDR | Vientiane | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Malaysia | Petaling Jaya | 3125 | 13.5 | 13.2 | 28.8 | 10.0 | 17.0 | 6.04 | 1.55 | 4.18 | 4.05 | 0.565 | 30.9 | 4.51 | 1.92 |
| | Tanah Rata | 3016 | 3.53 | 3.38 | 7.89 | 3.35 | 3.13 | 2.47 | 1.93 | 2.25 | 2.20 | <0.3 | 13.9 | 4.86 | 0.798 |
| | Danum Valley | 2964 | 2.70 | 2.56 | <0.5 | 4.60 | <0.8 | 2.52 | 1.29 | 1.48 | 1.43 | 0.379 | 6.08 | 5.22 | 0.339 |
| | Kuching | 3828 | 4.00 | 3.44 | 4.64 | 11.5 | 3.48 | 9.28 | 1.43 | 3.86 | 3.71 | 0.718 | 6.10 | 5.21 | 0.588 |
| Mongolia | Ulaanbaatar | 160 | 34.6 | 33.3 | 30.4 | 3.56 | 48.9 | 21.9 | 1.29 | 41.8 | 41.3 | 3.06 | 2.95 | 5.53 | 1.26 |
| | Terelj | 105 | 13.5 | 12.7 | 43.5 | 8.67 | 41.9 | 13.5 | 3.40 | 15.9 | 15.6 | 1.32 | 9.14 | 5.04 | 1.38 |
| Myanmar | Yangon | 2813 | 11.6 | 10.7 | 18.3 | 35.2 | 13.6 | 15.0 | 10.4 | 10.5 | 10.2 | 3.46 | 0.204 | 6.69 | 0.504 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| R of Korea | Kanghwa | 588 | 23.5 | 21.9 | 41.9 | 55.7 | 84.4 | 27.8 | 16.5 | 6.73 | 6.15 | 2.33 | 36.4 | 4.44 | 2.44 |
| | Cheju | 714 | 31.6 | 15.9 | 39.7 | 280 | 38.3 | 261 | 7.43 | 12.8 | 7.59 | 21.5 | 5.27 | 5.28 | 5.00 |
| | Imsil | 761 | 18.6 | 16.5 | 34.8 | 32.1 | 51.6 | 36.2 | 8.80 | 3.71 | 2.98 | 1.91 | 5.04 | 5.30 | 1.69 |
| Russia | Mondy | 191 | 6.43 | 6.27 | 9.75 | 5.29 | 10.4 | 2.58 | 1.94 | 8.67 | 8.61 | 1.75 | 4.86 | 5.31 | 0.659 |
| | Listvyanka | 315 | 22.5 | 22.3 | 19.3 | 4.12 | 20.6 | 3.26 | 3.64 | 12.2 | 12.1 | 3.15 | 17.0 | 4.77 | 1.54 |
| | Irkutsk | 502 | 25.7 | 25.2 | 14.4 | 10.2 | 20.4 | 7.99 | 2.92 | 22.5 | 22.4 | 4.70 | 11.4 | 4.94 | 1.62 |
| | Primorskaya | 635 | 34.2 | 32.6 | 35.0 | 37.1 | 46.8 | 26.0 | 10.1 | 20.9 | 20.4 | 11.9 | 2.07 | 5.69 | 2.06 |
| Thailand | Bangkok | 1592 | 17.0 | 16.7 | 20.2 | 8.16 | 54.6 | 5.83 | 1.24 | 11.3 | 11.2 | 1.57 | 1.08 | 5.97 | 0.821 |
| | Samutprakarn | 1815 | 8.90 | 8.47 | 15.7 | 8.30 | 48.5 | 7.10 | 1.36 | 7.96 | 7.81 | 1.56 | 1.37 | 5.86 | 0.799 |
| | Pathumthani | 1365 | 8.91 | 8.61 | 28.4 | 7.48 | 41.3 | 4.83 | 2.13 | 12.3 | 12.2 | 1.41 | 4.55 | 5.34 | 1.19 |
| | Khanchanaburi | 1178 | 3.33 | 3.05 | 4.95 | 5.92 | 14.1 | 4.70 | 1.43 | 3.63 | 3.53 | 1.15 | 1.72 | 5.76 | 0.421 |
| | Mae Hia | 1234 | 6.21 | 5.85 | 10.1 | 5.73 | 26.2 | 6.14 | 2.71 | 8.57 | 8.43 | 1.37 | 2.77 | 5.56 | 0.736 |
| | Sakaerat | 1692 | 4.93 | 4.80 | 10.6 | 4.08 | 23.3 | 2.08 | 0.512 | 4.60 | 4.55 | 1.76 | 3.84 | 5.42 | 0.566 |
| Vietnam | Hanoi | 2071 | 34.6 | 33.6 | 34.8 | 14.6 | 52.6 | 16.4 | 7.09 | 35.3 | 35.0 | 7.27 | 0.292 | 6.53 | 2.08 |
| | Hoa Binh | 1895 | 18.9 | 18.7 | 22.2 | 14.6 | 20.0 | 3.99 | 2.88 | 23.1 | 23.1 | 1.97 | 6.02 | 5.22 | 1.27 |
| | Cuc Phuong | 2236 | 16.2 | 15.1 | 14.0 | 35.6 | 8.72 | 17.6 | 3.41 | 24.0 | 23.7 | 8.30 | 8.43 | 5.07 | 1.52 |
| | Da Nang | 2244 | 16.5 | 11.6 | 5.39 | 80.9 | 20.9 | 81.0 | 9.85 | 33.9 | 32.1 | 11.3 | 1.36 | 5.87 | 2.47 |
| | Can Tho | 1907 | 16.2 | 15.6 | 3.83 | 29.2 | 21.5 | 9.61 | 5.44 | 10.6 | 10.3 | 5.35 | 1.08 | 5.97 | 1.06 |
| | Ho Chi Minh | 3444 | 23.4 | 22.3 | 10.8 | 47.5 | 38.4 | 17.4 | 10.4 | 14.8 | 14.4 | 9.01 | 0.861 | 6.06 | 1.68 |
| | Yen Bai | 2397 | 26.2 | 26.0 | 24.5 | 17.3 | 33.6 | 3.68 | 6.20 | 23.1 | 23.0 | 1.66 | 6.40 | 5.19 | 1.55 |

Terms and abbreviations are given in Table 3.5.

**Table 3.66 Annual wet depositions in 2017**

| Country | Name of sites | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ | mmol $m^{-2}y^{-1}$ |
| Cambodia | Phnom Penh | 15.6 | 15.2 | 15.1 | 8.40 | 30.7 | 6.14 | 1.68 | 13.4 | 13.3 | 1.94 | 0.920 |
| China | Haifu | 49.8 | 49.5 | 63.1 | 9.49 | 117 | 5.38 | 5.84 | 65.1 | 65.0 | 4.96 | 1.79 |
| | Jinyunshan | 46.3 | 46.1 | 46.7 | 6.77 | 76.1 | 3.74 | 4.56 | 65.8 | 65.7 | 6.01 | 8.96 |
| | Shizhan | 41.8 | 40.8 | 14.6 | 5.15 | 85.0 | 16.6 | 2.65 | 39.4 | 39.0 | 6.45 | 0.148 |
| | Jiwozi | 18.2 | 17.1 | 1.30 | 8.49 | 0.544 | 17.1 | 6.59 | 48.3 | 47.9 | 10.0 | 0.103 |
| | Hongwen | 17.1 | 15.9 | 23.5 | 38.6 | 18.2 | 19.2 | 18.8 | 15.2 | 14.8 | 3.87 | 2.46 |
| | Xiaoping | 9.85 | 9.57 | 19.0 | 14.5 | 20.0 | 4.64 | 8.37 | 10.2 | 10.1 | 1.88 | 0.856 |
| | Xiang Zhou | 26.9 | 20.9 | 34.5 | 116 | 46.6 | 99.5 | 4.87 | 19.1 | 16.9 | 10.7 | 20.0 |
| | Zhuxiandong | 25.7 | 22.8 | 41.5 | 53.3 | 46.7 | 47.7 | 4.08 | 25.2 | 24.2 | 5.82 | 15.4 |
| Indonesia | Jakarta | 22.6 | 21.8 | 24.7 | 16.2 | 31.4 | 12.8 | 3.10 | 22.9 | 22.7 | 3.86 | 16.8 |
| | Serpong | 81.5 | 79.2 | 99.6 | 52.6 | 161 | 38.7 | 12.1 | 38.6 | 37.8 | 8.01 | 20.3 |
| | Kototabang | 10.9 | 10.4 | 9.21 | 15.3 | 13.6 | 8.43 | 4.54 | 28.4 | 28.2 | 2.63 | 15.3 |
| | Bandung | 67.3 | 65.1 | 49.7 | 28.7 | 120 | 35.9 | 8.10 | 27.7 | 27.0 | 7.30 | 10.8 |
| | Maros | 14.6 | 8.53 | 8.00 | 262 | 12.0 | 240 | 14.4 | 33.0 | 28.1 | 5.16 | 11.2 |
| Japan | Rishiri | 23.1 | 11.4 | 17.5 | 219 | 20.9 | 194 | 5.63 | 7.64 | 3.45 | 22.7 | 16.2 |
| | Ochiishi | 15.1 | 4.07 | 5.71 | 216 | 5.24 | 183 | 4.48 | 5.17 | 1.22 | 21.3 | 6.21 |
| | Tappi | 24.9 | 12.1 | 22.0 | 242 | 17.9 | 213 | 5.33 | 7.66 | 3.06 | 24.5 | 20.4 |
| | Sado-seki | 24.7 | 13.3 | 23.5 | 214 | 25.2 | 189 | 5.95 | 8.41 | 4.33 | 21.6 | 16.0 |
| | Happo | 14.5 | 13.6 | 18.6 | 19.3 | 13.5 | 15.5 | 1.17 | 5.54 | 5.20 | 3.83 | 24.9 |
| | Ijira | 29.4 | 26.8 | 44.9 | 51.7 | 36.4 | 42.7 | 1.68 | 6.41 | 5.49 | 5.38 | 53.5 |
| | Oki | 40.4 | 11.4 | 20.8 | 551 | 17.6 | 482 | 11.5 | 15.0 | 4.68 | 54.8 | 14.8 |
| | Banryu | 23.8 | 16.0 | 32.6 | 147 | 24.0 | 129 | 3.54 | 7.55 | 4.75 | 14.6 | 25.2 |
| | Yusuhara | 51.3 | 43.4 | 68.2 | 157 | 56.9 | 126 | 4.74 | 13.5 | 10.7 | 15.6 | 80.7 |
| | Hedo | 45.5 | 9.63 | 14.2 | 696 | 11.4 | 597 | 13.0 | 15.7 | 3.38 | 69.2 | 16.1 |
| | Ogasawara | 21.1 | 3.45 | 4.65 | 344 | 3.80 | 298 | 6.84 | 7.51 | 1.07 | 35.2 | 10.1 |
| | Tokyo | 14.5 | 11.4 | 17.9 | 60.8 | 23.3 | 51.5 | 1.42 | 4.27 | 3.16 | 6.30 | 16.3 |
| Lao PDR | Vientiane | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Malaysia | Petaling Jaya | 42.2 | 41.1 | 90.1 | 31.3 | 53.3 | 18.9 | 4.83 | 13.1 | 12.7 | 1.77 | 96.6 |
| | Tanah Rata | 10.7 | 10.2 | 23.8 | 10.1 | 9.45 | 7.45 | 5.82 | 6.80 | 6.64 | 0.327 | 41.9 |
| | Danum Valley | 7.99 | 7.58 | 0.545 | 13.6 | 0.590 | 7.47 | 3.83 | 4.38 | 4.24 | 1.12 | 18.0 |
| | Kuching | 15.3 | 13.2 | 17.8 | 44.0 | 13.3 | 35.5 | 5.48 | 14.8 | 14.2 | 2.75 | 23.4 |
| Mongolia | Ulaanbaatar | 5.54 | 5.32 | 4.86 | 0.569 | 7.81 | 3.50 | 0.207 | 6.68 | 6.60 | 0.489 | 0.471 |
| | Terelj | 1.42 | 1.34 | 4.58 | 0.913 | 4.40 | 1.42 | 0.358 | 1.67 | 1.64 | 0.139 | 0.962 |
| Myanmar | Yangon | 32.6 | 30.0 | 51.4 | 99.1 | 38.2 | 42.2 | 29.4 | 29.5 | 28.6 | 9.75 | 0.575 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| R of Korea | Kanghwa | 13.8 | 12.9 | 24.6 | 32.8 | 49.6 | 16.3 | 9.72 | 3.96 | 3.61 | 1.37 | 21.4 |
| | Cheju | 22.6 | 11.3 | 28.4 | 200 | 27.3 | 187 | 5.31 | 9.15 | 5.42 | 15.3 | 3.76 |
| | Imsil | 14.2 | 12.5 | 26.5 | 24.4 | 39.2 | 27.5 | 6.70 | 2.82 | 2.26 | 1.45 | 3.83 |
| Russia | Mondy | 1.23 | 1.20 | 1.86 | 1.01 | 1.99 | 0.493 | 0.371 | 1.66 | 1.65 | 0.334 | 0.928 |
| | Listvyanka | 7.09 | 7.03 | 6.08 | 1.30 | 6.50 | 1.03 | 1.15 | 3.86 | 3.83 | 0.993 | 5.38 |
| | Irkutsk | 12.9 | 12.7 | 7.22 | 5.13 | 10.3 | 4.01 | 1.47 | 11.3 | 11.2 | 2.36 | 5.73 |
| | Primorskaya | 21.7 | 20.7 | 22.3 | 23.6 | 29.7 | 16.5 | 6.41 | 13.3 | 12.9 | 7.57 | 1.31 |
| Thailand | Bangkok | 27.1 | 26.6 | 32.2 | 13.0 | 87.0 | 9.28 | 1.97 | 18.0 | 17.8 | 2.50 | 1.72 |
| | Samutprakarn | 16.2 | 15.4 | 28.5 | 15.1 | 88.1 | 12.9 | 2.48 | 14.4 | 14.2 | 2.83 | 2.49 |
| | Pathumthani | 12.2 | 11.8 | 38.8 | 10.2 | 56.3 | 6.60 | 2.90 | 16.8 | 16.6 | 1.92 | 6.21 |
| | Khanchanaburi | 3.92 | 3.59 | 5.83 | 6.97 | 16.6 | 5.54 | 1.69 | 4.28 | 4.16 | 1.35 | 2.02 |
| | Mae Hia | 7.67 | 7.23 | 12.5 | 7.07 | 32.3 | 7.58 | 3.35 | 10.6 | 10.4 | 1.69 | 3.42 |
| | Sakaerat | 8.34 | 8.13 | 17.9 | 6.90 | 39.4 | 3.53 | 0.866 | 7.78 | 7.70 | 2.97 | 6.50 |
| Vietnam | Hanoi | 71.7 | 69.6 | 72.1 | 30.3 | 109 | 33.9 | 14.7 | 73.2 | 72.5 | 15.1 | 0.604 |
| | Hoa Binh | 35.9 | 35.4 | 42.1 | 27.6 | 37.8 | 7.56 | 5.46 | 43.8 | 43.7 | 3.73 | 11.4 |
| | Cuc Phuong | 36.1 | 33.7 | 31.4 | 79.6 | 19.5 | 39.3 | 7.63 | 53.7 | 52.9 | 18.6 | 18.8 |
| | Da Nang | 37.0 | 26.1 | 12.1 | 182 | 46.8 | 182 | 22.1 | 76.0 | 72.1 | 25.4 | 3.06 |
| | Can Tho | 30.9 | 29.8 | 7.30 | 55.6 | 41.0 | 18.3 | 10.4 | 20.1 | 19.7 | 10.2 | 2.05 |
| | Ho Chi Minh | 80.5 | 76.9 | 37.2 | 164 | 132 | 59.8 | 35.7 | 51.0 | 49.7 | 31.0 | 2.97 |
| | Yen Bai | 62.9 | 62.4 | 58.6 | 41.4 | 80.5 | 8.81 | 14.9 | 55.4 | 55.2 | 3.99 | 15.3 |

Terms and abbreviations are given in Table 3.5.

**Table 3.67 Data completeness for annual summaries in 2017 (%PCL, %TP)**

| Country | Name of sites | Precip. %PCL | $SO_4^{2-}$ %TP | nss-$SO_4^{2-}$ %TP | $NO_3^-$ %TP | $Cl^-$ %TP | $NH_4^+$ %TP | $Na^+$ %TP | $K^+$ %TP | $Ca^{2+}$ %TP | nss-$Ca^{2+}$ %TP | $Mg^{2+}$ %TP | $H^+$ %TP | pH %TP | EC %TP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| China | Haifu | 100 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 |
| | Jinyunshan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Shizhan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Jiwozi | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Hongwen | 100 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 |
| | Xiaoping | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Xiang Zhou | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Zhuxiandong | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Indonesia | Jakarta | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Serpong | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Kototabang | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Bandung | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Maros | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Japan | Rishiri | 98.6 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.5 | 98.5 | 98.5 |
| | Ochiishi | 99.5 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 96.7 | 94.1 | 94.1 | 94.1 |
| | Tappi | 99.5 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 99.2 | 97.3 | 97.3 | 97.3 |
| | Sado-seki | 95.6 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 59.0 | 59.0 | 59.0 |
| | Happo | 95.3 | 54.7 | 54.7 | 54.7 | 54.7 | 54.7 | 54.7 | 54.7 | 54.7 | 54.7 | 54.7 | 54.5 | 54.5 | 54.5 |
| | Ijira | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Oki | 99.2 | 81.4 | 81.4 | 81.4 | 81.4 | 81.4 | 81.4 | 81.4 | 81.4 | 81.4 | 81.4 | 79.5 | 79.5 | 79.5 |
| | Banryu | 96.2 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 | 43.7 |
| | Yusuhara | 99.7 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 | 18.1 |
| | Hedo | 97.8 | 96.9 | 96.9 | 96.9 | 96.9 | 96.9 | 96.9 | 96.9 | 96.9 | 96.9 | 96.9 | 96.5 | 96.5 | 96.5 |
| | Ogasawara | 99.5 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.9 | 65.2 | 65.2 | 65.2 |
| | Tokyo | 98.9 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 97.1 | 96.3 | 96.3 | 96.3 |
| Lao PDR | Vientiane | 0.0 | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Malaysia | Petaling Jaya | 100 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 | 95.7 |
| | Tanah Rata | 100 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 |
| | Danum Valley | 100 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 | 71.3 |
| | Kuching | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mongolia | Ulaanbaatar | 100 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 100 | 100 | 100 |
| | Terelj | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Myanmar | Yangon | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| R of Korea | Kanghwa | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Cheju | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Imsil | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Russia | Mondy | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Listvyanka | 100 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 100 | 100 | 100 |
| | Irkutsk | 100 | 100 | 100 | 100 | 100 | 99.8 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Primorskaya | 100 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 81.8 | 100 | 100 | 81.8 |
| Thailand | Bangkok | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Samutprakarn | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 97.4 | 97.4 | 97.4 |
| | Pathumthani | 100 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 | 99.8 |
| | Khanchanaburi | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 94.4 | 94.4 | 94.4 |
| | Mae Hia | 100 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.6 | 99.6 | 99.6 |
| | Sakaerat | 100 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.2 | 98.2 | 98.2 |
| Vietnam | Hanoi | 100 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 |
| | Hoa Binh | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Cuc Phuong | 100 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 |
| | Da Nang | 100 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 | 99.4 |
| | Can Tho | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Ho Chi Minh | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Yen Bai | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Terms and abbreviations are given in Table 3.5.

**Table 3.68 Results of ion balance and conductivity agreement check in 2017**

| Country | Name of sites | Sample (N) | $R_1$ (N) | $R_1$ (AA) | % | $R_2$ (N) | $R_2$ (AA) | % | $R_1$&$R_2$ (N) | $R_1$&$R_2$ (AA) | % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | 27 | 27 | 12 | 44.4 | 27 | 21 | 77.8 | 27 | 8 | 29.6 |
| China | Haifu* | 124 | 124 | 117 | 94.4 | 124 | 121 | 97.6 | 124 | 116 | 93.5 |
| | Jinyunshan* | 131 | 131 | 118 | 90.1 | 131 | 126 | 96.2 | 131 | 113 | 86.3 |
| | Shizhan | 41 | 41 | 3 | 7.3 | 41 | 21 | 51.2 | 41 | 1 | 2.4 |
| | Jiwozi | 39 | 39 | 2 | 5.1 | 39 | 27 | 69.2 | 39 | 2 | 5.1 |
| | Hongwen* | 27 | 27 | 19 | 70.4 | 27 | 17 | 63.0 | 27 | 13 | 48.1 |
| | Xiaoping* | 61 | 61 | 46 | 75.4 | 61 | 50 | 82.0 | 61 | 39 | 63.9 |
| | Xiang Zhou* | 67 | 67 | 32 | 47.8 | 67 | 61 | 91.0 | 67 | 30 | 44.8 |
| | Zhuxiandong* | 80 | 80 | 44 | 55.0 | 80 | 74 | 92.5 | 80 | 41 | 51.3 |
| Indonesia | Jakarta | 25 | 25 | 10 | 40.0 | 25 | 16 | 64.0 | 25 | 7 | 28.0 |
| | Serpong | 87 | 87 | 67 | 77.0 | 87 | 75 | 86.2 | 87 | 60 | 69.0 |
| | Kototabang | 43 | 43 | 8 | 18.6 | 43 | 25 | 58.1 | 43 | 5 | 11.6 |
| | Bandung | 113 | 113 | 60 | 53.1 | 113 | 106 | 93.8 | 113 | 60 | 53.1 |
| | Maros | 28 | 28 | 8 | 28.6 | 28 | 19 | 67.9 | 28 | 2 | 7.1 |
| Japan | Rishiri | 191 | 164 | 156 | 95.1 | 164 | 162 | 98.8 | 164 | 154 | 93.9 |
| | Ochiishi | 153 | 79 | 78 | 98.7 | 79 | 79 | 100 | 79 | 78 | 98.7 |
| | Tappi* | 202 | 125 | 125 | 100 | 125 | 125 | 100 | 125 | 125 | 100 |
| | Sado-seki | 153 | 84 | 84 | 100 | 84 | 84 | 100 | 84 | 84 | 100 |
| | Happo | 105 | 97 | 95 | 97.9 | 97 | 97 | 100 | 97 | 95 | 97.9 |
| | Ijira | 50 | 49 | 48 | 98.0 | 49 | 49 | 100 | 49 | 48 | 98.0 |
| | Oki | 157 | 85 | 85 | 100 | 85 | 85 | 100 | 85 | 85 | 100 |
| | Banryu | 49 | 24 | 24 | 100 | 24 | 24 | 100 | 24 | 24 | 100 |
| | Yusuhara* | 61 | 56 | 52 | 92.9 | 56 | 53 | 94.6 | 56 | 50 | 89.3 |
| | Hedo | 158 | 145 | 145 | 100 | 145 | 143 | 98.6 | 145 | 143 | 98.6 |
| | Ogasawara* | 104 | 73 | 71 | 97.3 | 73 | 73 | 100 | 73 | 71 | 97.3 |
| | Tokyo* | 117 | 93 | 92 | 98.9 | 93 | 93 | 100 | 93 | 92 | 98.9 |
| Lao PDR | Vientiane | 26 | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Malaysia | Petaling Jaya* | 43 | 42 | 42 | 100 | 42 | 42 | 100 | 42 | 42 | 100 |
| | Tanah Rata* | 50 | 45 | 30 | 66.7 | 45 | 42 | 93.3 | 45 | 29 | 64.4 |
| | Danum Valley* | 38 | 34 | 28 | 82.4 | 34 | 30 | 88.2 | 34 | 26 | 76.5 |
| | Kuching* | 52 | 52 | 43 | 82.7 | 52 | 50 | 96.2 | 52 | 43 | 82.7 |
| Mongolia | Ulaanbaatar | 22 | 21 | 2 | 9.5 | 21 | 11 | 52.4 | 21 | 1 | 4.8 |
| | Terelj | 24 | 24 | 2 | 8.3 | 24 | 12 | 50.0 | 24 | 2 | 8.3 |
| Myanmar | Yangon | 29 | 29 | 4 | 13.8 | 29 | 4 | 13.8 | 29 | 1 | 3.4 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| R of Korea | Kanghwa | 34 | 34 | 25 | 73.5 | 34 | 26 | 76.5 | 34 | 24 | 70.6 |
| | Cheju | 37 | 37 | 34 | 91.9 | 37 | 36 | 97.3 | 37 | 34 | 91.9 |
| | Imsil | 72 | 72 | 65 | 90.3 | 72 | 70 | 97.2 | 72 | 65 | 90.3 |
| Russia | Mondy* | 24 | 24 | 24 | 100 | 24 | 24 | 100 | 24 | 24 | 100 |
| | Listvyanka* | 51 | 50 | 49 | 98.0 | 50 | 50 | 100 | 50 | 49 | 98.0 |
| | Irkutsk* | 106 | 102 | 102 | 100 | 102 | 102 | 100 | 102 | 102 | 100 |
| | Primorskaya | 112 | 60 | 60 | 100 | 60 | 60 | 100 | 60 | 60 | 100 |
| Thailand | Bangkok* | 64 | 64 | 5 | 7.8 | 64 | 43 | 67.2 | 64 | 2 | 3.1 |
| | Samutprakarn* | 82 | 77 | 9 | 11.7 | 77 | 69 | 89.6 | 77 | 8 | 10.4 |
| | Pathumthani* | 92 | 87 | 28 | 32.2 | 87 | 77 | 88.5 | 87 | 24 | 27.6 |
| | Khanchanaburi* | 76 | 67 | 42 | 62.7 | 67 | 46 | 68.7 | 67 | 23 | 34.3 |
| | Mae Hia* | 115 | 107 | 25 | 23.4 | 107 | 91 | 85.0 | 107 | 21 | 19.6 |
| | Sakaerat* | 124 | 114 | 39 | 34.2 | 114 | 112 | 98.2 | 114 | 39 | 34.2 |
| Vietnam | Hanoi* | 39 | 37 | 12 | 32.4 | 37 | 37 | 100 | 37 | 12 | 32.4 |
| | Hoa Binh* | 36 | 36 | 29 | 80.6 | 36 | 35 | 97.2 | 36 | 29 | 80.6 |
| | Cuc Phuong* | 45 | 33 | 33 | 100 | 33 | 33 | 100 | 33 | 33 | 100 |
| | Da Nang* | 41 | 35 | 35 | 100 | 35 | 35 | 100 | 35 | 35 | 100 |
| | Can Tho* | 36 | 36 | 32 | 88.9 | 36 | 35 | 97.2 | 36 | 31 | 86.1 |
| | Ho Chi Minh* | 40 | 40 | 28 | 70.0 | 40 | 38 | 95.0 | 40 | 26 | 65.0 |
| | Yen Bai* | 42 | 42 | 42 | 100 | 42 | 42 | 100 | 42 | 42 | 100 |

Sites marked with * : R1 and R2, calculated including concentrations of additional measured constituent
Terms and abbreviations are given in Table 3.5.

**Table 3.69 Annual precipitation from 2000 to 2017**

unit: mm $y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 419 | 1308 | 949 | 1374 | 1834 | 1326 | 1851 | 1277 | 1617 | 1345 | 1561 | 1103 | 1277 | 1379 |
| China | Guanyinqiao | 1081 | 752 | 1445 | 987 | 1387 | 1077 | 842 | 1299 | | | | | | | | | | |
| | Nanshan | 1259 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 1010 | 1066 | 977 | 810 | 1010 | 1026 | 1417 | 1220 | 1270 | 1217 |
| | Jinyunshan | | 710 | 1607 | 1233 | 1518 | 1461 | 1196 | 1645 | 1213 | 1098 | 979 | 848 | 1005 | 1127 | 1490 | 1288 | 1217 | 1268 |
| | Shizhan | 559 | 364 | 349 | 1273 | 601 | 509 | 483 | 527 | 385 | 592 | 459 | 659 | 393 | 441 | 623 | 594 | 415 | 577 |
| | Weishuiyuan | 447 | 69.3 | 232 | 1302 | 466 | 439 | 316 | | | | | | | | | | | |
| | Jiwozi | 829 | 209 | 142 | 611 | 1020 | 362 | 234 | 100 | 438 | 628 | 1155 | 971 | 390 | 649 | 568 | 447 | 369 | 508 |
| | Hongwen | 1517 | 296 | 1568 | 1301 | 1065 | 1702 | 2134 | 1347 | 945 | 737 | 1530 | 843 | 924 | 1403 | 1129 | 1015 | 1771 | 538 |
| | Xiaoping | 1566 | 2682 | 2171 | 1768 | 1958 | 2921 | 2352 | 1044 | 2000 | 1134 | 1518 | 1531 | 1291 | 1979 | 1364 | 1557 | 1851 | 676 |
| | Xiang Zhou | 2031 | 1990 | 1731 | 1726 | 1340 | 1179 | 1529 | 1442 | 2815 | 2010 | 1857 | 1259 | 1518 | 2421 | 1673 | 1431 | 2344 | 1905 |
| | Zhuxiandong | 1779 | 2571 | 1581 | 1755 | 1277 | 1062 | 887 | *** | 2311 | 1580 | 1853 | 1146 | *** | *** | *** | 1598 | 2356 | 1817 |
| Indonesia | Jakarta | 1577 | 1237 | 1572 | 1617 | 1469 | 2125 | 1481 | 2171 | 1717 | 1557 | 2120 | 990 | 2722 | 2331 | 3168 | 2807 | 1976 | 1307 |
| | Serpong | *** | 1607 | 2505 | 2143 | 1462 | 824 | 1603 | 2015 | 2370 | 1344 | 1426 | 830 | 894 | 2324 | 2882 | 1770 | 2929 | 3197 |
| | Kototabang | 2340 | 1209 | 1798 | 3127 | 2111 | 2194 | 1248 | 2772 | 2481 | 2656 | 2370 | 2193 | 2639 | 2120 | 2496 | 2503 | 2163 | 2437 |
| | Bandung | 893 | 2605 | 2541 | 1606 | 894 | 1749 | 1311 | 1969 | 2334 | 2683 | 2606 | 1530 | 2084 | 2346 | 2033 | 2012 | 2699 | 1921 |
| | Maros | | | | | | | | | 3037 | 3237 | 2663 | 3632 | 2451 | 4033 | 2763 | 2479 | 1973 | 2301 |
| Japan | Rishiri | 770 | 615 | 957 | 709 | 945 | 961 | 1294 | 883 | 828 | 1054 | 1072 | 1232 | 1172 | 1170 | 1033 | 1092 | 1299 | 938 |
| | Ochiishi | | | | 782 | 648 | 822 | 997 | 866 | 730 | 1580 | 1085 | 818 | 871 | 1059 | 838 | 827 | 1138 | 836 |
| | Tappi | 1049 | 1082 | 1329 | 1150 | 1473 | 1240 | 964 | 1055 | 824 | 1337 | 1555 | 1144 | 1178 | 1070 | 1194 | 1114 | 1222 | 1129 |
| | Sado-seki | 1068 | 971 | 1433 | 1126 | 1539 | 1143 | 1264 | 1163 | 1021 | 1037 | 1368 | 1387 | 1296 | 1576 | 1409 | 867 | 999 | 1262 |
| | Happo | 2188 | 2345 | 2607 | 2461 | 3088 | 2997 | 2755 | 2329 | 1645 | 2352 | 2621 | 3076 | 2002 | 2658 | 2453 | 2242 | 2446 | 3121 |
| | Ijira | 2685 | 2237 | 2648 | 2967 | 3424 | 2569 | 2829 | 2263 | 2250 | 2876 | 3847 | 3068 | 2862 | 2724 | 3044 | 3135 | 3151 | 2919 |
| | Oki | 1209 | 1246 | 1571 | 1597 | 1409 | 1313 | 1396 | 1160 | 1110 | 1123 | 1452 | 1534 | 1296 | 1395 | 1053 | 1061 | 1519 | 992 |
| | Banryu | 1565 | 1788 | 1303 | 1752 | 1738 | 1290 | 1960 | 1273 | 1268 | 1735 | 1471 | 1432 | 1208 | 2024 | 1516 | 1458 | 1829 | 1471 |
| | Yusuhara | 2801 | 2080 | 2346 | 2839 | 3970 | 2321 | 3160 | 2373 | 2189 | 2068 | 2476 | 3401 | 3048 | 2485 | 3529 | 3046 | 2744 | 2594 |
| | Hedo | 2907 | 2126 | 2032 | 1393 | 1778 | 1780 | 1863 | 2701 | 1961 | 1975 | 2643 | 1766 | 2837 | 1612 | 2442 | 1762 | 1822 | 1623 |
| | Ogasawara | 1985 | 1806 | 1331 | 1398 | 1171 | 2050 | 1585 | 1567 | 1674 | 1675 | 1856 | 1297 | 1572 | 1265 | 1532 | 1586 | 1153 | 1654 |
| | Tokyo | | | | | | | | 1080 | 1860 | 1727 | 1656 | 1388 | 1635 | 1609 | 1807 | 1641 | 1609 | 1280 |
| Lao PDR | Vientiane | | | | 88.6 | 442 | 665 | 709 | 1399 | 1668 | 181 | *** | *** | 1322 | *** | 1273 | 921 | 471 | ** |
| Malaysia | Petaling Jaya | 3417 | 3085 | 2660 | 3041 | 2996 | 2848 | 4009 | 3021 | 3747 | 2968 | 3517 | 3607 | 3412 | 3570 | 3708 | 3751 | 3432 | 3125 |
| | Tanah Rata | 3127 | 2626 | 2783 | 3010 | 2415 | 2886 | 2785 | 2968 | 3925 | 3077 | 2451 | 3293 | 2846 | 2771 | 2895 | 2684 | 2366 | 3016 |
| | Danum Valley | | | | | | 1256 | 3005 | 2988 | 2999 | 3391 | 2370 | 3787 | 2958 | 3202 | 2848 | 2025 | 2987 | 2964 |
| | Kuching | | | | | | | | | 4286 | 4671 | 4645 | 4632 | 3796 | 4110 | 3656 | 4428 | 5655 | 3828 |
| Mongolia | Ulaanbaatar | 197 | 166 | 179 | 297 | 83.4 | 150 | 188 | 126 | 155 | 228 | 153 | 163 | 170 | 154 | *** | 150 | 160 | 160 |
| | Terelj | 208 | 88.6 | 246 | 312 | 207 | 246 | 215 | 185 | 206 | 111 | 130 | 144 | 117 | 90.8 | *** | 100 | 106 | 105 |
| Myanmar | Yangon | | | | | | | | 3981 | 6375 | 3010 | 2280 | 3151 | 2570 | 2692 | 2872 | 2432 | 2180 | 2813 |
| Philippines | Metro Manila | 4036 | 2291 | 2975 | 2205 | 2164 | 2377 | 2696 | 3505 | 2381 | 3782 | 2676 | 3657 | 4461 | 3516 | 2628 | 2499 | 2519 | *** |
| | Los Baños | 2635 | 1817 | 1702 | 1608 | 1743 | 1643 | 2222 | 3097 | 1894 | 2900 | 2068 | 2384 | 2102 | 2394 | 2073 | 1559 | 1756 | *** |
| | Mt.Sto.Tomas | | | | | | | 431 | 3379 | 5078 | 4727 | 3610 | 4608 | 5730 | 4392 | 3641 | 6108 | 4426 | *** |
| Republic of Korea | Kanghwa | 1118 | 1139 | 824 | 1573 | 878 | 811 | 1092 | 883 | 1546 | 1266 | 1570 | 1476 | 748 | 898 | 427 | 589 | 837 | 588 |
| | Cheju | 1058 | 1114 | 1017 | 1291 | 1124 | 699 | 1127 | 1244 | 843 | 1039 | 1003 | 1076 | 1199 | 636 | 1195 | 1452 | 1121 | 714 |
| | Imsil | | 1299 | 993 | 1876 | 1207 | 1248 | 709 | 1344 | 854 | 1069 | 1642 | 1493 | 1400 | 1220 | 1101 | 719 | 838 | 761 |
| Russia | Mondy | 305 | 319 | 204 | 409 | 360 | 286 | 410 | 351 | 206 | 119 | 90.2 | 73.5 | 105 | 330 | 123 | 136 | 222 | 191 |
| | Listvyanka | 442 | 494 | 360 | 540 | 551 | 452 | 311 | 408 | 391 | 312 | 327 | 478 | 343 | 278 | 279 | 335 | 316 | 315 |
| | Irkutsk | 534 | 468 | 303 | 457 | 553 | 442 | 357 | 478 | 527 | 430 | 375 | 329 | 443 | 277 | 388 | 291 | 481 | 502 |
| | Primorskaya | | | 835 | 323 | 692 | 737 | 623 | 989 | 553 | 864 | 673 | 621 | 922 | 723 | 643 | 1157 | 925 | 635 |
| Thailand | Bangkok | 1148 | 1174 | 1300 | 1385 | 1211 | 2006 | 1589 | 1579 | 1776 | 2072 | 2023 | 2171 | 1799 | 1330 | 1011 | 1593 | 1631 | 1592 |
| | Samutprakarn | 978 | | | | 1260 | 1625 | 1420 | 1871 | 1734 | 1989 | 1880 | 2103 | 953 | 1115 | 991 | 1442 | 1810 | 1815 |
| | Pathumthani | 956 | 1349 | 948 | 1658 | 976 | 1268 | 1608 | 1381 | 1670 | 1314 | 1763 | 1562 | 1563 | 1181 | 1059 | 1071 | 1069 | 1365 |
| | Khanchanaburi | 881 | 1516 | 2200 | 1627 | 1392 | 2043 | 2518 | 1704 | 1962 | 1998 | 1626 | 1941 | 2390 | 1501 | 979 | 1093 | 1059 | 1178 |
| | Mae Hia | | 1084 | 1473 | 808 | 1151 | 1430 | 1420 | 937 | 1286 | 1052 | 1167 | 1614 | 1111 | 1433 | 527 | 747 | 743 | 1234 |
| | Sakaerat | | | | | | | 1190 | 1386 | 1722 | 1259 | 1627 | 1509 | 1126 | 1443 | 427 | 1385 | 1083 | 1692 |
| Vietnam | Hanoi | 1256 | 2255 | 1416 | 1586 | 1575 | 1761 | 1231 | 1659 | 2267 | 1609 | 1236 | 1817 | 1798 | 1945 | 1661 | 1273 | 1661 | 2071 |
| | HoaBinh | 1894 | 2223 | 1626 | 1691 | 1831 | 2279 | 1546 | 1949 | 1978 | 1357 | 1370 | 1760 | 1915 | 2008 | 1303 | 1616 | 1438 | 1895 |
| | Cuc Phuong | | | | | | | | | | 2266 | 1654 | 1853 | 2018 | 1898 | 1702 | 1461 | 1937 | 2236 |
| | Da Nang | | | | | | | | | | 2966 | 1690 | 3639 | 1682 | 2315 | 2219 | 1891 | 2723 | 2244 |
| | Can Tho | | | | | | | | | | | | | | | 1840 | 2205 | 1670 | 1907 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1916 | 1420 | 2553 | 3444 |
| | Yen Bai | | | | | | | | | | | | | | | | 1514 | 1815 | 2397 |

Terms and abbreviations are given in Table 3.5.

**Table 3.70 Precipitation amount-weighted annual average concentrations of $SO_4^{2-}$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | *** | 5.68 | 5.31 | 22.5 | 11.6 | 11.6 | 7.37 | 9.04 | 10.5 | 7.99 | 6.27 | 7.04 | 5.37 | 11.3 |
| China | Guanyinqiao | 152 | 205 | 114 | 110 | 165 | 186 | 177 | 130 | | | | | | | | | | |
| | Nanshan | 130 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 144 | 99.3 | 139 | 142 | 102 | 106 | 84.4 | 50.3 | 46.9 | 41.0 |
| | Jinyunshan | | 124 | 78.3 | 83.2 | 109 | 102 | 141 | 90.4 | 120 | 114 | 151 | 141 | 124 | 81.4 | 60.4 | 43.9 | 40.0 | 36.5 |
| | Shizhan | 356 | 470 | 850 | 203 | 173 | 126 | 274 | 183 | 191 | 136 | 100.0 | 110 | 109 | 141 | 113 | 82.8 | 62.5 | 72.5 |
| | Weishuiyuan | 538 | 1510 | 1010 | 143 | 202 | 107 | 330 | | | | | | | | | | | |
| | Jiwozi | 141 | 326 | 305 | 90.6 | 55.2 | 118 | 128 | 182 | 145 | 93.5 | 31.8 | 62.6 | 94.5 | 52.6 | 69.3 | 31.6 | 19.5 | 35.8 |
| | Hongwen | 20.2 | 56.5 | 42.8 | 36.9 | 69.1 | 47.2 | 28.6 | 75.5 | 31.7 | 26.1 | 26.7 | 31.3 | 32.2 | 21.9 | 27.0 | 18.5 | 22.8 | 31.7 |
| | Xiaoping | 14.6 | 18.3 | 16.7 | 23.6 | 27.2 | 20.2 | 16.9 | 28.0 | 29.2 | 28.2 | 27.3 | 24.9 | 23.4 | 22.7 | 29.6 | 17.3 | 13.7 | 14.6 |
| | Xiang Zhou | 22.4 | 15.7 | 27.9 | 20.5 | 18.7 | 23.8 | 29.2 | 21.7 | 16.5 | 18.2 | 19.8 | 15.5 | 14.9 | 19.1 | 14.3 | 11.6 | 16.0 | 14.1 |
| | Zhuxiandong | 48.0 | 19.3 | 32.0 | 18.5 | 26.9 | 29.5 | 19.3 | *** | 21.5 | 21.0 | 17.1 | 20.4 | *** | *** | *** | 23.3 | 18.1 | 14.1 |
| Indonesia | Jakarta | 58.7 | 62.7 | 38.5 | 66.7 | 48.6 | 40.3 | 26.2 | 27.9 | 22.7 | 19.4 | 21.9 | 28.7 | 20.6 | 21.9 | 22.2 | 17.1 | 31.1 | 17.3 |
| | Serpong | *** | 38.2 | 25.7 | 23.1 | 28.1 | 33.3 | 28.2 | 30.5 | 27.8 | 23.1 | 24.4 | 33.6 | 29.0 | 26.5 | 23.2 | 31.5 | 25.9 | 25.5 |
| | Kototabang | 3.69 | 4.68 | 7.47 | 9.18 | 5.23 | 5.50 | 7.65 | 6.99 | 2.91 | 4.72 | 6.33 | 7.77 | 6.04 | 6.22 | 8.52 | 8.30 | 5.70 | 4.48 |
| | Bandung | 67.4 | 33.7 | 27.7 | 20.4 | 27.7 | 35.3 | 26.8 | 26.4 | 28.0 | 29.2 | 27.0 | 30.8 | 26.5 | 30.7 | 38.8 | 30.1 | 31.9 | 35.0 |
| | Maros | | | | | | | | | 5.38 | 6.96 | 10.8 | 8.26 | 8.77 | 6.44 | 7.56 | 6.19 | 10.4 | 6.34 |
| Japan | Rishiri | 39.0 | 31.0 | 27.3 | 23.5 | 28.6 | 27.9 | 22.9 | 28.3 | 29.4 | 25.9 | 23.4 | 21.2 | 27.8 | 23.2 | 20.0 | 18.2 | 11.8 | 24.6 |
| | Ochiishi | | | | 19.1 | 34.5 | 22.6 | 27.7 | 21.3 | 18.7 | 16.7 | 23.0 | 15.2 | 25.3 | 32.5 | 13.0 | 20.3 | 12.7 | 18.0 |
| | Tappi | 21.9 | 22.9 | 22.7 | 21.8 | 26.2 | 29.6 | 35.8 | 29.6 | 28.3 | 23.1 | 21.3 | 27.5 | 22.3 | 33.1 | 26.5 | 24.7 | 22.5 | 22.1 |
| | Sado-seki | 34.4 | 41.0 | 28.2 | 16.5 | 17.7 | 34.2 | 28.3 | 34.9 | 31.0 | 33.0 | 32.3 | 24.5 | 29.8 | 33.5 | 32.0 | 34.7 | 21.4 | 19.6 |
| | Happo | 13.3 | 11.7 | 7.59 | 7.53 | 9.13 | 12.0 | 10.3 | 12.2 | 10.9 | 10.1 | 6.11 | 7.00 | 11.6 | 8.88 | 8.00 | 7.06 | 5.12 | 4.66 |
| | Ijira | 19.9 | 22.0 | 19.7 | 19.1 | 14.0 | 18.9 | 20.6 | 19.0 | 18.2 | 15.4 | 11.1 | 13.0 | 13.6 | 12.3 | 12.0 | 11.7 | 10.8 | 10.1 |
| | Oki | 40.5 | 33.8 | 35.3 | 21.5 | 29.3 | 55.7 | 29.5 | 36.3 | 35.6 | 37.8 | 40.8 | 45.6 | 37.9 | 47.0 | 47.8 | 36.4 | 31.7 | 40.7 |
| | Banryu | 15.6 | 19.0 | 19.0 | 17.4 | 19.8 | 26.9 | 22.0 | 27.9 | 25.8 | 20.9 | 21.0 | 21.1 | 25.9 | 17.3 | 21.6 | 18.3 | 16.9 | 16.2 |
| | Yusuhara | 11.1 | 9.16 | 11.2 | 9.33 | 6.72 | 12.1 | 10.1 | 9.50 | 10.2 | 11.7 | 9.64 | 7.02 | 10.7 | 9.07 | 6.92 | 6.52 | 7.58 | 19.8 |
| | Hedo | 32.2 | 15.9 | 36.9 | 35.2 | 77.0 | 36.0 | 19.2 | 14.4 | 14.2 | 13.1 | 20.9 | 20.5 | 31.2 | 22.2 | 14.3 | 23.9 | 17.5 | 28.0 |
| | Ogasawara | 11.4 | 11.4 | 18.1 | 18.0 | 10.7 | 13.1 | 10.2 | 12.7 | 8.97 | 16.5 | 15.0 | 15.7 | 10.2 | 13.5 | 12.1 | 20.8 | 9.57 | 12.8 |
| | Tokyo | | | | | | | | 17.1 | 19.6 | 16.0 | 10.9 | 15.9 | 15.6 | 12.2 | 13.9 | 11.7 | 9.36 | 11.3 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 3.46 | 4.67 | 5.06 | 4.05 | *** | *** | 2.41 | *** | *** | 3.19 | 3.66 | ** |
| Malaysia | Petaling Jaya | 23.5 | 22.2 | 23.7 | 21.0 | 18.2 | 23.3 | 20.6 | 13.8 | 17.5 | 13.2 | 17.1 | 22.5 | 17.0 | 17.8 | 21.4 | 21.4 | 20.2 | 13.5 |
| | Tanah Rata | 4.12 | 3.73 | 4.62 | 3.79 | 4.03 | 5.58 | 4.43 | 3.52 | 3.28 | 3.27 | 3.25 | 5.05 | 4.59 | 4.77 | 6.19 | 6.86 | 3.92 | 3.53 |
| | Danum Valley | | | | | | 4.40 | 3.41 | 2.29 | 2.49 | 2.82 | 5.08 | 1.96 | 2.28 | 3.17 | 2.58 | 3.54 | 1.65 | 2.70 |
| | Kuching | | | | | | | | | 4.14 | 3.78 | 3.57 | 4.07 | 4.67 | 5.01 | 7.14 | 4.68 | 4.07 | 4.00 |
| Mongolia | Ulaanbaatar | 24.3 | 25.2 | 24.7 | 19.5 | 22.1 | 26.7 | 25.4 | 37.1 | 27.9 | 19.9 | 22.2 | 28.1 | *** | 56.6 | *** | 122 | 129 | 34.6 |
| | Terelj | 16.4 | 9.72 | 15.1 | 8.26 | 13.3 | 17.5 | 23.8 | 25.0 | 16.5 | 16.5 | 30.5 | 23.6 | *** | 48.5 | *** | 104 | 142 | 13.5 |
| Myanmar | Yangon | | | | | | | | *** | *** | 8.01 | 4.52 | 6.63 | 7.48 | 7.96 | 4.55 | 4.62 | 9.19 | 11.6 |
| Philippines | Metro Manila | 23.4 | 37.3 | 26.3 | 17.1 | 20.4 | 24.0 | 17.6 | 22.3 | 24.9 | 13.6 | 20.3 | 18.7 | 24.1 | 15.1 | 18.0 | 19.0 | 21.7 | *** |
| | Los Baños | 10.5 | 15.6 | 16.1 | 7.08 | 8.42 | 9.86 | 10.8 | 8.38 | 18.0 | 8.82 | 7.39 | 8.57 | 12.6 | 6.60 | 9.13 | 13.4 | 15.4 | *** |
| | Mt.Sto.Tomas | | | | | | | 1.37 | 5.74 | 3.47 | 5.04 | 4.94 | 4.69 | 7.26 | 7.71 | 4.62 | 4.02 | 5.52 | *** |
| Republic of Korea | Kanghwa | 31.6 | 25.0 | 34.5 | 26.1 | 44.8 | 46.8 | 37.0 | 41.2 | 27.9 | 29.2 | 26.3 | 27.2 | 27.2 | 36.1 | 29.3 | 29.4 | 18.8 | 23.5 |
| | Cheju | 23.2 | 20.7 | 28.0 | 22.7 | 23.8 | 34.3 | 28.1 | 37.9 | 26.2 | 25.3 | 19.3 | 25.5 | 36.7 | 40.6 | 17.2 | 17.3 | 43.1 | 31.6 |
| | Imsil | | 16.4 | 22.9 | 16.3 | 16.5 | 22.8 | 26.8 | 28.8 | 21.0 | 19.6 | 19.5 | 20.7 | 19.4 | 18.5 | 15.2 | 20.2 | 13.8 | 18.6 |
| Russia | Mondy | 7.18 | 11.0 | 10.8 | 8.51 | 6.85 | 5.37 | 4.70 | 9.31 | 7.13 | 7.82 | 6.80 | 4.53 | 7.16 | 3.58 | 5.47 | 6.45 | 3.13 | 6.43 |
| | Listvyanka | 15.4 | 13.4 | 18.2 | 19.1 | 19.2 | 17.3 | 19.0 | 17.1 | 21.3 | 19.3 | 20.7 | 22.1 | 21.4 | 18.1 | 17.4 | 21.0 | 15.0 | 22.5 |
| | Irkutsk | 30.1 | 29.6 | 34.2 | 26.3 | 26.6 | 27.8 | 26.0 | 33.6 | 38.5 | 31.2 | 33.5 | 34.4 | 37.9 | 36.6 | 23.2 | 42.2 | 23.6 | 25.7 |
| | Primorskaya | | | 29.0 | 43.1 | 37.2 | 38.2 | 46.0 | 30.8 | 40.6 | 22.6 | 31.9 | 14.0 | 20.8 | 29.2 | 32.1 | 21.4 | 24.0 | 34.2 |
| Thailand | Bangkok | 21.6 | 18.2 | 18.6 | 18.5 | 16.3 | 19.5 | 22.3 | 17.2 | 18.0 | 12.7 | 12.0 | 10.7 | 10.7 | 7.09 | 8.43 | 7.53 | 14.1 | 17.0 |
| | Samutprakarn | 25.5 | | | | 16.5 | 19.1 | 20.7 | 14.8 | 15.7 | 15.1 | 15.6 | 7.67 | 10.2 | 7.67 | 9.61 | 7.24 | 11.8 | 8.90 |
| | Pathumthani | 19.6 | 17.2 | 15.0 | 12.4 | 17.5 | 13.2 | 13.4 | 12.0 | 10.6 | 8.89 | 8.01 | 9.45 | 7.93 | 9.41 | 8.23 | 11.6 | 10.2 | 8.91 |
| | Khanchanaburi | 3.64 | 5.22 | 5.62 | 3.56 | 3.39 | 2.80 | 4.04 | 2.47 | 3.78 | 3.60 | 1.79 | 5.11 | 3.72 | 1.23 | 3.59 | 2.34 | 9.80 | 3.33 |
| | Mae Hia | | 2.79 | 4.46 | 4.13 | 6.90 | 5.90 | 4.54 | 6.00 | 4.96 | 4.30 | 3.32 | 3.24 | 4.76 | 4.13 | 8.39 | 4.12 | 5.45 | 6.21 |
| | Sakaerat | | | | | | | 8.24 | 6.44 | 7.36 | 6.44 | 7.04 | 5.30 | 6.64 | 7.49 | 10.8 | 6.53 | 6.94 | 4.93 |
| Vietnam | Hanoi | 30.1 | 14.0 | 33.7 | 30.1 | 37.0 | 51.4 | 46.9 | 33.6 | 20.2 | 27.4 | 35.4 | 30.7 | 28.8 | 25.9 | 39.3 | 39.5 | 35.8 | 34.6 |
| | HoaBinh | 16.3 | 14.7 | 18.8 | 22.5 | 29.4 | 17.8 | 24.9 | 17.0 | 13.6 | 16.1 | 26.3 | 18.0 | 17.1 | 19.7 | 25.2 | 20.0 | 26.3 | 18.9 |
| | Cuc Phuong | | | | | | | | | | 18.5 | 20.3 | 37.6 | 24.3 | 26.9 | 18.5 | 18.8 | 16.7 | 16.2 |
| | Da Nang | | | | | | | | | | 18.8 | 16.4 | 21.1 | 19.6 | 24.2 | 15.8 | 11.4 | 11.7 | 16.5 |
| | Can Tho | | | | | | | | | | | | | | | 8.73 | 30.7 | 15.9 | 16.2 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 24.2 | 47.6 | 19.2 | 23.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 22.6 | 43.6 | 26.2 |

Terms and abbreviations are given in Table 3.5.

**Table 3.71 Precipitation amount-weighted annual average concentrations of nss-$SO_4^{2-}$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | *** | *** | 5.08 | 22.0 | 8.67 | 11.2 | 7.18 | 8.83 | 10.3 | 7.80 | 5.81 | 6.66 | 5.11 | 11.0 |
| China | Guanyinqiao | 151 | 205 | 114 | 109 | 165 | 185 | 177 | 130 | | | | | | | | | | |
| | Nanshan | 130 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 144 | 99.0 | 138 | 142 | 101 | 106 | 84.0 | 50.1 | 46.5 | 40.7 |
| | Jinyunshan | | 123 | 78.0 | 82.9 | 109 | 101 | 140 | 90.0 | 120 | 113 | 151 | 140 | 124 | 81.2 | 60.1 | 43.8 | 39.8 | 36.4 |
| | Shizhan | 353 | 460 | 835 | 199 | 171 | 125 | 271 | 182 | 190 | 135 | 99.5 | 109 | 109 | 132 | 105 | 75.9 | 59.2 | 70.8 |
| | Weishuiyuan | 534 | 1500 | 994 | 136 | 201 | 106 | 326 | | | | | | | | | | | |
| | Jiwozi | 140 | 316 | 295 | 84.5 | 53.7 | 115 | 124 | 177 | 140 | 92.0 | 31.4 | 62.1 | 91.8 | 45.8 | 61.8 | 26.0 | 19.0 | 33.8 |
| | Hongwen | 18.8 | 55.9 | 39.4 | 34.8 | 66.0 | 44.1 | 27.0 | 74.0 | 30.3 | 24.6 | 25.5 | 30.2 | 31.2 | 21.0 | 25.8 | 17.4 | 21.3 | 29.5 |
| | Xiaoping | 14.1 | 17.6 | 15.7 | 22.1 | 26.4 | 19.6 | 16.1 | 27.2 | 27.8 | 27.3 | 26.2 | 24.2 | 22.9 | 22.0 | 29.0 | 16.7 | 13.3 | 14.2 |
| | Xiang Zhou | 19.9 | 14.6 | 25.4 | 18.3 | 16.7 | 21.5 | 27.0 | 20.5 | 14.4 | 15.8 | 18.6 | 13.5 | 12.1 | 15.9 | 12.5 | 8.60 | 14.7 | 11.0 |
| | Zhuxiandong | 46.3 | 18.0 | 29.3 | 16.4 | 23.8 | 26.1 | 18.0 | *** | 19.0 | 18.3 | 15.9 | 17.7 | *** | *** | *** | 19.3 | 16.2 | 12.6 |
| Indonesia | Jakarta | 55.6 | 60.3 | 36.4 | 65.1 | 46.4 | 38.9 | 25.4 | 27.0 | 22.1 | 18.8 | 21.4 | 28.0 | 19.8 | 20.9 | 20.9 | 16.3 | 29.8 | 16.7 |
| | Serpong | *** | 36.8 | 24.2 | 22.4 | 26.9 | 32.3 | 27.7 | 29.8 | 27.2 | 22.5 | 23.9 | 33.0 | 28.4 | 25.6 | 22.1 | 30.7 | 25.1 | 24.8 |
| | Kototabang | *** | 4.41 | 7.09 | 8.59 | 4.58 | 5.16 | 7.28 | 6.47 | 2.61 | 4.38 | 6.04 | 7.38 | 5.47 | 5.71 | 8.18 | 8.63 | 4.96 | 4.27 |
| | Bandung | *** | 32.5 | 27.2 | 20.0 | 27.0 | 34.6 | 25.7 | 26.0 | 27.5 | 28.5 | 26.4 | 30.1 | 25.8 | 29.9 | 38.0 | 29.6 | 31.2 | 33.9 |
| | Maros | | | | | | | | | 4.43 | 6.18 | 10.0 | 7.36 | 7.65 | 5.28 | 6.24 | 5.99 | 5.58 | 3.71 |
| Japan | Rishiri | 19.4 | 18.2 | 15.6 | 12.9 | 14.7 | 15.7 | 16.3 | 19.7 | 14.5 | 15.3 | 13.6 | 12.9 | 10.5 | 11.3 | 10.2 | 9.80 | 7.61 | 12.2 |
| | Ochiishi | | | | 7.47 | 12.9 | 10.1 | 11.3 | 10.1 | 8.41 | 5.88 | 9.65 | 6.73 | 8.81 | 7.18 | 7.15 | 9.53 | 4.37 | 4.87 |
| | Tappi | 12.9 | 14.8 | 12.9 | 13.4 | 14.2 | 16.6 | 18.4 | 15.7 | 16.4 | 11.5 | 14.5 | 18.5 | 13.8 | 17.6 | 17.1 | 11.5 | 12.3 | 10.7 |
| | Sado-seki | 18.9 | 19.5 | 13.1 | 10.9 | 9.53 | 16.8 | 14.8 | 21.3 | 18.3 | 13.7 | 13.4 | 15.3 | 15.3 | 13.9 | 15.0 | 15.1 | 10.9 | 10.6 |
| | Happo | 12.9 | 11.3 | 7.39 | 7.24 | 8.78 | 11.5 | 10.1 | 12.0 | 10.7 | 9.82 | 5.88 | 6.80 | 11.0 | 8.63 | 7.68 | 6.71 | 4.83 | 4.36 |
| | Ijira | 18.7 | 20.2 | 18.0 | 18.3 | 12.7 | 18.0 | 20.0 | 17.7 | 17.3 | 14.6 | 10.3 | 12.1 | 12.4 | 11.4 | 11.1 | 10.8 | 10.1 | 9.20 |
| | Oki | 16.9 | 14.8 | 13.5 | 10.3 | 11.9 | 19.3 | 15.8 | 19.7 | 16.4 | 15.2 | 16.2 | 16.7 | 16.4 | 16.5 | 15.0 | 11.5 | 11.7 | 11.5 |
| | Banryu | 13.9 | 14.3 | 14.2 | 12.5 | 13.0 | 21.3 | 18.0 | 23.1 | 21.4 | 15.0 | 15.3 | 14.6 | 20.3 | 13.1 | 16.4 | 12.8 | 11.9 | 10.9 |
| | Yusuhara | 10.1 | 8.45 | 9.44 | 8.46 | 5.27 | 10.6 | 9.39 | 8.69 | 9.69 | 10.9 | 9.11 | 6.28 | 9.66 | 8.47 | 6.61 | 5.28 | 7.10 | 16.7 |
| | Hedo | 5.89 | 6.49 | 7.44 | 11.3 | 24.4 | 13.0 | 7.86 | 6.58 | 6.73 | 5.55 | 5.79 | 8.26 | 6.30 | 8.58 | 6.03 | 5.04 | 5.47 | 5.94 |
| | Ogasawara | 3.13 | 5.11 | 3.94 | 4.08 | 3.44 | 7.32 | 4.15 | 4.85 | 3.81 | 5.21 | 3.02 | 3.56 | 3.35 | 4.99 | 4.20 | 2.39 | 4.09 | 2.09 |
| | Tokyo | | | | | | | | 15.0 | 18.4 | 14.5 | 9.86 | 13.6 | 13.8 | 10.8 | 12.8 | 10.6 | 8.49 | 8.89 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 3.03 | 4.53 | 4.88 | 3.50 | *** | *** | *** | *** | *** | 3.02 | 3.56 | ** |
| Malaysia | Petaling Jaya | 23.2 | 22.0 | 23.4 | 20.7 | 17.9 | 22.9 | 20.3 | 13.6 | 17.2 | 12.9 | 16.8 | 22.2 | 16.8 | 17.5 | 21.1 | 21.0 | 19.9 | 13.2 |
| | Tanah Rata | 4.01 | 3.61 | 4.52 | 3.68 | 3.92 | 5.18 | 4.34 | 3.43 | 3.21 | 3.19 | 3.17 | 4.93 | 4.50 | 4.64 | 6.02 | 6.69 | 3.77 | 3.38 |
| | Danum Valley | | | | | | 4.13 | 3.07 | 2.04 | 2.30 | 2.47 | 4.32 | 1.72 | 2.11 | 2.86 | 2.25 | 3.22 | 1.46 | 2.56 |
| | Kuching | | | | | | | | | 3.82 | 3.33 | 3.17 | 3.53 | 4.35 | 4.56 | 6.58 | 3.91 | 3.33 | 3.44 |
| Mongolia | Ulaanbaatar | 23.9 | 24.6 | 24.3 | 19.3 | 21.8 | 26.3 | 24.9 | 36.8 | 27.3 | 19.6 | 22.0 | 27.7 | *** | 52.0 | *** | *** | 119 | 33.3 |
| | Terelj | 16.0 | 8.77 | 14.3 | 7.99 | 12.9 | 16.8 | 23.0 | 24.5 | 15.8 | 16.0 | 29.8 | 23.2 | *** | 47.7 | *** | *** | 127 | 12.7 |
| Myanmar | Yangon | | | | | | | | *** | *** | 6.90 | 3.90 | 5.72 | 6.15 | 7.33 | 3.51 | 4.09 | 8.24 | 10.7 |
| Philippines | Metro Manila | 21.6 | 22.7 | 25.4 | 16.0 | 19.4 | 23.0 | 16.5 | 21.1 | 23.4 | 12.6 | 18.9 | 17.4 | 23.1 | 13.4 | 16.5 | 17.6 | 20.7 | *** |
| | Los Baños | 8.50 | 13.2 | 14.8 | 6.25 | 7.70 | 8.83 | 9.44 | 7.32 | 16.9 | 7.77 | 6.02 | 7.40 | 11.3 | 5.22 | 8.20 | 12.4 | 14.0 | *** |
| | Mt.Sto.Tomas | | | | | | | 1.20 | 5.40 | 3.17 | 4.54 | 4.56 | 4.43 | 6.64 | 7.31 | 4.24 | 3.49 | 4.62 | *** |
| Republic | Kanghwa | 28.2 | 22.5 | 31.5 | 24.6 | 42.9 | 44.7 | 35.2 | 38.5 | 25.6 | 26.5 | 24.7 | 25.0 | 24.4 | 34.3 | 26.7 | 26.7 | 17.1 | 21.9 |
| of Korea | Cheju | 14.0 | 16.2 | 24.5 | 19.9 | 20.3 | 29.2 | 22.9 | 31.8 | 18.2 | 22.1 | 13.1 | 16.4 | 14.1 | 23.2 | 10.2 | 11.2 | 19.3 | 15.9 |
| | Imsil | | 15.5 | 20.5 | 14.9 | 15.4 | 21.5 | 24.9 | 27.9 | 19.0 | 16.6 | 16.6 | 18.4 | 16.3 | 16.7 | 13.4 | 17.3 | 11.8 | 16.5 |
| Russia | Mondy | 7.08 | 10.8 | 10.7 | 8.37 | 6.75 | 5.28 | 4.60 | 9.12 | 7.02 | 7.69 | 6.63 | 4.30 | 6.90 | 3.49 | 5.34 | 6.35 | 3.05 | 6.27 |
| | Listvyanka | 15.1 | 13.2 | 18.0 | 18.8 | 18.9 | 17.1 | 18.8 | 17.0 | 21.2 | 19.1 | 20.5 | 21.8 | 21.1 | 17.7 | 17.1 | 20.9 | 14.7 | 22.3 |
| | Irkutsk | 29.6 | 29.1 | 33.6 | 25.9 | 26.2 | 27.4 | 25.4 | 33.0 | 37.9 | 30.1 | 32.4 | 33.4 | 37.3 | 35.8 | 22.7 | 41.4 | 23.2 | 25.2 |
| | Primorskaya | | | 27.6 | 41.1 | 35.8 | 36.9 | 45.0 | 29.6 | 39.3 | 21.8 | 30.4 | 13.2 | 19.4 | 27.6 | 31.1 | 19.9 | 22.5 | 32.6 |
| Thailand | Bangkok | 21.2 | 17.7 | 17.6 | 18.0 | 15.7 | 18.7 | 21.8 | 16.8 | 17.4 | 12.1 | 11.5 | 10.3 | 10.3 | 6.36 | 7.88 | 7.04 | 13.5 | 16.7 |
| | Samutprakarn | 24.9 | | | | 15.5 | 17.9 | 19.7 | 14.1 | 14.8 | 14.5 | 14.5 | 7.33 | 9.74 | 6.22 | 8.85 | 6.68 | 11.2 | 8.47 |
| | Pathumthani | 18.9 | 16.7 | 14.4 | 12.1 | 17.0 | 12.8 | 13.0 | 11.7 | 10.3 | 8.56 | 7.67 | 9.10 | 7.10 | 9.04 | 7.91 | 11.2 | 9.77 | 8.61 |
| | Khanchanaburi | 3.09 | 4.54 | 5.11 | 2.96 | 2.84 | 2.40 | 3.67 | 2.04 | 3.22 | 3.03 | 1.60 | 4.66 | 3.14 | <1.0 | 3.20 | 2.00 | 9.19 | 3.05 |
| | Mae Hia | | 2.56 | 3.92 | 3.97 | 6.72 | 5.84 | 4.34 | 5.82 | 4.81 | 4.14 | 3.16 | 3.05 | 4.53 | 3.83 | 8.17 | 3.85 | 5.04 | 5.85 |
| | Sakaerat | | | | | | | 7.97 | 6.18 | 7.11 | 6.27 | 6.85 | 5.05 | 6.42 | 7.31 | 10.3 | 6.25 | 6.70 | 4.80 |
| Vietnam | Hanoi | 29.0 | 13.3 | 33.4 | 29.6 | 36.5 | 50.4 | 46.1 | 33.1 | 19.6 | 26.8 | 35.0 | 30.3 | 28.6 | 25.4 | 38.9 | 39.0 | 35.2 | 33.6 |
| | HoaBinh | 15.5 | 14.1 | 18.6 | 22.3 | 29.2 | 17.4 | 24.6 | 16.8 | 13.4 | 15.9 | 26.0 | 17.9 | 16.9 | 19.5 | 25.1 | 19.8 | 26.1 | 18.7 |
| | Cuc Phuong | | | | | | | | | | 17.8 | 19.6 | 36.8 | 23.1 | 25.3 | 17.9 | 18.3 | 15.9 | 15.1 |
| | Da Nang | | | | | | | | | | 13.1 | 13.9 | 16.8 | 16.1 | 15.6 | 10.8 | 6.65 | 7.75 | 11.6 |
| | Can Tho | | | | | | | | | | | | | | | 7.80 | 28.9 | 15.1 | 15.6 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 22.7 | 45.5 | 18.4 | 22.3 |
| | Yen Bai | | | | | | | | | | | | | | | | 22.2 | 43.0 | 26.0 |

Terms and abbreviations are given in Table 3.5.

**Table 3.72 Precipitation amount-weighted annual average concentrations of $NO_3^-$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 7.68 | *** | 9.05 | 8.26 | 9.40 | 10.3 | 8.37 | 8.85 | 10.7 | 7.65 | 8.51 | 10.4 | 7.66 | 10.9 |
| China | Guanyinqiao | 42.1 | 52.8 | 34.4 | 38.9 | 43.9 | 41.3 | 60.7 | 48.8 | | | | | | | | | | |
| | Nanshan | 41.6 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 65.0 | 53.2 | 77.6 | 83.1 | 73.9 | 73.9 | 64.1 | 47.4 | 52.3 | 51.8 |
| | Jinyunshan | | 40.3 | 29.4 | 34.4 | 36.8 | 34.4 | 46.1 | 31.5 | 46.5 | 54.4 | 75.0 | 77.5 | 70.4 | 53.1 | 45.6 | 36.4 | 37.5 | 36.8 |
| | Shizhan | 87.0 | 153 | 150 | 68.0 | 61.7 | 12.1 | 81.7 | 75.9 | 40.2 | 57.7 | 41.0 | 17.5 | 49.4 | 35.6 | 98.0 | 71.9 | 62.8 | 25.2 |
| | Weishuiyuan | 95.8 | 210 | 168 | 54.1 | 69.6 | 11.4 | 104 | | | | | | | | | | | |
| | Jiwozi | 29.1 | 140 | 89.8 | 42.8 | 26.4 | 9.31 | 50.7 | 66.8 | 103 | 27.4 | 12.2 | 8.24 | 47.4 | 8.77 | 13.8 | 28.6 | 5.56 | 2.55 |
| | Hongwen | 18.7 | 37.9 | 30.7 | 33.6 | 49.8 | 37.3 | 22.4 | 37.6 | 22.9 | 23.4 | 29.0 | 23.6 | 35.2 | 20.9 | 26.4 | 26.2 | 31.4 | 43.7 |
| | Xiaoping | 14.6 | 18.7 | 14.8 | 22.6 | 19.6 | 18.1 | 16.0 | 26.2 | 24.6 | 29.3 | 30.3 | 22.6 | 26.7 | 20.7 | 34.0 | 24.4 | 19.3 | 28.1 |
| | Xiang Zhou | 15.6 | 14.1 | 17.8 | 20.9 | 22.1 | 17.2 | 21.8 | 16.6 | 12.3 | 17.7 | 23.9 | 15.7 | 15.2 | 20.4 | 20.9 | 18.8 | 18.2 | 18.1 |
| | Zhuxiandong | 33.5 | 22.2 | 20.8 | 11.5 | 25.0 | 21.5 | 13.2 | *** | 14.7 | 19.8 | 19.7 | 18.8 | *** | *** | *** | 29.4 | 22.2 | 22.8 |
| Indonesia | Jakarta | 17.6 | 53.7 | 28.2 | 58.4 | 77.6 | 53.9 | 20.5 | 31.1 | 14.1 | 15.3 | 17.1 | 29.8 | 16.2 | 21.8 | 20.0 | 15.3 | 34.2 | 18.9 |
| | Serpong | *** | 50.7 | 32.6 | 30.8 | 39.7 | 39.4 | 28.3 | 30.4 | 30.3 | 25.4 | 29.8 | 35.5 | 31.5 | 39.5 | 36.2 | 48.1 | 31.7 | 31.1 |
| | Kototabang | 6.16 | 2.74 | 5.64 | 49.3 | 4.71 | 1.58 | 1.40 | 3.57 | 2.79 | <0.5 | 2.37 | 5.05 | 4.65 | 2.86 | 7.48 | 3.60 | 4.16 | 3.78 |
| | Bandung | 34.4 | 26.9 | 26.3 | 20.4 | 28.2 | 19.2 | 23.1 | 21.6 | 20.7 | 22.8 | 17.9 | 28.0 | 21.6 | 22.0 | 27.2 | 23.6 | 22.6 | 25.9 |
| | Maros | | | | | | | | | 3.51 | 5.36 | 6.35 | 7.51 | 9.05 | 3.65 | 6.10 | 6.29 | 8.79 | 3.48 |
| Japan | Rishiri | 18.1 | 18.0 | 13.5 | 12.2 | 11.6 | 12.6 | 14.0 | 15.6 | 14.7 | 17.3 | 14.3 | 14.1 | 13.4 | 13.4 | 10.2 | 10.8 | 10.2 | 18.7 |
| | Ochiishi | | | | 7.95 | 13.5 | 9.31 | 11.4 | 9.57 | 8.44 | 5.42 | 9.47 | 9.58 | 9.80 | 8.83 | 8.71 | 11.5 | 5.62 | 6.83 |
| | Tappi | 12.9 | 15.3 | 16.9 | 16.9 | 16.3 | 18.2 | 22.5 | 21.6 | 22.4 | 13.4 | 17.5 | 19.8 | 17.4 | 25.2 | 24.1 | 14.3 | 17.6 | 19.5 |
| | Sado-seki | 18.3 | 22.2 | 15.0 | 13.9 | 11.2 | 18.6 | 18.9 | 25.8 | 23.9 | 16.6 | 18.1 | 19.7 | 20.0 | 19.4 | 19.3 | 20.8 | 18.7 | 18.6 |
| | Happo | 11.1 | 8.88 | 6.97 | 6.57 | 8.01 | 9.53 | 8.25 | 9.82 | 11.0 | 8.56 | 6.51 | 8.17 | 11.6 | 8.32 | 7.80 | 6.78 | 5.79 | 5.96 |
| | Ijira | 24.1 | 21.7 | 21.8 | 21.7 | 15.4 | 24.1 | 24.2 | 21.8 | 24.1 | 18.4 | 15.1 | 15.1 | 16.7 | 14.8 | 14.7 | 16.7 | 16.4 | 15.4 |
| | Oki | 18.6 | 15.7 | 15.1 | 12.9 | 17.0 | 21.8 | 18.2 | 23.8 | 19.3 | 20.2 | 24.2 | 21.2 | 21.6 | 24.2 | 20.3 | 15.1 | 16.4 | 21.0 |
| | Banryu | 13.9 | 17.4 | 19.1 | 15.9 | 15.6 | 25.5 | 19.5 | 29.2 | 24.6 | 20.0 | 22.6 | 19.5 | 27.8 | 16.2 | 21.7 | 18.0 | 17.9 | 22.2 |
| | Yusuhara | 7.02 | 6.85 | 8.45 | 6.95 | 5.27 | 9.41 | 7.56 | 7.19 | 8.98 | 7.83 | 7.70 | 5.75 | 8.57 | 7.03 | 4.87 | 7.55 | 6.96 | 26.3 |
| | Hedo | 5.73 | 6.57 | 9.49 | 9.48 | 13.4 | 11.0 | 8.09 | 6.41 | 6.90 | 6.43 | 6.38 | 7.69 | 7.17 | 8.58 | 6.88 | 7.05 | 7.40 | 8.76 |
| | Ogasawara | 2.38 | 3.69 | 2.71 | 4.69 | 3.67 | 3.21 | 4.78 | 4.88 | 3.75 | 3.39 | 3.07 | 2.93 | 2.88 | 3.82 | 3.11 | 2.41 | 3.87 | 2.81 |
| | Tokyo | | | | | | | | 19.5 | 24.4 | 18.1 | 15.3 | 21.7 | 18.8 | 16.1 | 16.8 | 16.3 | 11.8 | 14.0 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 6.94 | 6.90 | 5.96 | 9.73 | *** | *** | 5.55 | *** | *** | 4.12 | 4.07 | ** |
| Malaysia | Petaling Jaya | 27.2 | 23.7 | 36.8 | 32.9 | 29.8 | 35.9 | 30.0 | 26.6 | 36.1 | 46.4 | 49.5 | 52.8 | 43.8 | 33.5 | 35.8 | 43.6 | 44.1 | 28.8 |
| | Tanah Rata | 3.32 | 3.39 | 5.99 | 4.70 | 4.61 | 6.04 | 5.34 | 4.17 | 4.53 | 5.19 | 4.40 | 2.21 | 3.78 | 3.78 | 4.82 | 7.63 | 5.97 | 7.89 |
| | Danum Valley | | | | | | 2.50 | 1.41 | 0.676 | 1.37 | 1.65 | 1.42 | 1.05 | 0.956 | 1.97 | 0.738 | 1.88 | 0.888 | <0.5 |
| | Kuching | | | | | | | | | 4.98 | 4.55 | 4.91 | 5.00 | 3.82 | 4.52 | 5.29 | 3.61 | 4.16 | 4.64 |
| Mongolia | Ulaanbaatar | 19.9 | 20.7 | 23.7 | 15.5 | 15.8 | 18.8 | 18.6 | 26.0 | 20.1 | 19.1 | 21.4 | 16.8 | *** | 30.9 | *** | 34.6 | 36.7 | 30.4 |
| | Terelj | 17.6 | 9.20 | 18.1 | 12.4 | 16.1 | 11.8 | 15.5 | 18.3 | 18.3 | 21.0 | 27.6 | 18.0 | *** | 31.8 | *** | 24.0 | 48.9 | 43.5 |
| Myanmar | Yangon | | | | | | | | *** | *** | 7.23 | 4.96 | 6.30 | 8.31 | 6.72 | 4.80 | 8.25 | 14.9 | 18.3 |
| Philippines | Metro Manila | 12.1 | 18.5 | 17.6 | 13.1 | 15.4 | 21.5 | 12.3 | 14.1 | 21.1 | 8.68 | 50.5 | 14.4 | 18.2 | 13.9 | 16.0 | 13.4 | 36.4 | *** |
| | Los Baños | 5.44 | 13.9 | 8.21 | 4.87 | 6.10 | 9.83 | 8.13 | 6.25 | 7.97 | 8.01 | 31.4 | 8.35 | 11.9 | 7.80 | 8.22 | 8.81 | 38.5 | *** |
| | Mt.Sto.Tomas | | | | | | | 1.87 | 5.47 | 3.92 | 3.94 | 4.29 | 2.56 | 6.10 | 8.47 | 5.07 | 3.49 | 5.76 | *** |
| Republic | Kanghwa | 42.4 | 28.6 | 32.7 | 27.3 | 41.1 | 45.0 | 33.0 | 39.0 | 31.0 | 18.9 | 31.8 | 27.7 | 36.4 | 43.2 | 36.9 | 50.5 | 29.6 | 41.9 |
| of Korea | Cheju | 15.3 | 18.4 | 24.0 | 23.0 | 24.8 | 27.5 | 25.5 | 15.1 | 26.5 | 18.6 | 22.7 | 27.9 | 19.3 | 30.3 | 18.2 | 21.6 | 31.8 | 39.7 |
| | Imsil | | 15.6 | 32.0 | 16.9 | 20.5 | 26.4 | 27.7 | 18.1 | 22.6 | 22.3 | 29.0 | 27.7 | 26.2 | 26.2 | 28.0 | 33.8 | 22.7 | 34.8 |
| Russia | Mondy | 9.97 | 10.6 | 13.5 | 6.80 | 6.78 | 5.03 | 5.10 | 8.51 | 7.48 | 7.90 | 8.11 | 4.30 | 7.99 | 5.03 | 4.65 | 5.29 | 5.75 | 9.75 |
| | Listvyanka | 18.7 | 14.7 | 25.0 | 29.8 | 19.8 | 11.8 | 14.6 | 20.4 | 15.4 | 16.4 | 20.2 | 30.6 | 19.3 | 15.7 | 13.2 | 15.5 | 15.0 | 19.3 |
| | Irkutsk | 21.0 | 18.4 | 21.8 | 17.8 | 17.1 | 16.4 | 16.5 | 18.3 | 17.1 | 16.8 | 22.3 | 20.7 | 18.3 | 16.3 | 12.3 | 20.7 | 13.4 | 14.4 |
| | Primorskaya | | | 10.2 | 15.4 | 21.4 | 21.6 | 29.2 | 19.1 | 33.1 | 18.6 | 21.9 | 37.8 | 23.4 | 18.5 | 7.66 | 25.4 | 22.3 | 35.0 |
| Thailand | Bangkok | 21.6 | 17.9 | 24.6 | 23.1 | 15.9 | 23.2 | 33.0 | 28.0 | 31.2 | 28.1 | 26.8 | 20.6 | 27.6 | 12.9 | 15.3 | 16.2 | 31.8 | 20.2 |
| | Samutprakarn | 15.4 | | | | 9.79 | 17.9 | 14.1 | 16.6 | 17.4 | 20.0 | 15.4 | 9.81 | 12.5 | 5.07 | 13.0 | 9.97 | 18.3 | 15.7 |
| | Pathumthani | 18.6 | 19.6 | 18.5 | 17.2 | 24.0 | 19.6 | 22.0 | 22.8 | 21.5 | 16.6 | 20.4 | 19.2 | 18.8 | 18.6 | 14.8 | 29.1 | 26.3 | 28.4 |
| | Khanchanaburi | 5.74 | 6.75 | 6.06 | 4.89 | 4.78 | 2.50 | 6.15 | 2.94 | 5.02 | 4.55 | 3.76 | 7.27 | 6.86 | 1.93 | 4.68 | 4.28 | 4.93 | 4.95 |
| | Mae Hia | | 4.13 | 6.64 | 6.53 | 6.12 | 8.36 | 7.87 | 7.97 | 9.11 | 8.44 | 7.30 | 7.26 | 7.91 | 9.89 | 11.7 | 8.36 | 12.9 | 10.1 |
| | Sakaerat | | | | | | | 11.3 | 11.4 | 11.5 | 12.7 | 14.6 | 9.97 | 11.2 | 10.4 | 24.5 | 12.8 | 13.5 | 10.6 |
| Vietnam | Hanoi | 16.1 | 5.06 | 15.1 | 24.8 | 25.2 | 30.8 | 24.9 | 15.6 | 9.76 | 16.6 | 20.8 | 21.7 | 25.2 | 26.3 | 30.6 | 35.1 | 28.5 | 34.8 |
| | HoaBinh | 9.68 | 8.77 | 20.2 | 13.4 | 19.9 | 12.9 | 16.1 | 10.5 | 10.2 | 12.9 | 15.5 | 14.4 | 15.4 | 18.8 | 25.2 | 22.3 | 24.8 | 22.2 |
| | Cuc Phuong | | | | | | | | | | 10.9 | 23.2 | 27.8 | 20.1 | 16.7 | 10.2 | 13.4 | 11.4 | 14.0 |
| | Da Nang | | | | | | | | | | 11.4 | 7.02 | 15.8 | 4.79 | 5.41 | 5.29 | <0.5 | 2.78 | 5.39 |
| | Can Tho | | | | | | | | | | | | | | | 8.38 | 11.7 | 3.31 | 3.83 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 17.9 | 18.0 | 7.42 | 10.8 |
| | Yen Bai | | | | | | | | | | | | | | | | 17.8 | 40.3 | 24.5 |

Terms and abbreviations are given in Table 3.5.

**Table 3.73 Precipitation amount-weighted annual average concentrations of $Cl^-$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | *** | 6.21 | 6.20 | 12.6 | 8.68 | 10.3 | 4.93 | 5.89 | 6.67 | 7.53 | 9.08 | 9.01 | 6.45 | 6.09 |
| China | Guanyinqiao | 24.0 | 29.8 | 15.6 | 16.2 | 14.7 | 18.3 | 19.3 | 13.8 | | | | | | | | | | |
| | Nanshan | 15.6 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 13.8 | 11.0 | 16.2 | 14.3 | 11.4 | 12.7 | 11.1 | 7.78 | 8.34 | 7.80 |
| | Jinyunshan | | 56.8 | 12.9 | 10.3 | 12.8 | 15.5 | 13.6 | 8.70 | 15.4 | 16.1 | 16.1 | 11.9 | 11.6 | 7.21 | 5.70 | 5.09 | 4.75 | 5.34 |
| | Shizhan | 49.0 | 81.3 | 349 | 83.3 | 36.1 | 34.4 | 35.8 | 39.9 | 33.6 | 26.2 | 22.9 | 10.7 | 16.0 | 50.8 | 21.1 | 17.8 | 14.4 | 8.93 |
| | Weishuiyuan | 91.6 | 278 | 285 | 99.4 | 39.4 | 36.5 | 51.1 | | | | | | | | | | | |
| | Jiwozi | 32.3 | 98.9 | 185 | 70.1 | 14.8 | 38.4 | 33.2 | 44.1 | 33.8 | 27.9 | 14.6 | 11.1 | 31.3 | 33.9 | 23.0 | 14.2 | 0.787 | 16.7 |
| | Hongwen | 32.0 | 35.8 | 42.9 | 51.3 | 60.2 | 66.0 | 45.9 | 39.0 | 31.2 | 32.3 | 15.0 | 25.4 | 23.9 | 19.3 | 28.6 | 25.7 | 31.2 | 71.7 |
| | Xiaoping | 20.7 | 28.8 | 9.15 | 23.5 | 16.6 | 11.9 | 22.3 | 14.6 | 18.6 | 20.1 | 13.9 | 17.1 | 14.5 | 13.0 | 13.8 | 18.5 | 10.6 | 21.5 |
| | Xiang Zhou | 49.8 | 37.8 | 68.9 | 47.4 | 36.4 | 65.8 | 44.6 | 30.9 | 34.8 | 44.9 | 22.4 | 29.8 | 43.4 | 46.1 | 23.8 | 60.2 | 23.6 | 61.1 |
| | Zhuxiandong | 39.4 | 27.7 | 59.5 | 40.2 | 58.8 | 52.6 | 29.3 | *** | 45.6 | 51.4 | 21.7 | 18.8 | *** | *** | *** | 72.4 | 33.5 | 29.3 |
| Indonesia | Jakarta | 21.5 | 38.9 | 28.1 | 52.2 | 39.1 | 41.6 | 15.6 | 18.7 | 11.4 | 12.0 | 15.4 | 19.4 | 13.0 | 19.3 | 28.8 | 17.1 | 31.2 | 12.4 |
| | Serpong | *** | 32.3 | 23.0 | 27.2 | 23.8 | 19.8 | 10.9 | 14.3 | 17.0 | 17.6 | 22.4 | 15.1 | 24.1 | 22.7 | 25.5 | 22.3 | 16.0 | 16.4 |
| | Kototabang | 6.76 | 6.60 | 16.8 | 27.8 | 11.8 | 7.13 | 7.80 | 13.8 | 3.88 | 10.7 | 9.91 | 13.9 | 9.72 | 27.3 | 10.6 | 8.28 | 33.4 | 6.28 |
| | Bandung | 105 | 25.0 | 20.3 | 13.0 | 17.4 | 14.6 | 14.1 | 7.53 | 8.33 | 11.8 | 8.60 | 12.4 | 10.6 | 15.6 | 14.7 | 9.49 | 9.63 | 14.9 |
| | Maros | | | | | | | | | 20.1 | 15.3 | 21.1 | 16.1 | 20.0 | 36.3 | 36.2 | 6.90 | 154 | 114 |
| Japan | Rishiri | 372 | 235 | 217 | 201 | 256 | 233 | 126 | 161 | 268 | 193 | 184 | 156 | 332 | 222 | 184 | 160 | 79.8 | 234 |
| | Ochiishi | | | | 227 | 410 | 232 | 317 | 219 | 194 | 205 | 266 | 180 | 307 | 486 | 112 | 201 | 161 | 258 |
| | Tappi | 178 | 156 | 191 | 154 | 231 | 250 | 326 | 262 | 226 | 217 | 124 | 167 | 162 | 289 | 176 | 283 | 195 | 215 |
| | Sado-seki | 274 | 378 | 307 | 107 | 154 | 337 | 256 | 257 | 236 | 364 | 351 | 182 | 293 | 355 | 317 | 367 | 199 | 170 |
| | Happo | 10.7 | 8.84 | 4.97 | 7.26 | 8.74 | 8.69 | 5.68 | 4.36 | 5.60 | 6.64 | 4.99 | 4.43 | 11.6 | 4.89 | 6.21 | 7.00 | 6.42 | 6.18 |
| | Ijira | 23.0 | 32.7 | 33.3 | 19.1 | 27.5 | 16.8 | 14.4 | 24.8 | 18.9 | 16.5 | 16.2 | 17.2 | 24.5 | 19.5 | 19.7 | 19.9 | 15.2 | 17.7 |
| | Oki | 449 | 359 | 419 | 201 | 321 | 696 | 253 | 312 | 371 | 436 | 471 | 552 | 411 | 579 | 617 | 473 | 384 | 555 |
| | Banryu | 31.0 | 86.5 | 88.9 | 92.5 | 133 | 110 | 76.0 | 89.2 | 82.5 | 114 | 107 | 125 | 103 | 80.8 | 102 | 107 | 92.1 | 99.8 |
| | Yusuhara | 18.7 | 12.3 | 31.8 | 16.0 | 28.1 | 29.9 | 14.0 | 16.2 | 10.0 | 13.9 | 11.0 | 14.7 | 21.8 | 13.4 | 6.95 | 27.4 | 9.97 | 60.4 |
| | Hedo | 515 | 175 | 593 | 451 | 982 | 488 | 217 | 146 | 138 | 141 | 284 | 232 | 496 | 263 | 157 | 368 | 236 | 429 |
| | Ogasawara | 164 | 123 | 278 | 286 | 139 | 115 | 119 | 154 | 98.8 | 227 | 211 | 241 | 134 | 166 | 154 | 370 | 106 | 208 |
| | Tokyo | | | | | | | | 41.1 | 23.7 | 27.8 | 19.4 | 45.9 | 35.8 | 27.7 | 23.1 | 22.2 | 17.2 | 47.5 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 4.77 | 7.42 | 7.41 | 6.19 | *** | *** | 4.46 | *** | *** | 4.97 | 5.28 | ** |
| Malaysia | Petaling Jaya | 8.51 | 7.50 | 7.33 | 9.24 | 7.42 | 8.78 | 6.94 | 5.70 | 7.50 | 7.89 | 9.26 | 8.36 | 7.98 | 7.66 | 8.89 | 10.3 | 10.3 | 10.0 |
| | Tanah Rata | 6.80 | 3.00 | 2.26 | 2.39 | 2.43 | 2.64 | 2.10 | 1.70 | 1.47 | 2.26 | 1.91 | 2.95 | 3.19 | 2.96 | 3.49 | 3.75 | 3.30 | 3.35 |
| | Danum Valley | | | | | | 6.00 | 7.15 | 4.90 | 6.10 | 6.79 | 17.1 | 5.70 | 4.16 | 7.52 | 6.50 | 7.47 | 4.90 | 4.60 |
| | Kuching | | | | | | | | | 6.35 | 8.41 | 8.04 | 11.5 | 6.78 | 8.82 | 11.0 | 14.5 | 14.5 | 11.5 |
| Mongolia | Ulaanbaatar | 8.96 | 9.65 | 7.69 | 7.64 | 8.03 | 7.75 | 7.77 | 9.38 | 10.1 | 9.63 | 8.49 | 7.46 | *** | 4.08 | *** | 5.15 | 4.63 | 3.56 |
| | Terelj | 8.96 | 8.66 | 11.4 | 6.59 | 8.96 | 9.92 | 9.28 | 10.3 | 9.22 | 9.95 | 10.6 | 9.81 | *** | 6.94 | *** | 7.91 | 9.71 | 8.67 |
| Myanmar | Yangon | | | | | | | | *** | *** | 25.0 | 13.2 | 15.8 | 26.6 | 27.1 | 19.5 | 34.4 | 31.3 | 35.2 |
| Philippines | Metro Manila | 25.6 | 115 | 18.8 | 24.3 | 24.0 | 14.2 | 23.1 | 27.9 | 28.7 | 24.6 | 20.6 | 29.8 | 20.2 | 28.7 | 26.1 | 27.3 | 31.4 | *** |
| | Los Baños | 33.0 | 34.5 | 24.6 | 16.2 | 14.3 | 18.1 | 21.0 | 24.4 | 18.8 | 25.0 | 25.3 | 26.2 | 21.6 | 25.8 | 18.3 | 92.0 | 25.2 | *** |
| | Mt.Sto.Tomas | | | | | | | 1.57 | 7.38 | 5.24 | 8.31 | 5.07 | 4.41 | 6.50 | 7.11 | 4.21 | 7.79 | 5.46 | *** |
| Republic | Kanghwa | 54.9 | 42.6 | 43.0 | 61.3 | 55.8 | 56.1 | 36.0 | 57.7 | 45.6 | 60.2 | 43.9 | 48.5 | 67.5 | 36.3 | 61.6 | 161 | 50.1 | 55.7 |
| of Korea | Cheju | 210 | 112 | 83.8 | 68.5 | 79.1 | 105 | 102 | 104 | 136 | 63.7 | 114 | 147 | 455 | 344 | 124 | 109 | 444 | 280 |
| | Imsil | | 28.7 | 36.9 | 38.1 | 26.7 | 44.0 | 77.5 | 22.4 | 36.6 | 51.9 | 44.4 | 25.3 | 88.8 | 22.8 | 30.7 | 46.8 | 29.9 | 32.1 |
| Russia | Mondy | 2.58 | 1.45 | 8.87 | 3.07 | 2.75 | 5.92 | 4.47 | 3.94 | 4.22 | 3.29 | 3.39 | 5.28 | 5.95 | 3.69 | 3.57 | 3.68 | 1.66 | 5.29 |
| | Listvyanka | 5.04 | 2.16 | 6.81 | 4.13 | 4.94 | 5.38 | 3.50 | 4.29 | 5.13 | 3.02 | 3.43 | 6.63 | 3.28 | 5.85 | 3.65 | 5.45 | 3.09 | 4.12 |
| | Irkutsk | 11.6 | 12.2 | 18.0 | 17.7 | 8.52 | 12.4 | 12.5 | 13.2 | 15.9 | 24.9 | 23.8 | 22.0 | 15.1 | 19.2 | 9.86 | 23.9 | 9.90 | 10.2 |
| | Primorskaya | | | 33.9 | 35.6 | 21.3 | 21.7 | 18.0 | 18.6 | 25.6 | 14.7 | 29.4 | 67.4 | 29.9 | 42.7 | 25.0 | 25.4 | 33.4 | 37.1 |
| Thailand | Bangkok | 12.6 | 9.41 | 13.9 | 8.67 | 11.3 | 12.3 | 10.8 | 8.23 | 11.3 | 7.65 | 9.33 | 7.98 | 8.33 | 7.24 | 9.22 | 7.36 | 11.1 | 8.16 |
| | Samutprakarn | 12.9 | | | | 12.8 | 19.0 | 12.5 | 11.2 | 12.8 | 8.45 | 16.2 | 7.61 | 9.92 | 9.16 | 11.3 | 9.66 | 9.41 | 8.30 |
| | Pathumthani | 10.4 | 7.75 | 11.6 | 6.39 | 14.3 | 7.13 | 6.83 | 6.64 | 6.61 | 6.23 | 5.77 | 6.82 | 15.9 | 6.85 | 7.88 | 9.96 | 8.65 | 7.48 |
| | Khanchanaburi | 17.6 | 9.96 | 14.1 | 8.80 | 9.96 | 7.79 | 6.30 | 6.62 | 10.3 | 8.84 | 3.30 | 8.86 | 11.6 | 2.89 | 6.90 | 5.69 | 9.04 | 5.92 |
| | Mae Hia | | 4.53 | 10.1 | 4.71 | 3.82 | 4.21 | 3.73 | 5.85 | 4.59 | 4.91 | 3.58 | 2.88 | 4.14 | 5.94 | 5.39 | 3.87 | 7.39 | 5.73 |
| | Sakaerat | | | | | | | 5.52 | 5.11 | 5.93 | 4.62 | 4.81 | 4.80 | 6.36 | 6.34 | 11.1 | 6.99 | 6.57 | 4.08 |
| Vietnam | Hanoi | 24.3 | 27.1 | 9.53 | 21.3 | 14.7 | 27.2 | 15.6 | 11.8 | 8.74 | 9.65 | 10.9 | 8.56 | 6.58 | 9.93 | 10.4 | 14.8 | 11.4 | 14.6 |
| | HoaBinh | 20.3 | 22.1 | 6.95 | 6.92 | 11.8 | 13.5 | 6.46 | 6.30 | 4.22 | 5.38 | 6.35 | 4.30 | 4.65 | 6.18 | 4.24 | 5.25 | 7.94 | 14.6 |
| | Cuc Phuong | | | | | | | | | | 44.2 | 24.3 | 15.5 | 20.3 | 25.2 | 11.7 | 21.3 | 17.1 | 35.6 |
| | Da Nang | | | | | | | | | | 110 | 50.4 | 93.5 | 83.1 | 174 | 92.9 | 72.8 | 70.2 | 80.9 |
| | Can Tho | | | | | | | | | | | | | | | 27.4 | 41.2 | 36.1 | 29.2 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 44.8 | 52.0 | 37.3 | 47.5 |
| | Yen Bai | | | | | | | | | | | | | | | | 7.48 | 14.3 | 17.3 |

Terms and abbreviations are given in Table 3.5.

**Table 3.74 Precipitation amount-weighted annual average concentrations of $NH_4^+$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 10.8 | 16.3 | 17.9 | 19.7 | 11.8 | 13.1 | 22.6 | 21.9 | 21.6 | 13.5 | 13.9 | 18.1 | 19.5 | 22.2 |
| China | Guanyinqiao | 161 | 211 | 120 | 132 | 137 | 157 | 179 | 140 | | | | | | | | | | |
| | Nanshan | 105 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 148 | 105 | 141 | 145 | 116 | 142 | 116 | 95.2 | 98.7 | 96.3 |
| | Jinyunshan | | 111 | 83.5 | 85.6 | 105 | 105 | 121 | 75.2 | 98.8 | 110 | 124 | 117 | 124 | 90.1 | 70.6 | 62.6 | 65.8 | 60.0 |
| | Shizhan | 421 | 255 | 203 | 144 | 146 | 77.2 | 167 | 206 | 164 | 169 | 187 | 60.8 | 109 | 238 | 170 | 194 | 118 | 147 |
| | Weishuiyuan | 426 | 354 | 319 | 144 | 151 | 64.4 | 239 | | | | | | | | | | | |
| | Jiwozi | 199 | 171 | 71.2 | 82.7 | 37.1 | 37.8 | 48.6 | 11.2 | 31.6 | 52.0 | 17.3 | 23.1 | 26.6 | 55.5 | 32.8 | 65.7 | 2.87 | 1.07 |
| | Hongwen | 31.6 | 64.9 | 44.2 | 29.4 | 45.8 | 35.4 | 29.1 | 38.5 | 34.7 | 46.6 | 39.8 | 42.3 | 43.2 | 18.3 | 25.7 | 29.2 | 37.2 | 33.8 |
| | Xiaoping | 19.8 | 33.2 | 31.1 | 38.2 | 38.0 | 32.2 | 21.5 | 52.7 | 33.0 | 45.8 | 42.9 | 38.9 | 30.4 | 25.3 | 38.9 | 37.8 | 24.6 | 29.5 |
| | Xiang Zhou | 20.5 | 25.0 | 95.8 | 34.0 | 50.7 | 103 | 56.7 | 19.4 | 19.5 | 22.1 | 24.4 | 20.7 | 29.1 | 17.7 | 23.8 | 19.1 | 29.6 | 24.5 |
| | Zhuxiandong | 51.0 | 30.3 | 48.4 | 29.9 | 59.5 | 26.1 | 27.4 | *** | 18.6 | 25.6 | 22.7 | 24.8 | *** | *** | *** | 24.3 | 42.4 | 25.7 |
| Indonesia | Jakarta | 77.3 | 66.2 | 31.7 | 20.8 | 22.4 | 12.4 | 17.4 | 24.2 | 25.4 | 17.7 | 23.0 | 33.7 | 23.1 | 17.2 | 17.6 | 18.9 | 37.5 | 24.0 |
| | Serpong | *** | 67.6 | 46.0 | 45.0 | 42.3 | 44.6 | 40.3 | 44.3 | 47.2 | 43.0 | 52.3 | 62.2 | 71.1 | 83.0 | 65.5 | 63.0 | 55.6 | 50.5 |
| | Kototabang | 1.14 | 2.38 | 5.12 | 1.85 | 12.3 | 9.46 | 9.88 | 18.2 | 7.55 | 2.69 | 2.83 | 10.0 | 8.47 | 6.93 | 12.1 | 1903 | 4.94 | 5.59 |
| | Bandung | 32.8 | 37.9 | 29.9 | 32.7 | 36.8 | 35.8 | 46.5 | 47.9 | 44.8 | 48.3 | 32.1 | 60.8 | 53.8 | 47.4 | 55.4 | 56.7 | 58.1 | 62.4 |
| | Maros | | | | | | | | | 8.85 | 12.7 | 10.1 | 9.30 | 14.1 | 6.75 | 7.19 | 20.7 | 53.7 | 5.22 |
| Japan | Rishiri | 34.0 | 26.0 | 20.1 | 18.3 | 17.1 | 18.9 | 17.5 | 25.9 | 23.6 | 17.7 | 15.7 | 14.0 | 11.4 | 12.9 | 12.5 | 13.3 | 10.4 | 22.3 |
| | Ochiishi | | | | 7.65 | 11.8 | 7.51 | 15.6 | 7.84 | 6.45 | 8.40 | 10.7 | 11.0 | 12.3 | 9.68 | 10.8 | 11.4 | 5.01 | 6.26 |
| | Tappi | 9.65 | 12.7 | 14.7 | 16.2 | 15.6 | 15.8 | 18.9 | 17.7 | 18.2 | 10.5 | 15.0 | 16.9 | 13.8 | 19.1 | 22.7 | 13.0 | 15.4 | 15.9 |
| | Sado-seki | 16.9 | 19.7 | 14.5 | 15.6 | 10.1 | 18.3 | 16.6 | 25.2 | 21.7 | 12.5 | 11.9 | 14.6 | 15.5 | 18.1 | 18.2 | 19.3 | 16.0 | 20.0 |
| | Happo | 14.2 | 10.8 | 7.74 | 6.37 | 8.30 | 10.8 | 8.96 | 11.1 | 10.1 | 9.73 | 5.88 | 6.06 | 10.7 | 8.94 | 8.08 | 7.84 | 4.77 | 4.33 |
| | Ijira | 23.8 | 17.6 | 22.8 | 18.1 | 14.7 | 20.3 | 22.8 | 20.7 | 18.0 | 18.2 | 12.2 | 14.1 | 14.7 | 13.4 | 13.4 | 13.5 | 14.3 | 12.5 |
| | Oki | 19.4 | 14.7 | 12.4 | 8.82 | 10.9 | 15.8 | 12.8 | 15.7 | 15.7 | 17.0 | 17.8 | 18.6 | 17.0 | 17.5 | 14.0 | 9.63 | 14.4 | 17.7 |
| | Banryu | 11.6 | 13.8 | 17.9 | 12.5 | 11.2 | 21.8 | 14.9 | 22.3 | 19.2 | 16.3 | 21.6 | 15.7 | 21.5 | 13.8 | 17.3 | 14.9 | 15.0 | 16.3 |
| | Yusuhara | 5.06 | 5.17 | 7.57 | 6.02 | 4.78 | 8.88 | 7.52 | 7.45 | 7.52 | 8.25 | 6.60 | 4.83 | 7.55 | 7.16 | 4.91 | 4.04 | 6.04 | 21.9 |
| | Hedo | 7.22 | 4.48 | 18.5 | 10.9 | 17.2 | 13.3 | 8.55 | 7.49 | 6.11 | 6.43 | 9.31 | 9.13 | 18.8 | 9.94 | 8.28 | 11.0 | 8.05 | 7.04 |
| | Ogasawara | 2.33 | 4.82 | 5.40 | 3.63 | 5.09 | 3.46 | 4.59 | 7.70 | 3.43 | 4.82 | 5.29 | 4.54 | 5.18 | 6.04 | 3.88 | 2.64 | 4.85 | 2.30 |
| | Tokyo | | | | | | | | 27.7 | 29.9 | 26.2 | 19.2 | 25.4 | 24.3 | 22.9 | 23.1 | 20.1 | 17.2 | 18.2 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 7.72 | 10.9 | 8.39 | 17.3 | *** | *** | *** | *** | *** | 7.78 | 7.50 | ** |
| Malaysia | Petaling Jaya | 43.7 | 58.1 | 16.2 | 12.2 | 13.1 | 20.1 | 23.3 | 19.1 | 20.8 | 7.57 | 4.60 | 4.86 | 1.29 | 16.2 | 27.4 | 25.5 | 13.0 | 17.0 |
| | Tanah Rata | 41.1 | 35.4 | 4.02 | 2.30 | 2.39 | 2.82 | 3.53 | 3.91 | 3.10 | 5.41 | 4.05 | 14.3 | 5.67 | 2.42 | 3.44 | 7.54 | 3.51 | 3.13 |
| | Danum Valley | | | | | | 2.03 | 2.05 | 1.32 | 9.76 | 3.44 | 4.89 | 1.90 | <0.8 | <0.8 | 0.915 | 4.21 | <0.8 | <0.8 |
| | Kuching | | | | | | | | | 4.61 | 4.94 | 1.94 | 5.03 | 6.16 | 2.87 | 9.38 | 5.49 | 2.45 | 3.48 |
| Mongolia | Ulaanbaatar | 52.0 | 49.9 | 72.8 | 47.5 | 46.2 | 54.4 | 53.7 | 87.1 | 53.3 | 46.7 | 54.7 | 45.9 | *** | 62.2 | *** | *** | 40.7 | 48.9 |
| | Terelj | 44.3 | 30.5 | 65.7 | 31.6 | 35.6 | 36.1 | 54.6 | 38.8 | 51.1 | 41.0 | 35.0 | 39.4 | *** | 5.37 | *** | *** | 60.2 | 41.9 |
| Myanmar | Yangon | | | | | | | | *** | *** | 16.2 | 14.6 | 14.9 | 17.7 | 17.0 | 16.6 | 22.3 | 17.1 | 13.6 |
| Philippines | Metro Manila | 35.6 | 77.1 | 46.2 | 23.7 | 35.4 | 29.9 | 40.5 | 33.6 | 62.2 | 21.1 | 53.1 | 183 | 273 | 41.2 | 61.6 | 86.1 | 112 | *** |
| | Los Baños | 13.6 | 22.4 | 34.5 | 14.5 | 13.9 | 15.0 | 16.3 | 16.8 | 19.6 | 11.7 | 38.2 | 29.4 | 67.8 | 22.3 | 55.9 | 54.9 | 84.8 | *** |
| | Mt.Sto.Tomas | | | | | | | <0.8 | 8.69 | 10.5 | 14.1 | 4.65 | 0.822 | 3.42 | 4.71 | 13.5 | 9.57 | 7.79 | *** |
| Republic | Kanghwa | 37.6 | 37.5 | 40.1 | 57.6 | 75.6 | 66.4 | 53.0 | 58.4 | 35.4 | 30.5 | 26.5 | 43.3 | 49.4 | 78.5 | 60.2 | 99.0 | 58.1 | 84.4 |
| of Korea | Cheju | 20.2 | 32.3 | 43.3 | 41.9 | 36.0 | 30.9 | 26.1 | 28.8 | 26.2 | 45.2 | 26.8 | 28.0 | 33.4 | 35.9 | 25.5 | 28.2 | 40.3 | 38.3 |
| | Imsil | | 42.3 | 42.2 | 32.5 | 28.2 | 32.4 | 50.2 | 40.0 | 29.9 | 35.2 | 31.2 | 37.7 | 39.5 | 40.5 | 33.4 | 50.6 | 36.1 | 51.6 |
| Russia | Mondy | 11.4 | 22.2 | 33.8 | 14.7 | 11.2 | 9.76 | 3.70 | 30.1 | 9.86 | 20.2 | 17.5 | 9.14 | 19.0 | 2.71 | 3.60 | 13.5 | 4.97 | 10.4 |
| | Listvyanka | 16.5 | 10.8 | 26.8 | 20.8 | 12.2 | 16.6 | 15.5 | 15.6 | 18.9 | 13.4 | 18.3 | 17.2 | 26.7 | 9.85 | 13.7 | 36.8 | 14.4 | 20.6 |
| | Irkutsk | 32.1 | 25.1 | 43.0 | 42.1 | 27.2 | 35.3 | 24.9 | 33.9 | 34.4 | 36.4 | 34.5 | 32.7 | 34.1 | 29.5 | 23.9 | 73.0 | 22.2 | 20.4 |
| | Primorskaya | | | 35.9 | 39.1 | 30.4 | 41.6 | 49.8 | 29.6 | 50.6 | 28.8 | 42.7 | 54.1 | 27.0 | 39.6 | 42.3 | 25.7 | 22.7 | 46.8 |
| Thailand | Bangkok | 41.3 | 36.2 | 46.8 | 37.5 | 37.8 | 43.4 | 56.1 | 57.8 | 53.8 | 64.9 | 37.8 | 40.2 | 44.1 | 46.3 | 52.3 | 60.7 | 63.6 | 54.6 |
| | Samutprakarn | 31.8 | | | | 34.5 | 37.4 | 49.9 | 47.1 | 56.4 | 41.0 | 28.1 | 27.8 | 34.1 | 37.7 | 48.6 | 46.0 | 43.3 | 48.5 |
| | Pathumthani | 38.3 | 35.5 | 34.2 | 29.1 | 34.0 | 31.2 | 33.5 | 34.4 | 29.7 | 33.0 | 28.0 | 38.1 | 37.9 | 44.9 | 35.3 | 45.3 | 53.1 | 41.3 |
| | Khanchanaburi | 6.84 | 11.0 | 10.9 | 12.5 | 8.40 | 4.96 | 17.5 | 13.9 | 10.1 | 26.1 | 8.90 | 13.0 | 8.95 | 6.80 | 14.0 | 10.7 | 16.2 | 14.1 |
| | Mae Hia | | 15.8 | 18.5 | 15.8 | 15.7 | 21.0 | 15.2 | 18.8 | 19.9 | 20.2 | 19.3 | 13.5 | 19.6 | 19.3 | 26.8 | 17.6 | 29.3 | 26.2 |
| | Sakaerat | | | | | | | 23.1 | 18.3 | 21.1 | 22.9 | 24.6 | 24.3 | 25.7 | 23.8 | 42.3 | 31.3 | 34.0 | 23.3 |
| Vietnam | Hanoi | 27.5 | 20.3 | 55.5 | 55.1 | 52.7 | 98.8 | 45.7 | 48.3 | 30.6 | 50.6 | 52.4 | 52.8 | 60.2 | 53.4 | 68.0 | 64.9 | 61.4 | 52.6 |
| | HoaBinh | 8.01 | 12.5 | 28.2 | 28.7 | 41.0 | 30.1 | 27.6 | 21.3 | 17.1 | 31.4 | 28.3 | 27.8 | 30.0 | 25.3 | 45.6 | 38.3 | 56.9 | 20.0 |
| | Cuc Phuong | | | | | | | | | | 6.30 | 9.90 | 19.2 | 23.9 | 25.5 | 20.5 | 30.0 | 20.1 | 8.72 |
| | Da Nang | | | | | | | | | | 13.5 | 8.67 | 21.5 | 21.3 | 24.6 | 14.5 | 8.73 | 5.43 | 20.9 |
| | Can Tho | | | | | | | | | | | | | | | 18.3 | 21.3 | 22.7 | 21.5 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 24.3 | 29.4 | 28.8 | 38.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 30.5 | 91.5 | 33.6 |

Terms and abbreviations are given in Table 3.5.

**Table 3.75 Precipitation amount-weighted annual average concentrations of $Na^+$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | *** | *** | 1.85 | 8.25 | 10.3 | 6.95 | 3.10 | 3.55 | 3.65 | 3.10 | 7.60 | 6.28 | 4.23 | 4.45 |
| China | Guanyinqiao | 11.8 | 10.8 | 5.54 | 4.91 | 7.28 | 8.35 | 7.92 | 5.92 | | | | | | | | | | |
| | Nanshan | 7.73 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 6.99 | 4.20 | 7.56 | 9.87 | 6.04 | 7.29 | 6.36 | 3.61 | 6.18 | 4.42 |
| | Jinyunshan | | 10.2 | 5.90 | 4.99 | 12.3 | 15.3 | 6.65 | 6.20 | 10.3 | 7.70 | 8.17 | 6.12 | 6.28 | 3.92 | 4.50 | 2.23 | 2.55 | 2.95 |
| | Shizhan | 44.1 | 164 | 246 | 69.2 | 19.1 | 16.1 | 45.2 | 15.6 | 24.4 | 13.4 | 7.30 | 17.7 | 5.59 | 138 | 126 | 113 | 53.6 | 28.7 |
| | Weishuiyuan | 68.9 | 219 | 207 | 113 | 23.3 | 20.5 | 66.9 | | | | | | | | | | | |
| | Jiwozi | 23.8 | 158 | 171 | 102 | 25.1 | 59.6 | 65.6 | 85.8 | 81.1 | 25.2 | 6.47 | 7.86 | 44.5 | 112 | 125 | 92.5 | 8.39 | 33.7 |
| | Hongwen | 23.8 | 10.8 | 55.6 | 34.8 | 50.4 | 51.4 | 30.8 | 24.1 | 22.9 | 24.5 | 19.4 | 18.1 | 16.3 | 14.3 | 19.8 | 18.6 | 27.2 | 35.7 |
| | Xiaoping | 8.66 | 11.8 | 16.4 | 24.7 | 13.0 | 9.67 | 23.2 | 12.4 | 22.5 | 16.4 | 18.8 | 10.9 | 8.45 | 12.1 | 8.77 | 11.0 | 6.54 | 6.87 |
| | Xiang Zhou | 42.1 | 24.6 | 41.5 | 39.1 | 72.1 | 44.1 | 35.5 | 19.4 | 34.6 | 40.2 | 19.8 | 32.3 | 45.9 | 54.2 | 30.7 | 52.9 | 22.5 | 52.2 |
| | Zhuxiandong | 31.2 | 27.5 | 45.2 | 36.0 | 94.4 | 60.9 | 22.6 | *** | 40.7 | 45.3 | 19.9 | 45.0 | *** | *** | *** | 66.9 | 34.1 | 26.2 |
| Indonesia | Jakarta | 52.4 | 39.4 | 35.3 | 27.1 | 37.2 | 23.2 | 13.1 | 15.8 | 9.95 | 9.31 | 7.92 | 11.7 | 12.7 | 16.2 | 21.4 | 2.01 | 21.0 | 9.76 |
| | Serpong | *** | 23.8 | 25.2 | 11.3 | 19.6 | 16.0 | 7.46 | 11.7 | 10.5 | 10.2 | 8.32 | 10.1 | 10.9 | 14.0 | 18.8 | 14.6 | 14.4 | 12.1 |
| | Kototabang | *** | 4.52 | 6.29 | 9.65 | 10.9 | 5.69 | 6.21 | 8.65 | 5.33 | 6.12 | 5.25 | 6.54 | 9.63 | 8.51 | 5.67 | 0.779 | 21.1 | 3.46 |
| | Bandung | *** | 20.2 | 8.64 | 7.10 | 10.8 | 11.9 | 18.3 | 6.65 | 8.62 | 11.8 | 9.74 | 12.2 | 10.8 | 13.6 | 12.9 | 8.58 | 11.2 | 18.7 |
| | Maros | | | | | | | | | 15.7 | 13.3 | 13.2 | 14.9 | 19.9 | 19.3 | 29.1 | 3.67 | 118 | 104 |
| Japan | Rishiri | 325 | 212 | 197 | 176 | 229 | 203 | 110 | 143 | 247 | 176 | 162 | 139 | 292 | 200 | 162 | 140 | 69.7 | 207 |
| | Ochiishi | | | | 198 | 360 | 208 | 278 | 186 | 171 | 182 | 232 | 155 | 274 | 421 | 97.2 | 178 | 138 | 219 |
| | Tappi | 149 | 134 | 165 | 141 | 199 | 218 | 289 | 234 | 197 | 199 | 114 | 150 | 141 | 257 | 156 | 237 | 169 | 189 |
| | Sado-seki | 258 | 355 | 268 | 93.8 | 135 | 290 | 224 | 227 | 215 | 321 | 320 | 153 | 246 | 328 | 282 | 327 | 175 | 150 |
| | Happo | 7.85 | 6.22 | 3.39 | 4.78 | 5.94 | 7.04 | 4.13 | 3.13 | 4.12 | 5.14 | 3.76 | 3.34 | 9.57 | 4.07 | 5.31 | 5.84 | 4.83 | 4.96 |
| | Ijira | 19.9 | 29.7 | 28.5 | 13.3 | 21.6 | 13.6 | 10.8 | 20.8 | 15.4 | 13.5 | 13.0 | 13.8 | 19.3 | 15.1 | 15.6 | 15.8 | 12.4 | 14.6 |
| | Oki | 396 | 316 | 363 | 185 | 295 | 602 | 225 | 275 | 324 | 376 | 409 | 480 | 357 | 505 | 545 | 412 | 332 | 486 |
| | Banryu | 28.9 | 78.2 | 79.4 | 80.9 | 113 | 92.1 | 66.4 | 78.6 | 72.2 | 98.8 | 94.2 | 108 | 92.2 | 69.1 | 86.9 | 91.1 | 81.9 | 87.8 |
| | Yusuhara | 15.2 | 11.8 | 28.9 | 14.4 | 24.1 | 25.2 | 11.9 | 13.5 | 8.61 | 12.0 | 8.82 | 12.3 | 18.1 | 9.90 | 5.19 | 22.9 | 7.97 | 48.7 |
| | Hedo | 454 | 160 | 515 | 430 | 873 | 449 | 189 | 129 | 124 | 127 | 254 | 204 | 418 | 227 | 137 | 313 | 201 | 368 |
| | Ogasawara | 139 | 104 | 236 | 251 | 125 | 97.3 | 103 | 133 | 86.2 | 188 | 208 | 202 | 114 | 141 | 131 | 306 | 90.9 | 180 |
| | Tokyo | | | | | | | | 34.5 | 19.5 | 23.5 | 17.3 | 37.7 | 29.5 | 22.8 | 18.9 | 18.0 | 14.4 | 40.3 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 7.10 | 2.38 | 2.91 | 9.14 | *** | *** | *** | *** | *** | 2.78 | 1.52 | ** |
| Malaysia | Petaling Jaya | 4.97 | 3.70 | 5.08 | 5.60 | 5.69 | 6.64 | 4.27 | 3.61 | 4.22 | 4.59 | 4.99 | 4.56 | 3.85 | 4.29 | 5.04 | 6.20 | 6.14 | 6.04 |
| | Tanah Rata | 1.90 | 1.92 | 1.64 | 1.89 | 1.83 | 6.64 | 1.41 | 1.54 | 1.20 | 1.58 | 1.29 | 1.99 | 1.51 | 2.17 | 2.82 | 2.74 | 2.72 | 2.47 |
| | Danum Valley | | | | | | 4.45 | 5.64 | 4.15 | 3.22 | 5.83 | 13.8 | 5.52 | 2.87 | 5.14 | 5.42 | 5.40 | 3.30 | 2.52 |
| | Kuching | | | | | | | | | 5.39 | 7.35 | 6.67 | 9.08 | 5.21 | 7.54 | 9.25 | 12.9 | 12.7 | 9.28 |
| Mongolia | Ulaanbaatar | 7.88 | 9.09 | 6.29 | 3.84 | 5.79 | 7.16 | 8.43 | 5.25 | 3.59 | 4.88 | 3.50 | 5.65 | *** | 78.8 | *** | *** | 172 | 21.9 |
| | Terelj | 6.47 | 15.9 | 16.9 | 4.50 | 6.32 | 11.5 | 12.5 | 9.42 | 5.47 | 7.60 | 11.1 | 6.07 | *** | 17.0 | *** | *** | 206 | 13.5 |
| Myanmar | Yangon | | | | | | | | *** | *** | 18.5 | 12.9 | 15.0 | 22.1 | 15.8 | 17.3 | 8.77 | 15.7 | 15.0 |
| Philippines | Metro Manila | 30.6 | 205 | 14.6 | 18.4 | 16.3 | 15.9 | 17.2 | 20.2 | 24.6 | 20.2 | 22.3 | 21.4 | 16.7 | 28.0 | 24.5 | 23.4 | 17.4 | *** |
| | Los Baños | 34.8 | 37.2 | 21.1 | 15.3 | 12.0 | 17.2 | 22.7 | 17.6 | 19.1 | 17.4 | 22.7 | 19.4 | 22.2 | 22.8 | 15.4 | 17.6 | 22.4 | *** |
| | Mt.Sto.Tomas | | | | | | | 2.81 | 5.68 | 5.11 | 8.26 | 6.30 | 4.31 | 10.3 | 6.70 | 6.30 | 8.71 | 14.8 | *** |
| Republic | Kanghwa | 56.3 | 41.7 | 49.2 | 25.4 | 32.5 | 33.7 | 28.8 | 44.3 | 39.3 | 45.1 | 27.0 | 35.8 | 50.7 | 29.6 | 43.2 | 45.0 | 28.5 | 27.8 |
| of Korea | Cheju | 152 | 74.7 | 58.3 | 46.7 | 57.8 | 84.8 | 85.0 | 101 | 133 | 53.6 | 103 | 152 | 375 | 290 | 116 | 101 | 394 | 261 |
| | Imsil | | 15.4 | 38.6 | 22.8 | 17.9 | 21.7 | 31.1 | 15.0 | 32.0 | 50.3 | 48.2 | 37.4 | 51.8 | 30.3 | 29.8 | 47.1 | 33.8 | 36.2 |
| Russia | Mondy | 1.84 | 2.27 | 1.93 | 2.27 | 1.93 | 1.52 | 1.57 | 3.13 | 1.84 | 2.28 | 2.81 | 3.86 | 4.32 | 1.36 | 2.25 | 1.61 | 1.38 | 2.58 |
| | Listvyanka | 4.57 | 3.38 | 3.80 | 5.10 | 4.66 | 3.01 | 2.80 | 2.57 | 2.49 | 3.82 | 3.60 | 5.42 | 4.20 | 6.68 | 4.80 | 2.96 | 2.80 | 3.26 |
| | Irkutsk | 8.85 | 8.27 | 9.19 | 6.59 | 6.65 | 6.89 | 10.0 | 9.94 | 10.0 | 18.7 | 18.4 | 16.8 | 9.96 | 12.8 | 8.62 | 12.7 | 7.42 | 7.99 |
| | Primorskaya | | | 23.1 | 33.7 | 22.5 | 21.7 | 16.8 | 19.8 | 22.9 | 12.8 | 23.9 | 13.7 | 23.1 | 25.5 | 15.8 | 24.8 | 25.2 | 26.0 |
| Thailand | Bangkok | 6.93 | 8.33 | 16.1 | 7.65 | 10.2 | 12.8 | 8.72 | 7.08 | 9.77 | 9.79 | 8.79 | 6.46 | 6.07 | 12.0 | 9.17 | 7.97 | 11.0 | 5.83 |
| | Samutprakarn | 10.1 | | | | 16.5 | 19.8 | 14.6 | 12.2 | 15.4 | 10.0 | 18.6 | 5.70 | 7.89 | 25.3 | 12.6 | 9.33 | 8.87 | 7.10 |
| | Pathumthani | 10.9 | 8.06 | 9.65 | 4.73 | 8.94 | 6.56 | 7.49 | 5.77 | 5.96 | 5.58 | 7.46 | 5.87 | 14.1 | 5.96 | 5.31 | 6.92 | 6.41 | 4.83 |
| | Khanchanaburi | 9.71 | 11.3 | 8.34 | 10.3 | 8.99 | 6.70 | 6.86 | 7.05 | 9.23 | 9.49 | 3.11 | 7.45 | 9.71 | 5.46 | 6.41 | 5.91 | 10.4 | 4.70 |
| | Mae Hia | | 3.94 | 9.66 | 3.21 | 3.05 | 0.913 | 3.53 | 2.93 | 2.61 | 2.69 | 2.72 | 3.21 | 3.80 | 5.63 | 3.65 | 4.48 | 7.01 | 6.14 |
| | Sakaerat | | | | | | | 4.45 | 4.45 | 4.20 | 2.73 | 3.21 | 4.04 | 3.71 | 2.96 | 8.85 | 4.59 | 4.02 | 2.08 |
| Vietnam | Hanoi | 18.1 | 11.5 | 5.94 | 8.96 | 8.05 | 17.7 | 13.5 | 8.20 | 9.59 | 9.17 | 7.28 | 6.17 | 4.19 | 7.69 | 7.24 | 9.00 | 11.4 | 16.4 |
| | HoaBinh | 12.7 | 9.80 | 2.06 | 2.36 | 3.91 | 7.47 | 4.49 | 3.20 | 3.07 | 3.39 | 4.86 | 2.46 | 3.03 | 4.13 | 3.16 | 3.80 | 4.40 | 3.99 |
| | Cuc Phuong | | | | | | | | | | 11.2 | 12.0 | 13.6 | 20.0 | 26.7 | 10.7 | 8.76 | 12.7 | 17.6 |
| | Da Nang | | | | | | | | | | 94.6 | 41.3 | 70.2 | 63.2 | 144 | 82.1 | 79.6 | 65.7 | 81.0 |
| | Can Tho | | | | | | | | | | | | | | | 15.4 | 29.4 | 12.6 | 9.61 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 25.0 | 34.6 | 13.5 | 17.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 5.40 | 8.96 | 3.68 |

Terms and abbreviations are given in Table 3.5.

**Table 3.76 Precipitation amount-weighted annual average concentrations of $K^+$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 1.63 | *** | 1.48 | 3.64 | 10.3 | 1.50 | 0.861 | 1.15 | 0.761 | 1.06 | 2.69 | 1.98 | 2.11 | 1.22 |
| China | Guanyinqiao | 14.2 | 18.7 | 10.6 | 11.0 | 10.9 | 12.4 | 12.6 | 8.81 | | | | | | | | | | |
| | Nanshan | 16.3 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 11.5 | 7.72 | 10.0 | 9.38 | 6.57 | 12.8 | 9.28 | 5.99 | 4.66 | 4.80 |
| | Jinyunshan | | 44.4 | 10.3 | 8.60 | 11.7 | 11.4 | 11.4 | 6.78 | 9.54 | 8.71 | 10.4 | 10.4 | 7.64 | 5.49 | 4.42 | 3.40 | 3.37 | 3.60 |
| | Shizhan | 26.5 | 42.2 | 40.5 | 18.7 | 9.57 | 15.4 | 18.0 | 19.3 | 13.3 | 10.2 | 32.4 | 13.4 | 5.69 | 28.1 | 251 | 5.32 | 3.76 | 4.60 |
| | Weishuiyuan | 34.7 | 74.9 | 76.6 | 20.3 | 11.3 | 12.6 | 33.6 | | | | | | | | | | | |
| | Jiwozi | 17.9 | 43.6 | 42.2 | 21.3 | 8.48 | 27.7 | 20.8 | 28.0 | 29.0 | 13.7 | 4.89 | 7.28 | 9.74 | 10.2 | 16.4 | 6.63 | 4.58 | 13.0 |
| | Hongwen | 4.99 | 10.4 | 4.30 | 4.33 | 7.23 | 5.08 | 3.35 | 3.73 | 2.12 | 2.26 | 2.24 | 1.99 | 2.86 | 1.90 | 1.42 | 5.99 | 5.34 | 35.0 |
| | Xiaoping | 2.81 | 4.20 | 3.76 | 4.75 | 5.09 | 2.76 | 13.5 | 7.31 | 10.2 | 2.33 | 1.94 | 2.80 | 3.47 | 1.66 | 1.45 | 8.40 | 5.59 | 12.4 |
| | Xiang Zhou | 6.59 | 4.02 | 17.6 | 5.74 | 7.65 | 2.66 | 8.16 | 8.27 | 1.65 | 2.10 | 2.21 | 3.74 | 9.20 | 8.24 | 6.89 | 4.41 | 3.68 | 2.56 |
| | Zhuxiandong | 6.18 | 5.86 | 13.2 | 6.62 | 22.7 | 5.60 | 2.62 | *** | 4.50 | 2.56 | 3.29 | 5.92 | *** | *** | *** | 8.30 | 5.80 | 2.24 |
| Indonesia | Jakarta | *** | 24.3 | 11.3 | 9.28 | 10.3 | 5.73 | 8.01 | 11.2 | 3.51 | 2.22 | 2.23 | 2.28 | 2.86 | 2.83 | 3.62 | 12.5 | 10.5 | 2.38 |
| | Serpong | *** | 7.04 | 3.95 | 7.96 | 5.65 | 6.18 | 4.46 | 2.76 | 2.21 | 1.75 | 3.20 | 3.15 | 4.33 | 4.91 | 5.64 | 7.81 | 4.85 | 3.78 |
| | Kototabang | *** | 1.32 | 5.10 | 20.0 | 6.27 | 4.36 | 4.56 | 8.40 | 3.40 | 9.35 | 4.43 | 3.96 | 5.52 | 19.3 | 10.4 | 4949 | 11.5 | 1.86 |
| | Bandung | *** | 12.6 | 2.04 | 4.13 | 3.29 | 4.66 | 4.81 | 2.03 | 2.31 | 4.08 | 4.22 | 4.77 | 3.36 | 7.97 | 5.63 | 3.54 | 2.89 | 4.22 |
| | Maros | | | | | | | | | 5.76 | 3.89 | 2.52 | 1.86 | 3.50 | 1.84 | 19.1 | 1786 | 15.1 | 6.27 |
| Japan | Rishiri | 9.95 | 6.04 | 5.08 | 4.90 | 6.01 | 5.09 | 3.75 | 4.13 | 6.58 | 4.31 | 4.28 | 3.44 | 6.41 | 4.61 | 4.10 | 3.62 | 2.07 | 6.01 |
| | Ochiishi | | | | 4.63 | 8.08 | 5.28 | 7.66 | 4.58 | 3.81 | 4.09 | 6.16 | 3.70 | 6.76 | 9.35 | 2.55 | 4.84 | 3.43 | 5.36 |
| | Tappi | 3.64 | 3.28 | 4.07 | 3.45 | 4.95 | 4.99 | 7.12 | 5.66 | 5.36 | 4.95 | 3.50 | 4.34 | 3.96 | 6.21 | 3.97 | 5.56 | 4.47 | 4.72 |
| | Sado-seki | 6.37 | 8.19 | 6.49 | 2.46 | 3.56 | 6.65 | 5.69 | 5.88 | 7.16 | 7.96 | 8.08 | 4.45 | 6.62 | 7.69 | 7.51 | 9.69 | 7.55 | 4.71 |
| | Happo | 0.805 | 0.638 | 0.394 | 0.383 | 0.714 | 0.713 | 0.515 | 0.605 | 0.585 | 0.670 | 0.356 | 0.447 | 0.865 | 0.581 | 0.746 | 0.681 | 0.457 | 0.376 |
| | Ijira | 2.95 | 4.06 | 2.10 | 1.24 | 1.10 | 0.931 | 0.980 | 1.15 | 0.630 | 0.678 | 0.426 | 0.535 | 0.609 | 0.589 | 0.611 | 0.699 | 0.498 | 0.576 |
| | Oki | 10.5 | 8.77 | 9.53 | 5.45 | 9.62 | 15.5 | 6.56 | 9.12 | 11.9 | 10.1 | 10.1 | 12.7 | 9.16 | 12.8 | 13.1 | 9.87 | 8.06 | 11.6 |
| | Banryu | 1.35 | 2.73 | 2.89 | 2.49 | 3.02 | 3.69 | 2.23 | 3.06 | 2.54 | 3.00 | 5.43 | 3.39 | 3.26 | 2.33 | 2.65 | 2.54 | 2.28 | 2.41 |
| | Yusuhara | 0.768 | 0.505 | 1.01 | 0.457 | 0.937 | 0.976 | 0.681 | 0.637 | 0.424 | 0.768 | 0.613 | 0.465 | 1.07 | 0.387 | 0.701 | 0.758 | 0.508 | 1.83 |
| | Hedo | 9.06 | 3.56 | 12.0 | 10.1 | 24.6 | 11.3 | 4.71 | 3.31 | 3.18 | 3.29 | 6.19 | 4.94 | 10.6 | 5.48 | 3.31 | 7.24 | 4.51 | 8.02 |
| | Ogasawara | 3.58 | 4.08 | 6.17 | 5.60 | 3.07 | 2.28 | 2.53 | 3.17 | 2.61 | 4.55 | 5.02 | 4.95 | 2.71 | 3.64 | 3.12 | 8.10 | 2.22 | 4.14 |
| | Tokyo | | | | | | | | 1.40 | 1.14 | 1.10 | 0.989 | 1.29 | 0.888 | 0.711 | 0.628 | 0.641 | 0.539 | 1.11 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 3.51 | 1.69 | 1.69 | 0.930 | *** | *** | *** | *** | *** | 1.74 | 0.958 | ** |
| Malaysia | Petaling Jaya | 1.77 | 1.42 | 1.27 | 3.04 | 1.64 | 2.46 | 1.55 | 0.984 | 1.19 | 1.51 | 1.50 | 1.31 | 1.33 | 1.14 | 1.47 | 1.70 | 1.83 | 1.55 |
| | Tanah Rata | 1.09 | 0.915 | 0.795 | 0.714 | 1.52 | 0.891 | 0.626 | 0.646 | 0.433 | 0.991 | 1.06 | 2.03 | 1.68 | 1.75 | 1.62 | 2.37 | 1.22 | 1.93 |
| | Danum Valley | | | | | | 1.17 | 1.01 | 1.08 | 2.53 | 1.59 | 3.24 | 1.73 | 1.21 | 1.01 | 2.16 | 2.39 | 1.01 | 1.29 |
| | Kuching | | | | | | | | | 0.647 | 0.695 | 0.650 | 0.854 | 0.924 | 0.695 | 3.26 | 1.44 | 1.13 | 1.43 |
| Mongolia | Ulaanbaatar | 3.92 | 4.64 | 3.81 | 3.39 | 2.84 | 4.33 | 5.15 | 1.28 | 2.81 | 2.53 | 2.72 | 3.98 | *** | 3.88 | *** | *** | 0.620 | 1.29 |
| | Terelj | 4.50 | 3.81 | 10.2 | 4.11 | 4.68 | 6.48 | 8.98 | 3.80 | 6.46 | 4.10 | 5.43 | 5.00 | *** | 7.98 | *** | *** | 7.09 | 3.40 |
| Myanmar | Yangon | | | | | | | | *** | *** | 6.46 | 2.07 | 1.66 | 6.78 | 2.66 | 4.69 | 13.3 | 3.35 | 10.4 |
| Philippines | Metro Manila | 15.5 | 23.2 | 9.87 | 2.52 | 3.93 | 3.90 | 12.6 | 5.38 | 15.6 | 3.99 | 17.0 | 23.5 | 26.3 | 6.45 | 9.79 | 13.1 | 14.2 | *** |
| | Los Baños | 1.74 | 9.51 | 6.38 | 1.83 | 2.14 | 2.20 | 2.49 | 4.92 | 2.91 | 9.08 | 7.43 | 6.82 | 8.14 | 6.37 | 8.18 | 73.4 | 13.8 | *** |
| | Mt.Sto.Tomas | | | | | | | 1.32 | 2.29 | 0.702 | 1.95 | 1.41 | 0.821 | 0.885 | 0.752 | 1.26 | 1.63 | 0.889 | *** |
| Republic of Korea | Kanghwa | 5.61 | 4.74 | 8.83 | 9.39 | 11.4 | 6.49 | 4.86 | 10.8 | 5.40 | 8.97 | 7.78 | 3.62 | 6.39 | 3.27 | 13.4 | 106 | 13.3 | 16.5 |
| | Cheju | 6.32 | 9.38 | 6.45 | 8.16 | 8.11 | 8.61 | 6.04 | 7.18 | 10.4 | 9.75 | 7.96 | 6.54 | 15.7 | 12.0 | 11.3 | 13.8 | 15.2 | 7.43 |
| | Imsil | | 14.8 | 6.55 | 11.2 | 5.72 | 48.6 | 42.1 | 14.3 | 5.61 | 10.9 | 10.3 | 3.89 | 47.5 | 6.33 | 9.82 | 9.19 | 3.39 | 8.80 |
| Russia | Mondy | 1.19 | 2.07 | 2.32 | 1.61 | 2.68 | 1.05 | 1.11 | 2.47 | 2.02 | 3.29 | 2.62 | 4.98 | 9.05 | 2.30 | 2.01 | 3.40 | 1.05 | 1.94 |
| | Listvyanka | 4.67 | 1.73 | 2.22 | 2.64 | 2.36 | 1.15 | 1.54 | 1.28 | 3.38 | 2.07 | 1.66 | 2.42 | 2.00 | 4.36 | 3.11 | 2.10 | 1.71 | 3.64 |
| | Irkutsk | 4.38 | 7.37 | 2.32 | 2.63 | 2.72 | 3.39 | 7.64 | 7.77 | 8.99 | 26.6 | 5.52 | 4.59 | 4.99 | 5.19 | 2.97 | 4.51 | 3.10 | 2.92 |
| | Primorskaya | | | 5.35 | 10.1 | 7.24 | 7.07 | 5.47 | 6.18 | 8.99 | 4.40 | 5.84 | 6.75 | 5.09 | 5.55 | 5.14 | 7.79 | 19.1 | 10.1 |
| Thailand | Bangkok | 3.22 | 4.11 | 3.35 | 2.62 | 1.62 | 2.17 | 2.83 | 1.57 | 2.03 | 1.98 | 2.58 | 1.82 | 1.52 | 1.91 | 1.38 | 1.75 | 1.70 | 1.24 |
| | Samutprakarn | 5.29 | | | | 4.88 | 4.92 | 4.31 | 2.88 | 6.12 | 2.77 | 17.0 | 1.11 | 1.52 | 5.23 | 2.33 | 1.93 | 1.71 | 1.36 |
| | Pathumthani | 2.26 | 1.68 | 1.49 | 1.17 | 1.19 | 1.20 | 1.66 | 1.61 | 1.50 | 1.61 | 1.85 | 1.96 | 1.64 | 2.13 | 1.87 | 1.84 | 2.09 | 2.13 |
| | Khanchanaburi | 8.88 | 4.98 | 2.38 | 2.02 | 1.09 | 0.687 | 2.44 | 0.708 | 1.15 | 1.21 | 0.710 | 2.21 | 1.57 | 0.955 | 1.22 | 0.838 | 1.51 | 1.43 |
| | Mae Hia | | 2.94 | 4.41 | 3.95 | 1.41 | 0.717 | 1.70 | 2.87 | 2.63 | 1.47 | 1.21 | 1.45 | 1.26 | 1.48 | 1.77 | 1.24 | 3.17 | 2.71 |
| | Sakaerat | | | | | | | 0.665 | 1.38 | 1.24 | 1.31 | 0.940 | 1.20 | 1.26 | 0.813 | 2.63 | 1.52 | 1.59 | 0.512 |
| Vietnam | Hanoi | 4.09 | 3.81 | 2.07 | 2.57 | 2.95 | 5.22 | 3.78 | 2.70 | 2.77 | 1.57 | 2.78 | 2.27 | 3.00 | 2.64 | 3.75 | 3.72 | 3.63 | 7.09 |
| | HoaBinh | 3.56 | 2.33 | 1.48 | 1.48 | 1.67 | 3.64 | 2.43 | 2.24 | 3.24 | 2.72 | 2.88 | 2.40 | 1.50 | 7.10 | 2.77 | 2.87 | 2.59 | 2.88 |
| | Cuc Phuong | | | | | | | | | | 14.0 | 5.61 | 3.31 | 6.06 | 8.57 | 4.72 | 4.68 | 5.77 | 3.41 |
| | Da Nang | | | | | | | | | | 6.27 | 3.41 | 14.0 | 11.5 | 17.9 | 13.8 | 11.9 | 3.39 | 9.85 |
| | Can Tho | | | | | | | | | | | | | | | 7.45 | 7.17 | 6.07 | 5.44 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 10.6 | 12.0 | 6.62 | 10.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 4.03 | 4.98 | 6.20 |

Terms and abbreviations are given in Table 3.5.

**Table 3.77 Precipitation amount-weighted annual average concentrations of $Ca^{2+}$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | <0.2 | *** | 9.11 | 19.2 | 32.6 | 20.4 | 8.33 | 9.30 | 10.7 | 9.57 | 9.47 | 11.6 | 14.3 | 9.74 |
| China | Guanyinqiao | 63.0 | 137 | 65.4 | 65.4 | 110 | 156 | 143 | 75.2 | | | | | | | | | | |
| | Nanshan | 55.2 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 65.3 | 43.2 | 69.2 | 68.5 | 57.9 | 69.5 | 54.6 | 43.0 | 67.3 | 53.5 |
| | Jinyunshan | | 44.9 | 29.7 | 30.7 | 70.5 | 57.7 | 98.3 | 55.1 | 68.3 | 66.7 | 68.7 | 65.1 | 59.2 | 31.2 | 26.0 | 21.7 | 38.0 | 51.9 |
| | Shizhan | 229 | 675 | 479 | 258 | 147 | 107 | 301 | 116 | 150 | 138 | 105 | 91.2 | 128 | 325 | 92.7 | 89.7 | 35.0 | 68.3 |
| | Weishuiyuan | 305 | 1160 | 617 | 241 | 190 | 91.0 | 330 | | | | | | | | | | | |
| | Jiwozi | 124 | 429 | 276 | 230 | 88.0 | 129 | 221 | 347 | 266 | 93.7 | 40.7 | 91.6 | 203 | 133 | 149 | 57.7 | 36.8 | 95.1 |
| | Hongwen | 6.75 | 36.3 | 49.1 | 30.7 | 83.7 | 37.4 | 25.5 | 54.9 | 14.1 | 13.2 | 9.11 | 14.1 | 17.5 | 21.9 | 25.5 | 16.3 | 13.1 | 28.3 |
| | Xiaoping | 0.773 | 5.10 | 10.6 | 17.3 | 6.41 | 10.6 | 10.5 | 16.7 | 15.6 | 9.04 | 8.37 | 11.7 | 20.0 | 22.7 | 42.4 | 9.17 | 6.39 | 15.1 |
| | Xiang Zhou | 21.2 | 7.96 | 15.5 | 22.8 | 18.0 | 7.31 | 14.1 | 4.71 | 5.43 | 4.91 | 7.40 | 17.5 | 10.8 | 43.4 | 17.0 | 15.9 | 10.8 | 10.0 |
| | Zhuxiandong | 25.0 | 14.3 | 20.7 | 20.2 | 24.7 | 17.0 | 17.1 | *** | 13.6 | 7.40 | 16.4 | 19.1 | *** | *** | *** | 25.2 | 17.3 | 13.9 |
| Indonesia | Jakarta | 87.6 | 64.4 | 42.9 | 101 | 50.9 | 17.4 | 18.8 | 13.9 | 4.36 | 12.6 | 10.3 | 11.1 | 12.0 | 14.1 | 15.0 | 7.47 | 25.2 | 17.6 |
| | Serpong | *** | 13.6 | 9.93 | 6.60 | 10.5 | 12.0 | 7.19 | 7.37 | 7.97 | 5.17 | 9.25 | 10.9 | 9.29 | 14.0 | 13.0 | 19.7 | 13.9 | 12.1 |
| | Kototabang | 3.97 | 1.43 | 4.92 | 5.53 | 6.98 | 3.38 | 5.19 | 4.70 | 4.86 | 5.47 | 4.77 | 5.90 | 7.85 | 9.55 | 3.93 | 1.99 | 3.83 | 11.6 |
| | Bandung | *** | 24.2 | 17.1 | 10.9 | 18.3 | 15.9 | 14.8 | 9.50 | 11.3 | 15.3 | 13.5 | 20.9 | 13.3 | 19.6 | 22.8 | 17.6 | 15.2 | 14.4 |
| | Maros | | | | | | | | | 8.39 | 8.11 | 9.58 | 6.49 | 16.1 | 10.4 | 27.9 | 16.8 | 13.8 | 14.4 |
| Japan | Rishiri | 13.7 | 10.1 | 10.2 | 7.74 | 8.60 | 7.62 | 5.33 | 5.83 | 8.72 | 10.1 | 6.89 | 5.63 | 8.44 | 7.33 | 5.78 | 5.27 | 3.60 | 8.15 |
| | Ochiishi | | | | 5.74 | 12.2 | 8.96 | 10.2 | 6.96 | 5.29 | 5.20 | 8.25 | 5.42 | 7.35 | 11.5 | 4.06 | 6.72 | 4.27 | 6.18 |
| | Tappi | 6.37 | 5.78 | 9.01 | 6.98 | 7.76 | 10.7 | 12.7 | 11.0 | 10.3 | 6.41 | 8.54 | 8.01 | 8.02 | 14.1 | 7.45 | 7.99 | 7.45 | 6.78 |
| | Sado-seki | 11.7 | 15.8 | 9.08 | 5.08 | 4.70 | 10.2 | 12.1 | 11.8 | 10.3 | 11.1 | 12.7 | 8.28 | 11.4 | 10.4 | 9.49 | 11.3 | 11.4 | 6.67 |
| | Happo | 3.88 | 4.31 | 2.00 | 1.92 | 2.36 | 4.15 | 6.28 | 2.91 | 2.70 | 4.66 | 2.40 | 2.57 | 4.14 | 2.77 | 2.31 | 1.70 | 0.750 | 1.77 |
| | Ijira | 6.77 | 5.62 | 4.18 | 2.88 | 2.31 | 2.82 | 2.89 | 3.63 | 2.20 | 2.74 | 2.48 | 1.97 | 2.50 | 2.74 | 1.65 | 2.00 | 1.88 | 2.20 |
| | Oki | 16.0 | 12.9 | 11.5 | 6.91 | 11.9 | 18.6 | 11.4 | 13.6 | 10.9 | 14.6 | 16.1 | 17.1 | 12.1 | 17.0 | 16.4 | 12.0 | 10.6 | 15.1 |
| | Banryu | 4.24 | 5.97 | 5.37 | 3.39 | 5.29 | 5.87 | 9.51 | 7.36 | 7.41 | 5.45 | 8.02 | 5.85 | 6.65 | 3.92 | 4.75 | 5.37 | 5.17 | 5.13 |
| | Yusuhara | 2.69 | 3.41 | 1.78 | 1.42 | 1.84 | 2.39 | 2.61 | 1.96 | 1.69 | 1.97 | 1.79 | 2.27 | 2.39 | 2.16 | 1.60 | 1.02 | 1.14 | 5.19 |
| | Hedo | 10.1 | 4.88 | 14.0 | 10.9 | 22.7 | 14.1 | 9.21 | 4.92 | 4.18 | 4.47 | 7.98 | 6.04 | 11.5 | 6.89 | 4.25 | 8.24 | 5.37 | 9.70 |
| | Ogasawara | 5.11 | 5.43 | 8.61 | 8.00 | 3.36 | 2.56 | 3.58 | 4.36 | 2.55 | 5.20 | 5.82 | 5.56 | 3.46 | 4.60 | 3.98 | 8.13 | 2.60 | 4.54 |
| | Tokyo | | | | | | | | 4.99 | 4.09 | 3.42 | 3.98 | 4.84 | 4.21 | 4.35 | 3.81 | 3.56 | 2.48 | 3.34 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 8.75 | 3.04 | 5.77 | 5.50 | *** | *** | *** | *** | *** | 4.00 | 2.21 | ** |
| Malaysia | Petaling Jaya | 6.84 | 6.30 | 7.44 | 7.83 | 5.05 | 6.07 | 3.80 | 3.94 | 3.94 | 4.97 | 5.40 | 3.97 | 3.96 | 6.13 | 6.02 | 6.70 | 6.48 | 4.18 |
| | Tanah Rata | 2.26 | 3.10 | 3.08 | 3.35 | 2.32 | 1.83 | 1.15 | 1.05 | 0.772 | 1.03 | 1.22 | 2.08 | 2.37 | 2.91 | 2.68 | 2.00 | 2.18 | 2.25 |
| | Danum Valley | | | | | | 1.35 | 1.26 | 0.513 | 0.353 | 1.01 | 3.82 | 0.887 | 0.800 | 1.44 | 1.41 | 2.28 | 0.987 | 1.48 |
| | Kuching | | | | | | | | | 1.91 | 1.79 | 2.60 | 3.15 | 3.42 | 4.20 | 6.12 | 4.35 | 3.35 | 3.86 |
| Mongolia | Ulaanbaatar | 37.7 | 47.4 | 49.9 | 26.5 | 43.2 | 49.8 | 45.9 | 41.2 | 42.9 | 42.2 | 34.3 | 33.9 | *** | 95.3 | *** | *** | 29.1 | 41.8 |
| | Terelj | 15.2 | 15.0 | 27.3 | 10.7 | 16.2 | 13.6 | 24.8 | 13.6 | 17.9 | 35.8 | 42.3 | 20.4 | *** | 69.1 | *** | *** | 16.8 | 15.9 |
| Myanmar | Yangon | | | | | | | | *** | *** | 9.66 | 6.37 | 6.89 | 7.79 | 1.07 | 14.1 | 88.7 | 5.55 | 10.5 |
| Philippines | Metro Manila | 14.5 | 71.6 | 8.71 | 8.76 | 11.1 | 10.6 | 13.7 | 10.4 | 13.7 | 6.41 | 12.8 | 12.9 | 13.9 | 11.5 | 14.5 | 17.4 | 20.5 | *** |
| | Los Baños | 6.95 | 65.3 | 7.23 | 7.75 | 5.40 | 3.54 | 6.92 | 5.19 | 3.75 | 5.08 | 20.1 | 6.38 | 9.40 | 6.40 | 6.99 | 8.77 | 11.8 | *** |
| | Mt.Sto.Tomas | | | | | | | 5.64 | 23.4 | 3.09 | 5.87 | 22.7 | 7.84 | 14.0 | 8.58 | 8.06 | 6.85 | 13.4 | *** |
| Republic | Kanghwa | 26.5 | 14.0 | 11.1 | 11.3 | 14.0 | 11.1 | 15.8 | 12.4 | 10.8 | 5.19 | 7.02 | 4.39 | 8.64 | 8.72 | 8.94 | 9.52 | 3.85 | 6.73 |
| of Korea | Cheju | 13.8 | 5.89 | 9.37 | 8.10 | 7.70 | 11.3 | 9.05 | 10.6 | 10.5 | 4.08 | 6.72 | 6.60 | 11.2 | 13.6 | 4.12 | 4.64 | 16.2 | 12.8 |
| | Imsil | | 5.85 | 9.84 | 5.39 | 6.76 | 5.00 | 14.7 | 13.7 | 6.92 | 3.88 | 5.74 | 6.81 | 4.31 | 2.95 | 3.50 | 5.16 | 2.70 | 3.71 |
| Russia | Mondy | 5.79 | 7.00 | 8.54 | 3.80 | 5.33 | 4.17 | 5.46 | 6.91 | 7.97 | 5.19 | 9.20 | 9.02 | 12.1 | 4.61 | 7.02 | 8.36 | 5.42 | 8.67 |
| | Listvyanka | 12.8 | 7.25 | 11.4 | 14.3 | 14.1 | 8.23 | 8.81 | 9.02 | 8.18 | 12.6 | 12.6 | 16.1 | 11.7 | 11.9 | 12.8 | 9.97 | 7.94 | 12.2 |
| | Irkutsk | 28.0 | 34.8 | 31.5 | 23.9 | 21.9 | 21.6 | 29.9 | 26.5 | 29.5 | 29.2 | 32.2 | 34.7 | 31.3 | 33.0 | 26.5 | 30.5 | 17.0 | 22.5 |
| | Primorskaya | | | 18.1 | 25.3 | 21.5 | 21.1 | 25.0 | 14.0 | 19.4 | 11.7 | 16.9 | 13.7 | 12.2 | 18.0 | 18.1 | 13.1 | 13.1 | 20.9 |
| Thailand | Bangkok | 11.4 | 12.0 | 15.7 | 11.9 | 11.0 | 18.6 | 18.4 | 13.6 | 16.1 | 10.0 | 11.2 | 10.5 | 13.5 | 25.2 | 14.5 | 16.9 | 15.9 | 11.3 |
| | Samutprakarn | 11.1 | | | | 7.84 | 9.68 | 14.8 | 11.0 | 13.8 | 13.2 | 7.78 | 5.95 | 8.39 | 19.9 | 14.6 | 6.23 | 9.28 | 7.96 |
| | Pathumthani | 13.2 | 13.0 | 17.4 | 6.30 | 11.4 | 8.48 | 12.8 | 8.50 | 11.6 | 9.19 | 9.17 | 12.1 | 20.6 | 27.1 | 22.5 | 16.6 | 13.7 | 12.3 |
| | Khanchanaburi | 4.76 | 9.05 | 4.92 | 8.45 | 4.78 | 2.45 | 2.71 | 3.03 | 4.59 | 4.93 | 1.80 | 4.04 | 17.5 | 3.26 | 4.07 | 3.63 | 5.17 | 3.63 |
| | Mae Hia | | 6.95 | 18.0 | 5.72 | 4.77 | 3.75 | 4.74 | 8.03 | 6.68 | 5.69 | 4.40 | 2.60 | 7.77 | 10.6 | 9.72 | 4.11 | 10.7 | 8.57 |
| | Sakaerat | | | | | | | 9.54 | 3.75 | 3.35 | 2.53 | 2.21 | 1.88 | 3.74 | 1.96 | 8.73 | 6.83 | 8.24 | 4.60 |
| Vietnam | Hanoi | 20.9 | 10.7 | 16.8 | 17.8 | 25.0 | 26.1 | 35.2 | 18.1 | 11.8 | 12.0 | 23.7 | 14.6 | 15.0 | 16.2 | 24.8 | 36.7 | 22.8 | 35.3 |
| | HoaBinh | 13.1 | 10.4 | 12.6 | 12.0 | 19.9 | 14.3 | 17.8 | 9.33 | 14.5 | 9.44 | 21.1 | 12.5 | 11.1 | 16.9 | 13.4 | 10.1 | 13.1 | 23.1 |
| | Cuc Phuong | | | | | | | | | | 24.8 | 38.3 | 32.2 | 30.6 | 24.4 | 23.1 | 19.4 | 27.1 | 24.0 |
| | Da Nang | | | | | | | | | | 6.35 | 8.87 | 10.0 | 16.9 | 21.5 | 27.3 | 34.4 | 38.5 | 33.9 |
| | Can Tho | | | | | | | | | | | | | | | 12.8 | 26.8 | 11.9 | 10.6 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 26.0 | 44.3 | 12.1 | 14.8 |
| | Yen Bai | | | | | | | | | | | | | | | | 15.9 | 20.3 | 23.1 |

Terms and abbreviations are given in Table 3.5.

**Table 3.78 Precipitation amount-weighted annual average concentrations of nss-$Ca^{2+}$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | *** | *** | 9.07 | 19.1 | 32.5 | 20.3 | 8.26 | 9.23 | 10.7 | 9.50 | 9.31 | 11.5 | 14.2 | 9.64 |
| China | Guanyinqiao | 62.8 | 137 | 65.3 | 65.3 | 110 | 156 | 143 | 75.1 | | | | | | | | | | |
| | Nanshan | 55.0 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 65.2 | 43.2 | 69.0 | 68.2 | 57.7 | 69.3 | 54.5 | 43.0 | 67.1 | 53.4 |
| | Jinyunshan | | 44.7 | 29.6 | 30.6 | 70.2 | 57.4 | 98.2 | 55.0 | 68.1 | 66.5 | 68.6 | 64.9 | 59.0 | 31.1 | 25.9 | 21.7 | 38.0 | 51.9 |
| | Shizhan | 228 | 672 | 474 | 257 | 147 | 107 | 300 | 116 | 149 | 138 | 105 | 90.8 | 128 | 322 | 90.0 | 87.2 | 33.9 | 67.7 |
| | Weishuiyuan | 303 | 1150 | 612 | 238 | 189 | 90.6 | 328 | | | | | | | | | | | |
| | Jiwozi | 123 | 425 | 273 | 227 | 87.4 | 128 | 220 | 345 | 264 | 93.2 | 40.6 | 91.4 | 202 | 130 | 146 | 55.7 | 36.6 | 94.4 |
| | Hongwen | 6.32 | 36.1 | 47.9 | 30.0 | 82.6 | 36.3 | 24.8 | 54.4 | 13.6 | 12.7 | 8.70 | 13.7 | 17.1 | 21.6 | 25.1 | 15.9 | 12.6 | 27.5 |
| | Xiaoping | 0.599 | 4.90 | 10.3 | 16.8 | 6.13 | 10.4 | 9.99 | 16.4 | 15.1 | 8.69 | 7.96 | 11.5 | 19.9 | 22.4 | 42.2 | 8.94 | 6.24 | 14.9 |
| | Xiang Zhou | 20.3 | 7.43 | 14.6 | 21.9 | 16.4 | 6.46 | 13.3 | 4.33 | 4.68 | 4.04 | 6.97 | 16.8 | 9.76 | 42.2 | 16.4 | 14.7 | 10.4 | 8.88 |
| | Zhuxiandong | 24.3 | 13.7 | 19.7 | 19.4 | 22.7 | 15.7 | 16.7 | *** | 12.7 | 6.44 | 15.9 | 18.1 | *** | *** | *** | 23.7 | 16.6 | 13.3 |
| Indonesia | Jakarta | 86.4 | 63.5 | 42.2 | 101 | 50.2 | 16.9 | 18.5 | 13.6 | 4.14 | 12.4 | 10.2 | 10.8 | 11.7 | 13.8 | 14.5 | 7.43 | 24.7 | 17.3 |
| | Serpong | *** | 13.1 | 9.40 | 6.38 | 10.1 | 11.7 | 7.03 | 7.19 | 7.75 | 5.03 | 9.07 | 10.7 | 9.05 | 13.7 | 12.6 | 19.4 | 13.6 | 11.8 |
| | Kototabang | *** | 1.36 | 4.78 | 5.32 | 6.75 | 3.26 | 5.06 | 4.51 | 4.76 | 5.34 | 4.65 | 5.76 | 7.64 | 9.37 | 3.81 | 2.03 | 3.53 | 11.6 |
| | Bandung | *** | 23.7 | 16.9 | 10.7 | 18.0 | 15.4 | 14.4 | 9.36 | 11.1 | 15.1 | 13.3 | 20.6 | 13.1 | 19.3 | 22.6 | 17.4 | 15.0 | 14.0 |
| | Maros | | | | | | | | | 8.05 | 7.83 | 9.30 | 6.17 | 15.7 | 9.98 | 27.2 | 16.7 | 11.5 | 12.2 |
| Japan | Rishiri | 6.68 | 5.53 | 5.91 | 3.98 | 3.66 | 3.27 | 2.99 | 2.76 | 3.40 | 6.39 | 3.44 | 2.63 | 2.20 | 3.06 | 2.31 | 2.29 | 2.10 | 3.68 |
| | Ochiishi | | | | 1.60 | 4.48 | 4.44 | 4.30 | 2.96 | 1.66 | 1.38 | 3.25 | 2.11 | 1.50 | 2.42 | 1.96 | 2.87 | 1.28 | 1.46 |
| | Tappi | 3.20 | 3.01 | 5.49 | 3.94 | 3.52 | 6.15 | 6.50 | 6.01 | 6.09 | 2.26 | 6.16 | 4.87 | 4.44 | 8.53 | 4.17 | 3.02 | 3.80 | 2.71 |
| | Sado-seki | 6.18 | 8.32 | 3.39 | 3.06 | 1.88 | 3.90 | 7.28 | 6.87 | 5.67 | 4.20 | 5.94 | 4.99 | 6.19 | 3.83 | 3.47 | 4.33 | 7.67 | 3.43 |
| | Happo | 3.71 | 4.18 | 1.92 | 1.81 | 2.24 | 4.00 | 6.19 | 2.85 | 2.61 | 4.55 | 2.32 | 2.49 | 3.93 | 2.69 | 2.20 | 1.58 | 0.646 | 1.67 |
| | Ijira | 6.34 | 4.97 | 3.57 | 2.60 | 1.87 | 2.53 | 2.65 | 3.18 | 1.87 | 2.46 | 2.21 | 1.70 | 2.09 | 2.43 | 1.34 | 1.66 | 1.61 | 1.88 |
| | Oki | 7.50 | 6.10 | 3.91 | 2.85 | 5.51 | 5.51 | 6.85 | 7.68 | 3.94 | 6.44 | 7.24 | 6.73 | 4.40 | 6.12 | 4.63 | 3.15 | 3.55 | 4.72 |
| | Banryu | 3.67 | 4.29 | 3.66 | 1.65 | 2.86 | 3.89 | 8.08 | 5.66 | 5.85 | 3.32 | 5.99 | 3.52 | 4.66 | 2.42 | 2.87 | 3.49 | 3.45 | 3.23 |
| | Yusuhara | 2.43 | 3.21 | 1.24 | 1.14 | 1.32 | 1.85 | 2.35 | 1.67 | 1.51 | 1.71 | 1.65 | 2.04 | 2.00 | 1.95 | 1.49 | 0.530 | 0.969 | 4.14 |
| | Hedo | 0.807 | 1.71 | 2.89 | 3.48 | 4.30 | 4.39 | 5.15 | 2.13 | 1.50 | 1.75 | 2.50 | 1.63 | 2.44 | 1.99 | 1.29 | 1.48 | 1.12 | 2.08 |
| | Ogasawara | 2.14 | 3.19 | 3.58 | 2.63 | 1.04 | 0.575 | 1.37 | 1.50 | 0.862 | 1.16 | 1.35 | 1.20 | 1.01 | 1.56 | 1.15 | 1.51 | 0.638 | 0.647 |
| | Tokyo | | | | | | | | 4.24 | 3.67 | 2.91 | 3.60 | 4.03 | 3.57 | 3.86 | 3.40 | 3.17 | 2.17 | 2.47 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 8.59 | 2.99 | 5.70 | 5.30 | *** | *** | *** | *** | *** | 3.94 | 2.18 | ** |
| Malaysia | Petaling Jaya | 6.73 | 6.22 | 7.33 | 7.71 | 4.93 | 5.93 | 3.71 | 3.86 | 3.85 | 4.87 | 5.29 | 3.87 | 3.88 | 6.04 | 5.91 | 6.56 | 6.34 | 4.05 |
| | Tanah Rata | 2.21 | 3.06 | 3.04 | 3.31 | 2.28 | 1.70 | 1.12 | 1.02 | 0.753 | 1.01 | 1.19 | 2.04 | 2.33 | 2.87 | 2.63 | 1.94 | 2.12 | 2.20 |
| | Danum Valley | | | | | | 1.26 | 1.16 | 0.453 | 0.315 | 0.919 | 3.59 | 0.794 | 0.750 | 1.34 | 1.32 | 2.18 | 0.920 | 1.43 |
| | Kuching | | | | | | | | | 1.81 | 1.66 | 2.45 | 2.95 | 3.32 | 4.04 | 5.93 | 4.07 | 3.07 | 3.71 |
| Mongolia | Ulaanbaatar | 37.6 | 47.2 | 49.8 | 26.4 | 43.0 | 49.6 | 45.7 | 41.1 | 42.9 | 42.1 | 34.2 | 33.8 | *** | 93.6 | *** | *** | 25.4 | 41.3 |
| | Terelj | 15.1 | 14.6 | 26.3 | 10.6 | 16.1 | 13.3 | 24.5 | 13.4 | 17.7 | 35.6 | 42.1 | 20.2 | *** | 68.8 | *** | *** | 13.7 | 15.6 |
| Myanmar | Yangon | | | | | | | | *** | *** | 9.26 | 6.09 | 6.57 | 7.32 | 0.792 | 13.8 | 88.5 | 5.22 | 10.2 |
| Philippines | Metro Manila | 13.9 | 67.2 | 8.40 | 8.40 | 10.8 | 10.3 | 13.3 | 9.96 | 13.2 | 5.98 | 12.3 | 12.4 | 13.5 | 10.9 | 14.0 | 16.9 | 20.2 | *** |
| | Los Baños | 6.20 | 64.5 | 6.77 | 7.46 | 5.14 | 3.18 | 6.43 | 4.82 | 3.34 | 4.71 | 19.7 | 5.96 | 8.92 | 5.94 | 6.67 | 8.42 | 11.3 | *** |
| | Mt.Sto.Tomas | | | | | | | 5.58 | 23.3 | 2.98 | 5.69 | 22.5 | 7.75 | 13.8 | 8.43 | 7.92 | 6.66 | 13.1 | *** |
| Republic | Kanghwa | 25.3 | 13.1 | 10.0 | 10.8 | 13.3 | 10.3 | 15.2 | 11.5 | 10.0 | 4.23 | 6.44 | 3.66 | 7.54 | 8.09 | 8.13 | 8.55 | 3.24 | 6.15 |
| of Korea | Cheju | 10.5 | 4.30 | 8.15 | 7.09 | 6.45 | 9.45 | 7.21 | 8.43 | 7.63 | 3.03 | 4.70 | 3.72 | 3.15 | 7.33 | 1.79 | 2.52 | 7.72 | 7.59 |
| | Imsil | | 5.51 | 9.00 | 4.89 | 6.37 | 4.53 | 14.0 | 13.3 | 6.23 | 2.83 | 4.79 | 6.02 | 3.40 | 2.29 | 2.90 | 4.19 | 2.01 | 2.98 |
| Russia | Mondy | 5.75 | 6.95 | 8.50 | 3.75 | 5.29 | 4.14 | 5.43 | 6.84 | 7.93 | 5.14 | 9.14 | 8.94 | 12.1 | 4.58 | 6.97 | 8.32 | 5.39 | 8.61 |
| | Listvyanka | 12.7 | 7.18 | 11.3 | 14.1 | 14.0 | 8.16 | 8.76 | 8.96 | 8.12 | 12.5 | 12.5 | 16.0 | 11.7 | 11.7 | 12.7 | 9.91 | 7.88 | 12.1 |
| | Irkutsk | 27.8 | 34.6 | 31.3 | 23.7 | 21.7 | 21.4 | 29.7 | 26.3 | 29.2 | 28.8 | 31.8 | 34.4 | 31.1 | 32.7 | 26.3 | 30.2 | 16.8 | 22.4 |
| | Primorskaya | | | 17.6 | 24.6 | 21.0 | 20.7 | 24.7 | 13.5 | 18.9 | 11.4 | 16.3 | 13.4 | 11.7 | 17.4 | 17.7 | 12.6 | 12.6 | 20.4 |
| Thailand | Bangkok | 11.2 | 11.8 | 15.4 | 11.7 | 10.7 | 18.4 | 18.2 | 13.5 | 15.9 | 9.81 | 11.1 | 10.4 | 13.3 | 25.0 | 14.3 | 16.8 | 15.7 | 11.2 |
| | Samutprakarn | 10.8 | | | | 7.48 | 9.25 | 14.5 | 10.7 | 13.5 | 13.0 | 7.38 | 5.83 | 8.22 | 19.3 | 14.3 | 6.02 | 9.09 | 7.81 |
| | Pathumthani | 12.9 | 12.8 | 17.2 | 6.20 | 11.2 | 8.34 | 12.7 | 8.38 | 11.5 | 9.07 | 9.03 | 12.0 | 20.3 | 27.0 | 22.4 | 16.5 | 13.6 | 12.2 |
| | Khanchanaburi | 4.56 | 8.81 | 4.74 | 8.22 | 4.59 | 2.31 | 2.56 | 2.88 | 4.39 | 4.72 | 1.73 | 3.88 | 17.3 | 3.14 | 3.93 | 3.50 | 4.95 | 3.53 |
| | Mae Hia | | 6.86 | 17.8 | 5.65 | 4.71 | 3.73 | 4.68 | 7.97 | 6.63 | 5.63 | 4.36 | 2.54 | 7.69 | 10.4 | 9.64 | 4.01 | 10.6 | 8.43 |
| | Sakaerat | | | | | | | 9.45 | 3.66 | 3.26 | 2.48 | 2.15 | 1.81 | 3.66 | 1.90 | 8.57 | 6.73 | 8.16 | 4.55 |
| Vietnam | Hanoi | 20.5 | 10.4 | 16.7 | 17.6 | 24.8 | 25.7 | 35.0 | 17.9 | 11.6 | 11.8 | 23.5 | 14.5 | 15.0 | 16.1 | 24.6 | 36.5 | 22.5 | 35.0 |
| | HoaBinh | 12.8 | 10.2 | 12.6 | 11.9 | 19.8 | 14.1 | 17.7 | 9.26 | 14.4 | 9.37 | 21.0 | 12.5 | 11.0 | 16.9 | 13.3 | 10.0 | 13.0 | 23.1 |
| | Cuc Phuong | | | | | | | | | | 24.6 | 38.0 | 32.0 | 30.2 | 23.8 | 22.8 | 19.2 | 26.8 | 23.7 |
| | Da Nang | | | | | | | | | | 4.31 | 7.98 | 8.50 | 15.5 | 18.4 | 25.5 | 32.7 | 37.1 | 32.1 |
| | Can Tho | | | | | | | | | | | | | | | 12.4 | 26.2 | 11.6 | 10.3 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 25.4 | 43.5 | 11.8 | 14.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 15.8 | 20.1 | 23.0 |

Terms and abbreviations are given in Table 3.5.

**Table 3.79 Precipitation amount-weighted annual average concentrations of $Mg^{2+}$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | <0.3 | *** | 0.661 | 3.27 | 3.45 | 2.00 | 0.717 | 1.22 | 1.22 | 1.12 | 1.63 | 2.56 | 1.44 | 1.41 |
| China | Guanyinqiao | 8.54 | 11.6 | 6.00 | 4.46 | 9.12 | 12.7 | 12.6 | 8.04 | | | | | | | | | | |
| | Nanshan | 7.05 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 7.08 | 5.45 | 8.95 | 8.61 | 6.87 | 8.23 | 7.00 | 4.79 | 5.69 | 4.08 |
| | Jinyunshan | | 5.76 | 3.37 | 2.89 | 3.55 | 3.17 | 4.00 | 2.81 | 4.64 | 5.56 | 5.76 | 6.13 | 5.82 | 4.42 | 4.37 | 3.24 | 3.89 | 4.74 |
| | Shizhan | 23.6 | 48.5 | 67.9 | 33.5 | 15.3 | 13.2 | 28.3 | 21.4 | 45.4 | 12.4 | 11.0 | 9.94 | 3.47 | 54.5 | 11.8 | 9.25 | 1.97 | 11.2 |
| | Weishuiyuan | 31.7 | 88.4 | 91.1 | 40.0 | 19.3 | 10.9 | 42.0 | | | | | | | | | | | |
| | Jiwozi | 14.6 | 41.1 | 50.1 | 33.9 | 16.6 | 30.9 | 40.6 | 48.8 | 77.3 | 20.2 | 7.17 | 9.65 | 44.4 | 22.3 | 21.6 | 11.1 | 12.6 | 19.7 |
| | Hongwen | 4.22 | 6.30 | 9.64 | 5.96 | 11.4 | 9.04 | 5.44 | 6.18 | 4.92 | 4.08 | 2.00 | 4.22 | 4.69 | 3.36 | 4.27 | 4.20 | 4.89 | 7.19 |
| | Xiaoping | 1.32 | 2.50 | 1.61 | 4.04 | 1.44 | 1.15 | 2.77 | 2.06 | 3.39 | 3.24 | 1.89 | 2.21 | 3.45 | 4.03 | 3.65 | 2.27 | 2.14 | 2.78 |
| | Xiang Zhou | 6.95 | 2.93 | 5.52 | 7.15 | 6.35 | 6.87 | 12.0 | 2.38 | 3.97 | 4.52 | 2.57 | 4.39 | 6.90 | 14.0 | 7.21 | 7.19 | 4.02 | 5.64 |
| | Zhuxiandong | 7.91 | 3.33 | 7.08 | 7.37 | 8.49 | 9.08 | 4.99 | *** | 5.70 | 6.15 | 2.86 | 6.75 | *** | *** | *** | 8.78 | 5.17 | 3.21 |
| Indonesia | Jakarta | 219 | 69.0 | 13.1 | 12.7 | 6.30 | 3.63 | 8.59 | 2.21 | 1.67 | 1.97 | 2.23 | 3.45 | 2.96 | 2.62 | 3.64 | 1.81 | 4.50 | 2.95 |
| | Serpong | *** | 3.53 | 4.52 | 2.69 | 3.99 | 3.74 | 1.73 | 2.65 | 4.12 | 1.36 | 3.09 | 3.12 | 2.01 | 3.86 | 3.23 | 3.86 | 3.06 | 2.51 |
| | Kototabang | *** | 1.04 | 2.58 | 6.76 | 1.78 | 0.939 | 2.26 | 3.81 | 1.000 | 1.10 | 1.55 | 0.950 | 1.40 | 2.40 | 0.908 | 21.5 | 1.19 | 1.08 |
| | Bandung | *** | 4.07 | 1.64 | 1.70 | 3.28 | 2.45 | 3.26 | 1.68 | 4.40 | 4.13 | 4.43 | 5.78 | 3.17 | 6.33 | 7.51 | 5.61 | 3.50 | 3.80 |
| | Maros | | | | | | | | | 2.56 | 1.86 | 2.17 | 2.50 | 7.03 | 2.81 | 13.6 | 30.0 | 2.92 | 2.24 |
| Japan | Rishiri | 36.3 | 24.8 | 22.3 | 20.3 | 26.4 | 23.3 | 12.6 | 17.0 | 30.0 | 19.9 | 18.6 | 15.4 | 32.3 | 22.5 | 18.1 | 16.2 | 7.96 | 24.2 |
| | Ochiishi | | | | 22.1 | 42.2 | 22.2 | 31.2 | 21.5 | 19.8 | 19.9 | 28.6 | 18.5 | 30.6 | 48.2 | 11.1 | 20.4 | 15.8 | 25.4 |
| | Tappi | 17.5 | 15.5 | 19.6 | 16.8 | 23.4 | 24.2 | 33.3 | 26.4 | 23.1 | 21.1 | 12.9 | 17.4 | 15.4 | 30.0 | 18.1 | 25.2 | 19.5 | 21.7 |
| | Sado-seki | 29.0 | 40.5 | 30.7 | 11.3 | 15.6 | 33.0 | 25.9 | 26.1 | 23.5 | 36.2 | 37.7 | 19.0 | 29.4 | 36.9 | 32.5 | 37.3 | 20.8 | 17.1 |
| | Happo | 1.67 | 1.59 | 0.926 | 1.25 | 1.26 | 1.20 | 0.958 | 0.676 | 0.697 | 1.16 | 0.810 | 0.896 | 2.30 | 1.37 | 1.27 | 1.33 | 0.861 | 1.23 |
| | Ijira | 2.89 | 3.99 | 3.53 | 2.16 | 2.75 | 1.75 | 1.64 | 2.75 | 1.74 | 1.67 | 1.62 | 1.69 | 2.54 | 2.09 | 1.97 | 2.04 | 1.57 | 1.84 |
| | Oki | 45.0 | 36.6 | 40.6 | 21.2 | 34.4 | 69.9 | 26.9 | 31.7 | 36.7 | 43.1 | 48.1 | 55.5 | 41.2 | 56.1 | 60.6 | 47.9 | 38.5 | 55.2 |
| | Banryu | 3.33 | 9.11 | 9.30 | 9.29 | 13.2 | 10.8 | 8.34 | 9.85 | 8.91 | 11.8 | 12.1 | 12.8 | 11.2 | 8.50 | 10.8 | 10.8 | 9.45 | 9.94 |
| | Yusuhara | 2.18 | 1.83 | 3.55 | 1.83 | 2.86 | 3.04 | 1.66 | 1.80 | 1.11 | 1.61 | 1.56 | 2.56 | 2.84 | 2.40 | 1.82 | 2.77 | 1.21 | 6.01 |
| | Hedo | 50.0 | 16.9 | 59.0 | 49.3 | 91.0 | 47.3 | 21.8 | 14.8 | 14.2 | 14.5 | 29.2 | 23.2 | 47.9 | 25.7 | 15.6 | 35.8 | 23.3 | 42.6 |
| | Ogasawara | 19.2 | 13.3 | 32.4 | 31.1 | 13.0 | 10.7 | 11.4 | 15.0 | 10.6 | 21.9 | 24.5 | 23.6 | 13.6 | 17.0 | 15.2 | 34.5 | 10.5 | 21.3 |
| | Tokyo | | | | | | | | 4.22 | 2.78 | 2.97 | 2.40 | 4.79 | 3.78 | 3.04 | 2.54 | 2.45 | 1.85 | 4.92 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 3.49 | 0.698 | 1.31 | 0.722 | *** | *** | *** | *** | *** | 0.613 | <0.3 | ** |
| Malaysia | Petaling Jaya | 1.39 | 1.30 | 1.43 | 0.707 | 0.888 | 0.842 | 0.710 | 0.385 | 0.520 | 0.467 | 0.698 | 0.579 | 0.497 | 0.686 | 1.10 | 0.922 | 0.819 | 0.565 |
| | Tanah Rata | 0.415 | 0.406 | 0.422 | 0.451 | 0.310 | 0.492 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | <0.3 | 0.301 | 0.333 | <0.3 | <0.3 | <0.3 |
| | Danum Valley | | | | | | 0.323 | 0.481 | 0.402 | 0.528 | 0.549 | 1.48 | 0.541 | <0.3 | 0.430 | 0.552 | 0.934 | 0.320 | 0.379 |
| | Kuching | | | | | | | | | <0.3 | 0.395 | 0.457 | 0.745 | <0.3 | 0.588 | 1.12 | 1.21 | 0.949 | 0.718 |
| Mongolia | Ulaanbaatar | 4.14 | 5.41 | 3.56 | 3.69 | 5.86 | 5.21 | 4.39 | 4.75 | 3.67 | 5.32 | 2.98 | 9.23 | *** | 3.74 | *** | *** | 6.06 | 3.06 |
| | Terelj | 3.16 | 2.53 | 4.09 | 2.26 | 5.15 | 3.67 | 4.85 | 2.07 | 3.00 | 5.45 | 5.54 | 7.35 | *** | 4.97 | *** | *** | 2.19 | 1.32 |
| Myanmar | Yangon | | | | | | | | *** | *** | 2.84 | 1.80 | 3.02 | 6.56 | 12.3 | 3.41 | 5.87 | 4.58 | 3.46 |
| Philippines | Metro Manila | 6.32 | 15.0 | 3.27 | 2.99 | 4.38 | 2.46 | 5.46 | 4.13 | 4.64 | 2.56 | 9.12 | 7.13 | 6.53 | 4.54 | 4.64 | 6.39 | 5.29 | *** |
| | Los Baños | 3.71 | 11.1 | 2.94 | 2.60 | 3.59 | 2.34 | 3.44 | 3.46 | 4.65 | 3.73 | 8.20 | 4.76 | 4.26 | 3.25 | 3.32 | 4.40 | 4.14 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.971 | 2.08 | 0.346 | 1.53 | 3.34 | 1.61 | 2.90 | 1.69 | 1.35 | 3.44 | 2.78 | *** |
| Republic of Korea | Kanghwa | 9.31 | 5.26 | 6.34 | 2.86 | 5.49 | 6.20 | 5.10 | 6.74 | 2.75 | 5.27 | 3.64 | 3.18 | 5.50 | 3.30 | 3.27 | 3.60 | 1.19 | 2.33 |
| | Cheju | 18.6 | 9.96 | 7.48 | 5.86 | 7.27 | 15.0 | 9.59 | 7.30 | 9.68 | 6.02 | 6.90 | 10.5 | 34.5 | 25.6 | 7.85 | 5.92 | 37.7 | 21.5 |
| | Imsil | | 1.92 | 3.31 | 1.60 | 2.39 | 1.82 | 3.99 | 3.57 | 1.99 | 3.88 | 4.68 | 2.02 | 3.05 | 1.87 | 1.77 | 3.30 | 1.55 | 1.91 |
| Russia | Mondy | 1.09 | 1.46 | 2.20 | 0.775 | 1.27 | 0.961 | 0.986 | 1.78 | 1.98 | 1.17 | 1.81 | 2.60 | 4.06 | 0.877 | 1.18 | 2.15 | 0.864 | 1.75 |
| | Listvyanka | 2.94 | 1.78 | 3.04 | 3.65 | 3.20 | 1.58 | 1.71 | 1.85 | 1.76 | 2.84 | 2.97 | 3.12 | 2.53 | 2.92 | 2.37 | 2.06 | 1.91 | 3.15 |
| | Irkutsk | 4.99 | 5.55 | 5.66 | 4.32 | 4.77 | 5.08 | 5.76 | 6.27 | 6.44 | 7.55 | 6.75 | 7.29 | 6.49 | 6.38 | 3.68 | 5.51 | 3.97 | 4.70 |
| | Primorskaya | | | 5.66 | 11.2 | 7.05 | 5.67 | 5.50 | 4.30 | 6.26 | 3.11 | 4.27 | 4.29 | 4.43 | 4.89 | 6.21 | 5.62 | 5.51 | 11.9 |
| Thailand | Bangkok | 2.01 | 3.16 | 3.54 | 2.33 | 2.13 | 3.78 | 2.34 | 1.68 | 2.34 | 1.49 | 1.52 | 1.25 | 1.35 | 2.63 | 2.37 | 1.90 | 2.48 | 1.57 |
| | Samutprakarn | 2.39 | | | | 1.87 | 3.43 | 4.63 | 2.69 | 3.99 | 2.80 | 2.20 | 1.20 | 1.53 | 4.46 | 3.12 | 1.57 | 1.79 | 1.56 |
| | Pathumthani | 2.41 | 2.17 | 2.77 | 1.06 | 1.58 | 1.31 | 1.76 | 1.28 | 1.70 | 1.24 | 1.38 | 1.57 | 3.14 | 2.59 | 1.91 | 1.88 | 2.10 | 1.41 |
| | Khanchanaburi | 1.67 | 2.52 | 1.75 | 2.23 | 1.64 | 1.13 | 0.983 | 0.997 | 1.61 | 1.44 | 0.575 | 1.27 | 2.76 | 1.03 | 1.32 | 1.06 | 1.74 | 1.15 |
| | Mae Hia | | 1.10 | 3.54 | 2.08 | 1.82 | 1.00 | 2.42 | 1.24 | 1.78 | 2.73 | 0.451 | <0.3 | 0.842 | 1.50 | 1.91 | 1.41 | 1.54 | 1.37 |
| | Sakaerat | | | | | | | 1.98 | 1.78 | 1.22 | 1.27 | 0.703 | <0.3 | 0.423 | <0.3 | 1.31 | 2.17 | 4.25 | 1.76 |
| Vietnam | Hanoi | 4.99 | 3.97 | 2.95 | 3.64 | 3.80 | 8.64 | 8.55 | 4.17 | 3.65 | 4.78 | 5.68 | 4.08 | 2.15 | 2.79 | 3.51 | 4.59 | 4.38 | 7.27 |
| | HoaBinh | 4.67 | 3.71 | 1.42 | 2.14 | 2.52 | 4.21 | 5.28 | 2.76 | 1.60 | 1.85 | 5.56 | 2.39 | 2.17 | 2.69 | 2.72 | 2.44 | 2.52 | 1.97 |
| | Cuc Phuong | | | | | | | | | | 4.37 | 4.41 | 4.78 | 7.07 | 12.2 | 4.88 | 5.44 | 8.30 | 8.30 |
| | Da Nang | | | | | | | | | | 10.2 | 8.52 | 9.42 | 9.19 | 18.8 | 10.8 | 8.77 | 9.03 | 11.3 |
| | Can Tho | | | | | | | | | | | | | | | 4.45 | 9.17 | 6.85 | 5.35 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 8.73 | 17.9 | 6.90 | 9.01 |
| | Yen Bai | | | | | | | | | | | | | | | | 2.68 | 3.24 | 1.66 |

Terms and abbreviations are given in Table 3.5.

**Table 3.80 Precipitation amount-weighted annual average concentrations of $H^+$ from 2000 to 2017**

unit: μmol $L^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 4.79 | 0.478 | 0.191 | 0.203 | 1.45 | 0.649 | 1.07 | 1.10 | 0.694 | 0.662 | 0.621 | 0.717 | 0.389 | 0.667 |
| China | Guanyinqiao | 46.7 | 16.1 | 25.2 | 32.2 | 25.9 | 11.2 | 13.7 | 22.6 | | | | | | | | | | |
| | Nanshan | 60.5 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 63.5 | 60.3 | 71.0 | 65.9 | 57.5 | 30.1 | 12.1 | 3.81 | 0.655 | 1.47 |
| | Jinyunshan | | 65.4 | 43.6 | 50.3 | 25.9 | 23.7 | 20.4 | 30.0 | 44.0 | 47.1 | 115 | 90.9 | 81.5 | 63.3 | 41.2 | 20.0 | 10.6 | 7.07 |
| | Shizhan | 2.09 | 0.420 | 0.576 | 1.00 | 0.505 | 3.86 | 2.75 | 3.03 | 0.402 | 0.297 | 0.211 | 0.535 | 0.552 | 0.117 | 0.247 | 0.220 | 0.206 | 0.256 |
| | Weishuiyuan | 0.381 | 0.484 | 0.931 | 0.784 | 1.05 | 7.04 | 1.46 | | | | | | | | | | | |
| | Jiwozi | 3.79 | 0.573 | 0.999 | 0.890 | 0.776 | 0.627 | 1.36 | 0.143 | 0.114 | 0.794 | 2.91 | 1.13 | 0.076 | 0.635 | 0.104 | 0.124 | 0.237 | 0.203 |
| | Hongwen | 19.1 | 29.6 | 16.2 | 34.4 | 19.4 | 19.9 | 14.7 | 16.2 | 25.7 | 30.2 | 26.6 | 22.5 | 30.9 | 13.2 | 8.39 | 12.7 | 12.1 | 4.56 |
| | Xiaoping | 12.2 | 12.6 | 33.6 | 41.4 | 24.6 | 16.5 | 16.5 | 25.4 | 27.9 | 34.1 | 26.5 | 15.3 | 15.7 | 9.92 | 19.6 | 11.3 | 18.5 | 1.27 |
| | Xiang Zhou | 7.00 | 11.4 | 7.83 | 7.87 | 16.5 | 27.3 | 13.4 | 23.3 | 11.7 | 13.4 | 14.1 | 8.81 | 7.73 | 5.83 | 9.91 | 2.77 | 6.78 | 10.5 |
| | Zhuxiandong | 23.0 | 16.7 | 12.8 | 7.88 | 23.2 | 24.4 | 15.0 | *** | 13.1 | 17.7 | 11.3 | 16.7 | *** | *** | *** | 3.29 | 6.88 | 8.49 |
| Indonesia | Jakarta | 6.57 | 3.79 | 16.9 | 6.96 | 20.4 | 49.1 | 41.5 | 27.5 | 22.5 | 23.5 | 18.6 | 28.2 | 17.4 | 16.9 | 19.6 | 14.4 | 11.3 | 12.9 |
| | Serpong | *** | 23.7 | 22.6 | 24.1 | 20.8 | 25.6 | 25.0 | 25.8 | 23.9 | 19.3 | 17.5 | 19.7 | 12.4 | 8.63 | 7.23 | 11.4 | 6.56 | 6.34 |
| | Kototabang | 31.2 | 8.53 | 4.89 | 5.00 | 18.5 | 20.9 | 29.4 | 5.31 | 6.00 | 22.6 | 16.0 | 9.22 | 9.75 | 10.6 | 15.2 | 12.4 | 5.04 | 6.29 |
| | Bandung | *** | 10.1 | 34.9 | 10.0 | 9.30 | 9.33 | 7.00 | 11.8 | 6.81 | 4.99 | 7.99 | 4.00 | 3.48 | 4.01 | 6.14 | 4.41 | 8.29 | 5.63 |
| | Maros | | | | | | | | | 2.35 | 4.64 | 6.16 | 4.43 | 2.41 | 3.41 | 5.88 | 5.77 | 5.77 | 4.88 |
| Japan | Rishiri | 15.7 | 16.8 | 15.0 | 13.3 | 14.4 | 18.4 | 21.5 | 26.3 | 12.3 | 18.3 | 18.7 | 20.1 | 20.2 | 21.2 | 18.6 | 16.8 | 12.6 | 17.3 |
| | Ochiishi | | | | 12.2 | 20.7 | 14.6 | 13.8 | 16.7 | 13.5 | 9.64 | 14.8 | 13.1 | 15.2 | 9.38 | 7.82 | 9.96 | 6.39 | 7.42 |
| | Tappi | 19.0 | 23.0 | 20.9 | 27.0 | 25.4 | 24.9 | 26.5 | 23.8 | 26.0 | 18.2 | 20.4 | 24.6 | 20.5 | 16.0 | 21.9 | 14.1 | 15.2 | 18.0 |
| | Sado-seki | 26.9 | 23.2 | 22.7 | 21.5 | 19.7 | 27.6 | 19.7 | 31.4 | 27.9 | 17.7 | 19.8 | 20.8 | 18.6 | 18.2 | 19.7 | 21.8 | 13.9 | 12.7 |
| | Happo | 18.6 | 14.6 | 11.8 | 12.4 | 13.9 | 15.9 | 10.7 | 16.2 | 14.7 | 10.7 | 8.00 | 9.15 | 13.3 | 10.0 | 9.77 | 8.14 | 8.18 | 7.96 |
| | Ijira | 30.1 | 37.1 | 30.4 | 38.7 | 22.1 | 30.9 | 31.0 | 29.3 | 35.7 | 23.0 | 17.3 | 18.0 | 20.5 | 17.9 | 19.3 | 20.0 | 17.5 | 18.3 |
| | Oki | 22.8 | 17.0 | 18.6 | 17.5 | 15.9 | 27.4 | 18.7 | 23.1 | 25.0 | 19.4 | 21.8 | 18.8 | 26.4 | 24.6 | 22.2 | 19.1 | 13.4 | 14.9 |
| | Banryu | 22.9 | 21.9 | 20.4 | 23.3 | 19.9 | 32.7 | 20.5 | 32.3 | 29.3 | 22.1 | 19.8 | 21.8 | 33.5 | 22.8 | 27.9 | 22.2 | 15.4 | 17.1 |
| | Yusuhara | 19.5 | 14.9 | 17.4 | 18.4 | 10.6 | 22.8 | 14.4 | 15.3 | 21.6 | 17.2 | 16.2 | 11.7 | 16.8 | 16.7 | 13.2 | 13.5 | 14.2 | 31.1 |
| | Hedo | 7.38 | 10.9 | 11.3 | 12.5 | 16.5 | 14.7 | 10.1 | 10.2 | 10.0 | 7.81 | 6.34 | 12.5 | 7.49 | 10.9 | 9.55 | 7.17 | 6.72 | 9.90 |
| | Ogasawara | 5.91 | 8.07 | 8.21 | 9.10 | 7.48 | 15.4 | 10.1 | 9.38 | 10.0 | 6.79 | 5.68 | 4.98 | 4.63 | 5.65 | 8.38 | 5.89 | 7.98 | 6.09 |
| | Tokyo | | | | | | | | 16.3 | 24.8 | 17.7 | 11.2 | 14.9 | 14.4 | 8.83 | 14.8 | 16.3 | 11.4 | 12.7 |
| Lao PDR | Vientiane | | | | 0.313 | 2.26 | 0.481 | 0.325 | 2.16 | 0.987 | 3.31 | *** | *** | 0.351 | *** | 0.288 | 1.15 | 0.171 | ** |
| Malaysia | Petaling Jaya | 44.9 | 56.0 | 58.8 | 52.1 | 47.3 | 43.1 | 37.8 | 27.6 | 37.2 | 45.2 | 54.4 | 69.4 | 61.4 | 38.0 | 38.2 | 40.8 | 54.9 | 30.9 |
| | Tanah Rata | 16.1 | 12.7 | 10.8 | 12.7 | 13.7 | 14.3 | 11.3 | 11.1 | 8.01 | 8.31 | 8.64 | 9.76 | 10.9 | 11.2 | 13.9 | 19.1 | 14.1 | 13.9 |
| | Danum Valley | | | | | | 10.5 | 8.93 | 8.03 | 6.02 | 6.00 | 5.99 | 6.20 | 6.58 | 5.33 | 4.87 | 6.15 | 5.56 | 6.08 |
| | Kuching | | | | | | | | | 5.55 | 5.47 | 5.25 | 3.73 | 4.84 | 5.17 | 4.60 | 4.88 | 7.14 | 6.10 |
| Mongolia | Ulaanbaatar | 0.550 | 0.643 | 0.419 | 1.90 | 0.347 | 1.02 | 0.354 | 0.550 | 0.521 | 0.777 | 1.33 | 3.64 | 1.31 | 1.04 | *** | 0.379 | 9.54 | 2.95 |
| | Terelj | 3.02 | 0.913 | 1.77 | 3.96 | 1.64 | 5.44 | 6.89 | 6.04 | 3.72 | 0.608 | 2.44 | 5.47 | 1.81 | 12.3 | *** | 3.14 | 6.47 | 9.14 |
| Myanmar | Yangon | | | | | | | | 2.66 | 0.392 | 0.346 | 0.384 | 0.347 | 0.323 | 0.352 | 0.199 | 0.216 | 0.178 | 0.204 |
| Philippines | Metro Manila | 3.28 | 3.87 | 8.11 | 36.2 | 6.64 | 11.3 | 5.01 | 5.33 | 2.84 | 5.87 | 2.25 | 2.27 | 6.03 | 2.85 | 0.736 | 0.528 | 3.05 | *** |
| | Los Baños | 3.64 | 2.98 | 1.81 | 32.5 | 5.47 | 7.27 | 2.44 | 2.91 | 11.2 | 2.64 | 1.32 | 2.70 | 2.19 | 1.41 | 1.61 | 0.508 | 19.3 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.475 | 2.97 | 3.22 | 1.47 | 0.201 | 4.46 | 1.12 | 5.18 | 0.724 | 1.10 | 0.345 | *** |
| Republic of Korea | Kanghwa | 10.0 | 10.2 | 22.2 | 21.3 | 27.2 | 56.9 | 21.0 | 24.0 | 28.4 | 25.9 | 39.0 | 23.0 | 24.4 | 26.3 | 13.4 | 20.2 | 16.4 | 36.4 |
| | Cheju | 14.1 | 12.9 | 24.3 | 15.0 | 18.2 | 28.5 | 45.9 | 30.7 | 21.5 | 7.79 | 9.19 | 6.80 | 4.95 | 4.18 | 1.61 | 2.15 | 7.94 | 5.27 |
| | Imsil | | 8.05 | 2.02 | 8.34 | 11.8 | 0.997 | 6.45 | 1.85 | 13.1 | 8.06 | 13.5 | 5.42 | 7.82 | 6.01 | 5.17 | 8.04 | 3.15 | 5.04 |
| Russia | Mondy | 5.50 | 3.15 | 4.06 | 4.47 | 4.57 | 4.34 | 4.08 | 3.03 | 6.72 | 3.33 | 2.80 | 2.90 | 2.37 | 4.83 | 4.65 | 3.58 | 4.31 | 4.86 |
| | Listvyanka | 8.57 | 11.0 | 13.2 | 9.71 | 12.1 | 14.7 | 22.8 | 21.6 | 23.2 | 14.4 | 17.6 | 18.8 | 16.7 | 15.9 | 12.6 | 14.7 | 12.5 | 17.0 |
| | Irkutsk | 7.76 | 5.31 | 9.44 | 4.24 | 12.2 | 7.61 | 7.04 | 11.7 | 17.1 | 3.89 | 7.41 | 9.51 | 11.6 | 9.81 | 8.65 | 6.15 | 11.8 | 11.4 |
| | Primorskaya | | | 6.30 | 13.2 | 14.5 | 8.67 | 15.0 | 14.5 | 16.3 | 10.5 | 10.7 | 23.4 | 8.55 | 8.80 | 3.41 | 6.90 | 3.97 | 2.07 |
| Thailand | Bangkok | 11.1 | 10.7 | 7.90 | 29.5 | 6.49 | 12.7 | 6.91 | 8.96 | 5.29 | 8.07 | 8.48 | 8.97 | 2.08 | 2.52 | 0.0943 | 5.09 | 2.91 | 1.08 |
| | Samutprakarn | 14.8 | | | | 3.41 | 3.42 | 1.36 | 2.46 | 5.08 | 7.40 | 4.82 | 1.27 | 0.679 | 1.06 | 0.310 | 2.53 | 3.57 | 1.37 |
| | Pathumthani | 5.66 | 7.42 | 4.64 | 13.7 | 13.6 | 12.9 | 13.0 | 15.6 | 9.24 | 7.05 | 5.82 | 9.99 | 3.60 | 3.90 | 3.09 | 5.12 | 4.01 | 4.55 |
| | Khanchanaburi | 2.73 | 5.47 | 2.30 | 3.47 | 0.847 | 2.87 | 1.78 | 1.66 | 2.19 | 2.18 | 2.03 | 3.21 | 0.964 | 4.72 | 1.61 | 3.44 | 1.04 | 1.72 |
| | Mae Hia | | 1.94 | 1.89 | 2.47 | 2.54 | 5.94 | 2.00 | 1.12 | 1.04 | 1.20 | 0.676 | 5.14 | 0.789 | 0.909 | 0.527 | 2.28 | 2.49 | 2.77 |
| | Sakaerat | | | | | | | 7.61 | 8.30 | 9.31 | 13.6 | 17.8 | 9.95 | 8.58 | 5.70 | 15.0 | 9.26 | 5.47 | 3.84 |
| Vietnam | Hanoi | 3.57 | 1.47 | 2.79 | 1.55 | 2.26 | 0.710 | 1.85 | 2.61 | 1.43 | 2.15 | 1.16 | 5.03 | 2.39 | 2.21 | 1.83 | 0.649 | 2.52 | 0.292 |
| | HoaBinh | 7.79 | 9.09 | 6.50 | 4.15 | 2.52 | 2.03 | 2.57 | 8.71 | 3.25 | 5.13 | 4.26 | 3.65 | 2.35 | 0.911 | 3.60 | 5.07 | 2.31 | 6.02 |
| | Cuc Phuong | | | | | | | | | | 10.3 | 5.88 | 9.09 | 3.68 | 3.77 | 3.00 | 4.78 | 1.57 | 8.43 |
| | Da Nang | | | | | | | | | | 16.8 | 7.71 | 10.4 | 3.66 | 2.62 | 3.01 | 1.05 | 1.10 | 1.36 |
| | Can Tho | | | | | | | | | | | | | | | 0.550 | 1.68 | 1.43 | 1.08 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1.42 | 0.775 | 1.75 | 0.861 |
| | Yen Bai | | | | | | | | | | | | | | | | 5.90 | 6.63 | 6.40 |

Terms and abbreviations are given in Table 3.5.

**Table 3.81 Precipitation amount-weighted annual average pH from 2000 to 2017**

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 5.32 | 6.32 | 6.72 | 6.69 | 5.84 | 6.19 | 5.97 | 5.96 | 6.16 | 6.18 | 6.21 | 6.14 | 6.41 | 6.18 |
| China | Guanyinqiao | 4.33 | 4.79 | 4.60 | 4.49 | 4.59 | 4.95 | 4.86 | 4.65 | | | | | | | | | | |
| | Nanshan | 4.22 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 4.20 | 4.22 | 4.15 | 4.18 | 4.24 | 4.52 | 4.92 | 5.42 | 6.18 | 5.83 |
| | Jinyunshan | | 4.18 | 4.36 | 4.30 | 4.59 | 4.62 | 4.69 | 4.52 | 4.36 | 4.33 | 3.94 | 4.04 | 4.09 | 4.20 | 4.39 | 4.70 | 4.97 | 5.15 |
| | Shizhan | 5.68 | 6.38 | 6.24 | 6.00 | 6.30 | 5.41 | 5.56 | 5.52 | 6.40 | 6.53 | 6.68 | 6.27 | 6.26 | 6.93 | 6.61 | 6.66 | 6.69 | 6.59 |
| | Weishuiyuan | 6.42 | 6.32 | 6.03 | 6.11 | 5.98 | 5.15 | 5.84 | | | | | | | | | | | |
| | Jiwozi | 5.42 | 6.24 | 6.00 | 6.05 | 6.11 | 6.20 | 5.87 | 6.85 | 6.94 | 6.10 | 5.54 | 5.95 | 7.12 | 6.20 | 6.98 | 6.91 | 6.63 | 6.69 |
| | Hongwen | 4.72 | 4.53 | 4.79 | 4.46 | 4.71 | 4.70 | 4.83 | 4.79 | 4.59 | 4.52 | 4.57 | 4.65 | 4.51 | 4.88 | 5.08 | 4.90 | 4.92 | 5.34 |
| | Xiaoping | 4.91 | 4.90 | 4.47 | 4.38 | 4.61 | 4.78 | 4.78 | 4.60 | 4.55 | 4.47 | 4.58 | 4.82 | 4.80 | 5.00 | 4.71 | 4.95 | 4.73 | 5.90 |
| | Xiang Zhou | 5.15 | 4.94 | 5.11 | 5.10 | 4.78 | 4.56 | 4.87 | 4.63 | 4.93 | 4.87 | 4.85 | 5.05 | 5.11 | 5.23 | 5.00 | 5.56 | 5.17 | 4.98 |
| | Zhuxiandong | 4.64 | 4.78 | 4.89 | 5.10 | 4.63 | 4.61 | 4.82 | *** | 4.88 | 4.75 | 4.95 | 4.78 | *** | *** | *** | 5.48 | 5.16 | 5.07 |
| Indonesia | Jakarta | 5.18 | 5.42 | 4.77 | 5.16 | 4.69 | 4.31 | 4.38 | 4.56 | 4.65 | 4.63 | 4.73 | 4.55 | 4.76 | 4.77 | 4.71 | 4.84 | 4.95 | 4.89 |
| | Serpong | *** | 4.63 | 4.65 | 4.62 | 4.68 | 4.59 | 4.60 | 4.59 | 4.62 | 4.71 | 4.76 | 4.70 | 4.91 | 5.06 | 5.14 | 4.94 | 5.18 | 5.20 |
| | Kototabang | 4.51 | 5.07 | 5.31 | 5.30 | 4.73 | 4.68 | 4.53 | 5.27 | 5.22 | 4.65 | 4.80 | 5.04 | 5.01 | 4.97 | 4.82 | 4.91 | 5.30 | 5.20 |
| | Bandung | *** | 4.99 | 4.46 | 5.00 | 5.03 | 5.03 | 5.15 | 4.93 | 5.17 | 5.30 | 5.10 | 5.40 | 5.46 | 5.40 | 5.21 | 5.36 | 5.08 | 5.25 |
| | Maros | | | | | | | | | 5.63 | 5.33 | 5.21 | 5.35 | 5.62 | 5.47 | 5.23 | 5.24 | 5.24 | 5.31 |
| Japan | Rishiri | 4.80 | 4.77 | 4.82 | 4.88 | 4.84 | 4.74 | 4.67 | 4.58 | 4.91 | 4.74 | 4.73 | 4.70 | 4.70 | 4.67 | 4.73 | 4.77 | 4.90 | 4.76 |
| | Ochiishi | | | | 4.91 | 4.68 | 4.84 | 4.86 | 4.78 | 4.87 | 5.02 | 4.83 | 4.88 | 4.82 | 5.03 | 5.11 | 5.00 | 5.19 | 5.13 |
| | Tappi | 4.72 | 4.64 | 4.68 | 4.57 | 4.59 | 4.60 | 4.58 | 4.62 | 4.59 | 4.74 | 4.69 | 4.61 | 4.69 | 4.80 | 4.66 | 4.85 | 4.82 | 4.74 |
| | Sado-seki | 4.57 | 4.63 | 4.64 | 4.67 | 4.70 | 4.56 | 4.70 | 4.50 | 4.55 | 4.75 | 4.70 | 4.68 | 4.73 | 4.74 | 4.70 | 4.66 | 4.86 | 4.90 |
| | Happo | 4.73 | 4.84 | 4.93 | 4.91 | 4.86 | 4.80 | 4.97 | 4.79 | 4.83 | 4.97 | 5.10 | 5.04 | 4.88 | 5.00 | 5.01 | 5.09 | 5.09 | 5.10 |
| | Ijira | 4.52 | 4.43 | 4.52 | 4.41 | 4.65 | 4.51 | 4.51 | 4.53 | 4.45 | 4.64 | 4.76 | 4.75 | 4.69 | 4.75 | 4.71 | 4.70 | 4.76 | 4.74 |
| | Oki | 4.64 | 4.77 | 4.73 | 4.76 | 4.80 | 4.56 | 4.73 | 4.64 | 4.60 | 4.71 | 4.66 | 4.73 | 4.58 | 4.61 | 4.65 | 4.72 | 4.87 | 4.83 |
| | Banryu | 4.64 | 4.66 | 4.69 | 4.63 | 4.70 | 4.49 | 4.69 | 4.49 | 4.53 | 4.66 | 4.70 | 4.66 | 4.48 | 4.64 | 4.55 | 4.65 | 4.81 | 4.77 |
| | Yusuhara | 4.71 | 4.83 | 4.76 | 4.73 | 4.97 | 4.64 | 4.84 | 4.81 | 4.67 | 4.77 | 4.79 | 4.93 | 4.77 | 4.78 | 4.88 | 4.87 | 4.85 | 4.51 |
| | Hedo | 5.13 | 4.96 | 4.95 | 4.90 | 4.78 | 4.83 | 4.99 | 4.99 | 5.00 | 5.11 | 5.20 | 4.90 | 5.13 | 4.96 | 5.02 | 5.14 | 5.17 | 5.00 |
| | Ogasawara | 5.23 | 5.09 | 5.09 | 5.04 | 5.13 | 4.81 | 4.99 | 5.03 | 5.00 | 5.17 | 5.25 | 5.30 | 5.33 | 5.25 | 5.08 | 5.23 | 5.10 | 5.22 |
| | Tokyo | | | | | | | | 4.79 | 4.60 | 4.75 | 4.95 | 4.83 | 4.84 | 5.05 | 4.83 | 4.79 | 4.94 | 4.90 |
| Lao PDR | Vientiane | | | | 6.51 | 5.65 | 6.32 | 6.49 | 5.67 | 6.01 | 5.48 | *** | *** | 6.46 | *** | 6.54 | 5.94 | 6.77 | ** |
| Malaysia | Petaling Jaya | 4.35 | 4.25 | 4.23 | 4.28 | 4.33 | 4.37 | 4.42 | 4.56 | 4.43 | 4.35 | 4.26 | 4.16 | 4.21 | 4.42 | 4.42 | 4.39 | 4.26 | 4.51 |
| | Tanah Rata | 4.79 | 4.90 | 4.97 | 4.90 | 4.86 | 4.84 | 4.95 | 4.95 | 5.10 | 5.08 | 5.06 | 5.01 | 4.96 | 4.95 | 4.86 | 4.72 | 4.85 | 4.86 |
| | Danum Valley | | | | | | 4.98 | 5.05 | 5.10 | 5.22 | 5.22 | 5.22 | 5.21 | 5.18 | 5.27 | 5.31 | 5.21 | 5.25 | 5.22 |
| | Kuching | | | | | | | | | 5.26 | 5.26 | 5.28 | 5.43 | 5.32 | 5.29 | 5.34 | 5.31 | 5.15 | 5.21 |
| Mongolia | Ulaanbaatar | 6.26 | 6.19 | 6.38 | 5.72 | 6.46 | 5.99 | 6.45 | 6.26 | 6.28 | 6.11 | 5.88 | 5.44 | 5.88 | 5.98 | *** | 6.42 | 5.02 | 5.53 |
| | Terelj | 5.52 | 6.04 | 5.75 | 5.40 | 5.78 | 5.26 | 5.16 | 5.22 | 5.43 | 6.22 | 5.61 | 5.26 | 5.74 | 4.91 | *** | 5.50 | 5.19 | 5.04 |
| Myanmar | Yangon | | | | | | | | 5.57 | 6.41 | 6.46 | 6.42 | 6.46 | 6.49 | 6.45 | 6.70 | 6.66 | 6.75 | 6.69 |
| Philippines | Metro Manila | 5.48 | 5.41 | 5.09 | 4.44 | 5.18 | 4.95 | 5.30 | 5.27 | 5.55 | 5.23 | 5.65 | 5.64 | 5.22 | 5.55 | 6.13 | 6.28 | 5.52 | *** |
| | Los Baños | 5.44 | 5.53 | 5.74 | 4.49 | 5.26 | 5.14 | 5.61 | 5.54 | 4.95 | 5.58 | 5.88 | 5.57 | 5.66 | 5.85 | 5.79 | 6.29 | 4.71 | *** |
| | Mt.Sto.Tomas | | | | | | | 6.32 | 5.53 | 5.49 | 5.83 | 6.70 | 5.35 | 5.95 | 5.29 | 6.14 | 5.96 | 6.46 | *** |
| Republic | Kanghwa | 5.00 | 4.99 | 4.65 | 4.67 | 4.57 | 4.25 | 4.68 | 4.62 | 4.55 | 4.59 | 4.41 | 4.64 | 4.61 | 4.58 | 4.87 | 4.69 | 4.79 | 4.44 |
| of Korea | Cheju | 4.85 | 4.89 | 4.61 | 4.83 | 4.74 | 4.55 | 4.34 | 4.51 | 4.67 | 5.11 | 5.04 | 5.17 | 5.31 | 5.38 | 5.79 | 5.67 | 5.10 | 5.28 |
| | Imsil | | 5.09 | 5.69 | 5.08 | 4.93 | 6.00 | 5.19 | 5.73 | 4.88 | 5.09 | 4.87 | 5.27 | 5.11 | 5.22 | 5.29 | 5.09 | 5.50 | 5.30 |
| Russia | Mondy | 5.26 | 5.50 | 5.39 | 5.35 | 5.34 | 5.36 | 5.39 | 5.52 | 5.17 | 5.48 | 5.55 | 5.54 | 5.62 | 5.32 | 5.33 | 5.45 | 5.37 | 5.31 |
| | Listvyanka | 5.07 | 4.96 | 4.88 | 5.01 | 4.92 | 4.83 | 4.64 | 4.67 | 4.63 | 4.84 | 4.76 | 4.73 | 4.78 | 4.80 | 4.90 | 4.83 | 4.90 | 4.77 |
| | Irkutsk | 5.11 | 5.28 | 5.02 | 5.37 | 4.91 | 5.12 | 5.15 | 4.93 | 4.77 | 5.41 | 5.13 | 5.02 | 4.93 | 5.01 | 5.06 | 5.21 | 4.93 | 4.94 |
| | Primorskaya | | | 5.20 | 4.88 | 4.84 | 5.06 | 4.83 | 4.84 | 4.79 | 4.98 | 4.97 | 4.63 | 5.07 | 5.06 | 5.47 | 5.16 | 5.40 | 5.69 |
| Thailand | Bangkok | 4.95 | 4.97 | 5.10 | 4.53 | 5.19 | 4.89 | 5.16 | 5.05 | 5.28 | 5.09 | 5.07 | 5.05 | 5.68 | 5.60 | 7.03 | 5.29 | 5.54 | 5.97 |
| | Samutprakarn | 4.83 | | | | 5.47 | 5.47 | 5.87 | 5.61 | 5.29 | 5.13 | 5.32 | 5.90 | 6.17 | 5.98 | 6.51 | 5.60 | 5.45 | 5.86 |
| | Pathumthani | 5.25 | 5.13 | 5.33 | 4.86 | 4.87 | 4.89 | 4.89 | 4.81 | 5.03 | 5.15 | 5.24 | 5.00 | 5.44 | 5.41 | 5.51 | 5.29 | 5.40 | 5.34 |
| | Khanchanaburi | 5.56 | 5.26 | 5.64 | 5.46 | 6.07 | 5.54 | 5.75 | 5.78 | 5.66 | 5.66 | 5.69 | 5.49 | 6.02 | 5.33 | 5.79 | 5.46 | 5.98 | 5.76 |
| | Mae Hia | | 5.71 | 5.72 | 5.61 | 5.59 | 5.23 | 5.70 | 5.95 | 5.98 | 5.92 | 6.17 | 5.29 | 6.10 | 6.04 | 6.28 | 5.64 | 5.60 | 5.56 |
| | Sakaerat | | | | | | | 5.12 | 5.08 | 5.03 | 4.87 | 4.75 | 5.00 | 5.07 | 5.24 | 4.82 | 5.03 | 5.26 | 5.42 |
| Vietnam | Hanoi | 5.45 | 5.83 | 5.55 | 5.81 | 5.65 | 6.15 | 5.73 | 5.58 | 5.84 | 5.67 | 5.93 | 5.30 | 5.62 | 5.66 | 5.74 | 6.19 | 5.60 | 6.53 |
| | HoaBinh | 5.11 | 5.04 | 5.19 | 5.38 | 5.60 | 5.69 | 5.59 | 5.06 | 5.49 | 5.29 | 5.37 | 5.44 | 5.63 | 6.04 | 5.44 | 5.29 | 5.64 | 5.22 |
| | Cuc Phuong | | | | | | | | | | 4.99 | 5.23 | 5.04 | 5.43 | 5.42 | 5.52 | 5.32 | 5.81 | 5.07 |
| | Da Nang | | | | | | | | | | 4.77 | 5.11 | 4.98 | 5.44 | 5.58 | 5.52 | 5.98 | 5.96 | 5.87 |
| | Can Tho | | | | | | | | | | | | | | | 6.26 | 5.77 | 5.84 | 5.97 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 5.85 | 6.11 | 5.76 | 6.06 |
| | Yen Bai | | | | | | | | | | | | | | | | 5.23 | 5.18 | 5.19 |

Terms and abbreviations are given in Table 3.5.

**Table 3.82 Precipitation amount-weighted annual average EC from 2000 to 2017**

unit: mS $m^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | PhnomPenh | | | | | 1.17 | 0.807 | 1.17 | 1.37 | 1.53 | 0.880 | 0.747 | 0.820 | 0.704 | 0.665 | 0.676 | 0.691 | 0.705 | 0.747 |
| China | Guanyinqiao | 5.61 | 7.00 | 4.36 | 4.89 | 5.82 | 6.70 | 6.70 | 5.01 | | | | | | | | | | |
| | Nanshan | 5.20 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 6.46 | 5.14 | 6.71 | 6.55 | 5.33 | 5.26 | 3.94 | 2.70 | 3.00 | 2.71 |
| | Jinyunshan | | 6.23 | 3.69 | 4.19 | 4.35 | 4.23 | 5.45 | 3.76 | 5.13 | 5.27 | 8.07 | 7.09 | 6.56 | 4.81 | 3.65 | 2.50 | 2.44 | 2.38 |
| | Shizhan | 11.4 | 19.5 | 16.1 | 7.50 | 6.47 | 5.18 | 9.81 | 7.21 | 7.96 | 5.80 | 5.63 | 4.31 | 6.51 | 6.97 | 4.37 | 5.06 | 3.69 | 3.53 |
| | Weishuiyuan | 15.1 | 27.7 | 21.7 | 7.80 | 8.55 | 4.61 | 13.4 | | | | | | | | | | | |
| | Jiwozi | 7.71 | 9.65 | 4.02 | 5.19 | 2.91 | 5.82 | 6.95 | 10.3 | 8.46 | 3.73 | 1.67 | 3.04 | 5.39 | 3.61 | 4.29 | 2.32 | 1.05 | 2.64 |
| | Hongwen | 1.66 | 3.87 | 2.64 | 2.88 | 3.41 | 2.63 | 2.31 | 2.68 | 2.15 | 2.25 | 2.05 | 2.18 | 2.67 | 1.63 | 1.89 | 1.59 | 2.33 | 2.21 |
| | Xiaoping | 0.879 | 1.44 | 1.60 | 2.15 | 1.97 | 1.91 | 2.19 | 2.01 | 2.09 | 2.26 | 2.06 | 1.82 | 1.67 | 1.46 | 2.15 | 1.43 | 1.28 | 0.996 |
| | Xiang Zhou | 2.05 | 1.95 | 3.20 | 2.19 | 2.37 | 2.41 | 2.20 | 1.99 | 1.84 | 1.99 | 1.74 | 1.84 | 1.76 | 1.15 | 1.94 | 1.65 | 1.50 | 1.85 |
| | Zhuxiandong | 3.04 | 2.08 | 3.63 | 2.42 | 3.15 | 2.49 | 2.67 | *** | 1.94 | 2.15 | 1.37 | 1.99 | *** | *** | *** | 2.29 | 2.01 | 1.45 |
| Indonesia | Jakarta | 5.06 | 26.4 | 2.97 | 4.78 | 3.69 | 3.37 | 1.92 | 2.23 | 1.78 | 1.66 | 1.90 | 2.17 | 1.39 | 1.59 | 1.67 | 1.26 | 2.03 | 1.27 |
| | Serpong | *** | 2.94 | 1.87 | 2.26 | 2.25 | 2.63 | 2.10 | 2.14 | 2.10 | 1.66 | 1.95 | 2.31 | 2.05 | 2.16 | 1.89 | 2.26 | 1.85 | 1.82 |
| | Kototabang | 0.997 | 0.427 | 4.94 | 1.96 | 1.11 | 0.843 | 0.881 | 0.816 | 0.556 | 0.766 | 0.903 | 0.742 | 0.791 | 0.927 | 1.10 | 104 | 0.790 | 0.402 |
| | Bandung | 3.37 | 2.08 | 1.68 | 1.50 | 1.80 | 1.75 | 1.69 | 1.64 | 1.58 | 1.62 | 1.43 | 1.90 | 1.60 | 1.86 | 2.14 | 1.71 | 1.79 | 1.88 |
| | Maros | | | | | | | | | 0.623 | 1.06 | 0.718 | 0.576 | 0.885 | 0.970 | 1.00 | 2.10 | 3.03 | 1.65 |
| Japan | Rishiri | 6.37 | 4.51 | 4.23 | 3.80 | 4.72 | 4.46 | 3.04 | 3.72 | 4.86 | 4.10 | 3.77 | 3.50 | 5.54 | 4.25 | 3.56 | 3.16 | 1.92 | 4.47 |
| | Ochiishi | | | | 3.45 | 6.72 | 4.01 | 5.00 | 3.69 | 3.33 | 3.31 | 4.65 | 3.28 | 4.96 | 7.10 | 2.14 | 3.29 | 2.42 | 4.02 |
| | Tappi | 3.69 | 3.52 | 3.89 | 3.74 | 4.57 | 4.18 | 5.98 | 4.92 | 4.32 | 3.78 | 2.80 | 3.64 | 3.45 | 4.76 | 3.62 | 3.97 | 3.32 | 3.91 |
| | Sado-seki | 4.76 | 5.64 | 4.99 | 2.65 | 3.10 | 5.05 | 3.81 | 4.92 | 4.28 | 5.65 | 5.08 | 3.57 | 4.88 | 5.98 | 5.58 | 6.15 | 3.47 | 3.11 |
| | Happo | 1.22 | 0.965 | 0.667 | 0.692 | 0.915 | 1.10 | 0.840 | 1.08 | 1.03 | 0.860 | 0.597 | 0.666 | 1.07 | 0.764 | 0.744 | 0.680 | 0.616 | 0.569 |
| | Ijira | 2.11 | 2.44 | 2.18 | 2.12 | 1.62 | 2.11 | 2.15 | 2.05 | 2.18 | 1.65 | 1.33 | 1.46 | 1.65 | 1.42 | 1.47 | 1.49 | 1.33 | 1.32 |
| | Oki | 7.28 | 5.90 | 6.59 | 3.82 | 5.86 | 11.3 | 4.77 | 5.91 | 6.60 | 7.16 | 7.56 | 8.76 | 6.72 | 9.41 | 9.58 | 7.57 | 6.08 | 7.96 |
| | Banryu | 1.82 | 2.52 | 2.56 | 2.56 | 3.02 | 3.50 | 2.54 | 3.36 | 3.10 | 3.02 | 2.88 | 3.13 | 3.44 | 2.48 | 3.11 | 2.82 | 2.39 | 2.46 |
| | Yusuhara | 1.17 | 0.981 | 1.42 | 1.16 | 1.03 | 1.59 | 1.08 | 1.06 | 1.14 | 1.15 | 1.06 | 0.870 | 1.24 | 1.06 | 0.789 | 1.11 | 0.972 | 2.68 |
| | Hedo | 7.21 | 2.95 | 8.85 | 7.10 | 14.2 | 7.10 | 3.58 | 2.54 | 2.61 | 2.44 | 4.59 | 3.87 | 7.27 | 4.24 | 2.68 | 5.28 | 3.41 | 6.15 |
| | Ogasawara | 2.59 | 2.20 | 3.95 | 4.31 | 2.29 | 2.33 | 2.14 | 2.59 | 1.86 | 3.27 | 3.58 | 3.70 | 2.26 | 2.86 | 2.62 | 5.30 | 1.87 | 3.25 |
| | Tokyo | | | | | | | | 1.80 | 1.96 | 1.66 | 1.18 | 1.88 | 1.75 | 1.33 | 1.46 | 1.40 | 1.04 | 1.60 |
| Lao PDR | Vientiane | | | | 2.07 | 2.65 | 1.01 | 0.764 | 0.396 | 0.644 | 0.534 | *** | *** | 0.411 | *** | 0.867 | 1.26 | 0.730 | ** |
| Malaysia | Petaling Jaya | 2.08 | 2.13 | 2.81 | 2.32 | 2.26 | 2.12 | 1.81 | 1.40 | 1.98 | 2.46 | 2.90 | 3.43 | 3.10 | 2.43 | 2.50 | 2.61 | 2.95 | 1.92 |
| | Tanah Rata | 0.725 | 0.543 | 0.594 | 0.613 | 0.763 | 0.684 | 0.510 | 0.506 | 0.471 | 0.544 | 0.550 | 0.822 | 0.780 | 0.734 | 0.875 | 1.10 | 0.813 | 0.798 |
| | Danum Valley | | | | | | 0.562 | 0.465 | 0.347 | 0.461 | 0.445 | 0.552 | 0.440 | 0.416 | 0.410 | 0.419 | 0.513 | 0.360 | 0.339 |
| | Kuching | | | | | | | | | 0.443 | 0.521 | 0.500 | 0.547 | 0.489 | 0.549 | 1.02 | 0.635 | 0.683 | 0.588 |
| Mongolia | Ulaanbaatar | 1.79 | 1.91 | 2.20 | 1.56 | 1.68 | 1.87 | 1.92 | 2.18 | 1.92 | 1.76 | 1.53 | 1.74 | 1.71 | 2.54 | *** | 2.86 | 3.52 | 1.26 |
| | Terelj | 1.28 | 0.933 | 1.93 | 1.05 | 1.12 | 1.18 | 1.95 | 2.02 | 1.34 | 2.06 | 1.88 | 1.54 | 1.33 | 1.94 | *** | 2.80 | 3.27 | 1.38 |
| Myanmar | Yangon | | | | | | | | 0.595 | 0.949 | 1.54 | 1.34 | 0.682 | 1.30 | 0.813 | 0.914 | 1.46 | 1.37 | 0.504 |
| Philippines | Metro Manila | 2.20 | 6.49 | 1.85 | 1.36 | 1.48 | 1.66 | 1.66 | 1.40 | 2.88 | 1.24 | 1.89 | 3.76 | 4.81 | 1.53 | 1.92 | 2.53 | 3.02 | *** |
| | Los Baños | 1.13 | 2.08 | 1.22 | 1.99 | 0.801 | 1.01 | 1.08 | 0.859 | 1.76 | 0.802 | 1.22 | 1.18 | 1.74 | 1.02 | 1.45 | 3.34 | 2.25 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.221 | 1.03 | 0.347 | 0.495 | 0.533 | 0.355 | 0.500 | 0.558 | 0.460 | 0.464 | 0.527 | *** |
| Republic | Kanghwa | 2.50 | 1.98 | 2.68 | 2.54 | 3.25 | 4.14 | 2.75 | 3.49 | 2.72 | 2.88 | 2.46 | 2.34 | 2.76 | 2.66 | 2.41 | 4.29 | 1.80 | 2.44 |
| of Korea | Cheju | 3.37 | 2.56 | 3.03 | 2.22 | 2.45 | 3.43 | 3.64 | 3.43 | 3.47 | 2.20 | 2.32 | 3.07 | 7.05 | 5.55 | 2.42 | 2.31 | 7.07 | 5.00 |
| | Imsil | | 1.31 | 1.80 | 1.42 | 1.42 | 1.72 | 2.51 | 1.58 | 1.75 | 1.98 | 1.89 | 1.58 | 2.58 | 1.47 | 1.39 | 1.98 | 1.23 | 1.69 |
| Russia | Mondy | 0.578 | 0.680 | 0.964 | 0.586 | 0.536 | 0.485 | 0.428 | 0.799 | 0.727 | 0.621 | 0.653 | 0.566 | 0.864 | 0.420 | 0.480 | 0.588 | 0.409 | 0.659 |
| | Listvyanka | 1.04 | 0.945 | 1.39 | 1.36 | 1.30 | 1.19 | 1.51 | 1.38 | 1.58 | 1.31 | 1.41 | 1.63 | 1.51 | 1.25 | 1.20 | 1.50 | 1.11 | 1.54 |
| | Irkutsk | 1.71 | 1.79 | 2.10 | 1.67 | 1.80 | 1.66 | 1.76 | 2.02 | 2.48 | 2.18 | 2.05 | 2.16 | 2.16 | 2.08 | 1.59 | 2.55 | 1.47 | 1.62 |
| | Primorskaya | | | 1.77 | 2.66 | 2.20 | 2.03 | 2.47 | 1.90 | 2.58 | 1.48 | 1.96 | 2.64 | 1.56 | 1.89 | 1.63 | 1.75 | 1.58 | 2.06 |
| Thailand | Bangkok | 1.64 | 1.50 | 1.32 | 1.67 | 1.25 | 1.66 | 1.94 | 1.41 | 1.54 | 1.38 | 1.31 | 1.24 | 1.26 | 1.35 | 1.10 | 1.35 | 1.34 | 0.821 |
| | Samutprakarn | 1.52 | | | | 1.01 | 1.30 | 1.56 | 1.34 | 1.66 | 1.48 | 1.13 | 0.667 | 0.902 | 1.20 | 1.00 | 0.921 | 0.880 | 0.799 |
| | Pathumthani | 1.48 | 1.80 | 1.07 | 1.24 | 1.47 | 1.31 | 1.42 | 1.50 | 1.19 | 1.07 | 0.975 | 1.27 | 1.17 | 1.08 | 0.998 | 1.34 | 1.38 | 1.19 |
| | Khanchanaburi | 0.519 | 0.559 | 0.508 | 0.352 | 0.406 | 0.315 | 0.462 | 0.292 | 0.496 | 0.511 | 0.249 | 0.585 | 0.817 | 0.326 | 0.506 | 0.438 | 0.379 | 0.421 |
| | Mae Hia | | 0.885 | 0.476 | 0.458 | 0.486 | 0.812 | 0.593 | 0.630 | 0.622 | 0.608 | 0.519 | 0.442 | 0.512 | 0.682 | 0.803 | 0.561 | 0.825 | 0.736 |
| | Sakaerat | | | | | | | 0.918 | 0.775 | 0.833 | 0.981 | 0.992 | 0.796 | 0.756 | 0.789 | 1.46 | 0.856 | 0.848 | 0.566 |
| Vietnam | Hanoi | 1.55 | 0.917 | 1.52 | 1.70 | 1.85 | 2.75 | 2.18 | 1.57 | 1.11 | 1.41 | 1.72 | 1.60 | 1.56 | 1.52 | 1.99 | 2.21 | 1.93 | 2.08 |
| | HoaBinh | 1.15 | 1.04 | 1.06 | 1.12 | 1.48 | 1.15 | 1.22 | 1.08 | 0.918 | 1.10 | 1.39 | 1.02 | 0.940 | 1.10 | 1.35 | 1.22 | 1.45 | 1.27 |
| | Cuc Phuong | | | | | | | | | | 1.74 | 1.71 | 1.98 | 1.73 | 1.80 | 1.28 | 1.42 | 1.37 | 1.52 |
| | Da Nang | | | | | | | | | | 2.53 | 1.46 | 2.37 | 2.10 | 3.46 | 1.85 | 1.82 | 1.74 | 2.47 |
| | Can Tho | | | | | | | | | | | | | | | 1.10 | 1.92 | 1.20 | 1.06 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 2.00 | 2.85 | 1.33 | 1.68 |
| | Yen Bai | | | | | | | | | | | | | | | | 1.31 | 2.47 | 1.55 |

Terms and abbreviations are given in Table 3.5.

**Table 3.83 Annual $SO_4^{2-}$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | *** | 7.43 | 5.04 | 30.9 | 21.3 | 15.4 | 13.6 | 11.5 | 17.0 | 10.7 | 9.78 | 7.76 | 6.85 | 15.6 |
| China | Guanyinqiao | 164 | 154 | 165 | 108 | 229 | 200 | 149 | 169 | | | | | | | | | | |
| | Nanshan | 164 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 145 | 106 | 136 | 115 | 103 | 109 | 120 | 61.3 | 59.5 | 49.8 |
| | Jinyunshan | | 87.7 | 126 | 103 | 166 | 149 | 169 | 149 | 146 | 125 | 148 | 119 | 125 | 91.7 | 90.0 | 56.5 | 48.6 | 46.3 |
| | Shizhan | 199 | 171 | 297 | 258 | 104 | 63.9 | 132 | 96.7 | 73.6 | 80.5 | 45.8 | 72.5 | 42.9 | 62.0 | 70.1 | 49.1 | 25.9 | 41.8 |
| | Weishuiyuan | 241 | 105 | 234 | 186 | 94.2 | 47.1 | 104 | | | | | | | | | | | |
| | Jiwozi | 117 | 68.0 | 43.2 | 55.3 | 56.3 | 42.8 | 30.0 | 18.2 | 63.6 | 58.7 | 36.8 | 60.7 | 36.9 | 34.1 | 39.4 | 14.1 | 7.18 | 18.2 |
| | Hongwen | 30.7 | 16.7 | 67.0 | 48.0 | 73.6 | 80.4 | 61.1 | 102 | 29.9 | 19.2 | 40.8 | 26.4 | 29.7 | 30.7 | 30.4 | 18.8 | 40.4 | 17.1 |
| | Xiaoping | 22.8 | 49.1 | 36.3 | 41.7 | 53.3 | 59.0 | 39.7 | 29.2 | 58.3 | 32.0 | 41.4 | 38.1 | 30.2 | 44.9 | 40.3 | 27.0 | 25.4 | 9.85 |
| | Xiang Zhou | 45.5 | 31.2 | 48.3 | 35.3 | 25.0 | 28.0 | 44.6 | 31.2 | 46.5 | 36.6 | 36.7 | 19.5 | 22.6 | 46.3 | 23.9 | 16.6 | 37.6 | 26.9 |
| | Zhuxiandong | 85.4 | 49.5 | 50.6 | 32.4 | 34.3 | 31.3 | 17.1 | *** | 49.6 | 33.2 | 31.6 | 23.4 | *** | *** | *** | 37.2 | 42.6 | 25.7 |
| Indonesia | Jakarta | 92.7 | 77.5 | 60.5 | 108 | 71.4 | 85.6 | 38.7 | 60.6 | 38.9 | 30.2 | 46.4 | 28.4 | 56.0 | 51.0 | 70.4 | 48.0 | 61.4 | 22.6 |
| | Serpong | *** | 61.4 | 64.3 | 49.5 | 41.0 | 27.5 | 45.2 | 61.5 | 65.9 | 31.0 | 34.8 | 27.9 | 26.0 | 61.6 | 66.9 | 55.8 | 76.0 | 81.5 |
| | Kototabang | 8.65 | 5.66 | 13.4 | 28.7 | 11.0 | 12.1 | 9.55 | 19.4 | 7.21 | 12.5 | 15.0 | 17.1 | 16.0 | 13.2 | 21.3 | 20.8 | 12.3 | 10.9 |
| | Bandung | 60.2 | 87.8 | 70.4 | 32.8 | 24.8 | 61.7 | 35.1 | 52.0 | 65.4 | 78.3 | 70.3 | 47.1 | 55.2 | 72.1 | 78.8 | 60.6 | 86.1 | 67.3 |
| | Maros | | | | | | | | | 16.3 | 22.5 | 28.9 | 30.0 | 21.5 | 26.0 | 20.9 | 15.3 | 20.6 | 14.6 |
| Japan | Rishiri | 30.0 | 19.1 | 26.1 | 16.6 | 27.0 | 26.8 | 29.6 | 24.9 | 24.3 | 27.4 | 25.1 | 26.1 | 32.6 | 27.1 | 20.7 | 19.9 | 15.3 | 23.1 |
| | Ochiishi | | | | 14.9 | 22.3 | 18.6 | 27.6 | 18.4 | 13.7 | 26.3 | 24.9 | 12.4 | 22.0 | 34.4 | 10.9 | 16.8 | 14.5 | 15.1 |
| | Tappi | 22.9 | 24.7 | 30.2 | 25.1 | 38.6 | 36.8 | 34.5 | 31.2 | 23.3 | 30.9 | 33.1 | 31.5 | 26.2 | 35.4 | 31.7 | 27.5 | 27.5 | 24.9 |
| | Sado-seki | 36.8 | 39.8 | 40.4 | 18.6 | 27.2 | 39.1 | 35.7 | 40.6 | 31.6 | 34.2 | 44.2 | 34.0 | 38.6 | 52.7 | 45.1 | 30.1 | 21.4 | 24.7 |
| | Happo | 29.2 | 27.4 | 19.8 | 18.5 | 28.2 | 35.8 | 28.4 | 28.4 | 18.0 | 23.8 | 16.0 | 21.5 | 23.2 | 23.6 | 19.6 | 15.8 | 12.5 | 14.5 |
| | Ijira | 53.3 | 49.1 | 52.2 | 56.7 | 48.0 | 48.5 | 58.3 | 43.0 | 41.0 | 44.2 | 42.6 | 39.8 | 38.9 | 33.6 | 36.6 | 36.8 | 34.1 | 29.4 |
| | Oki | 49.0 | 42.1 | 55.4 | 34.3 | 41.3 | 73.2 | 41.1 | 42.1 | 39.5 | 42.4 | 59.3 | 70.0 | 49.1 | 65.6 | 50.4 | 38.6 | 48.2 | 40.4 |
| | Banryu | 24.4 | 33.9 | 24.8 | 30.5 | 34.4 | 34.6 | 43.1 | 35.5 | 32.7 | 36.3 | 30.8 | 30.1 | 31.2 | 35.0 | 32.7 | 26.7 | 30.9 | 23.8 |
| | Yusuhara | 31.0 | 19.0 | 26.2 | 26.5 | 26.7 | 28.0 | 31.9 | 22.5 | 22.4 | 24.1 | 23.9 | 23.9 | 32.8 | 22.5 | 24.4 | 19.9 | 20.8 | 51.3 |
| | Hedo | 93.6 | 33.9 | 75.0 | 49.0 | 137 | 64.1 | 35.8 | 38.8 | 27.8 | 25.9 | 55.3 | 36.3 | 88.5 | 35.8 | 34.9 | 42.1 | 31.9 | 45.5 |
| | Ogasawara | 22.6 | 20.7 | 24.1 | 25.2 | 12.5 | 26.9 | 16.2 | 19.9 | 15.0 | 27.7 | 27.9 | 20.4 | 16.0 | 17.1 | 18.5 | 32.9 | 11.0 | 21.1 |
| | Tokyo | | | | | | | | 18.4 | 36.5 | 27.6 | 18.1 | 22.0 | 25.5 | 19.7 | 25.1 | 19.2 | 15.1 | 14.5 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 2.45 | 6.54 | 8.43 | 0.733 | *** | *** | 3.19 | *** | *** | 2.94 | 1.72 | ** |
| Malaysia | Petaling Jaya | 80.4 | 68.4 | 63.1 | 63.9 | 54.5 | 66.4 | 82.5 | 41.8 | 65.6 | 39.2 | 60.3 | 81.2 | 58.0 | 63.6 | 79.2 | 80.3 | 69.4 | 42.2 |
| | Tanah Rata | 12.9 | 9.79 | 12.8 | 11.4 | 9.74 | 16.1 | 12.3 | 10.4 | 12.9 | 10.0 | 7.96 | 16.6 | 13.1 | 13.2 | 17.9 | 18.4 | 9.28 | 10.7 |
| | Danum Valley | | | | | | 5.53 | 10.2 | 6.85 | 7.46 | 9.56 | 12.0 | 7.42 | 6.75 | 10.1 | 7.35 | 7.17 | 4.92 | 7.99 |
| | Kuching | | | | | | | | | 17.8 | 17.6 | 16.6 | 18.9 | 17.7 | 20.6 | 26.1 | 20.7 | 23.0 | 15.3 |
| Mongolia | Ulaanbaatar | 4.78 | 4.17 | 4.41 | 5.80 | 1.84 | 4.01 | 4.78 | 4.67 | 4.33 | 4.53 | 3.39 | 4.59 | *** | 8.71 | *** | 18.3 | 20.7 | 5.54 |
| | Terelj | 3.41 | 0.861 | 3.72 | 2.57 | 2.75 | 4.29 | 5.10 | 4.63 | 3.40 | 1.83 | 3.96 | 3.40 | *** | 4.40 | *** | 10.4 | 15.1 | 1.42 |
| Myanmar | Yangon | | | | | | | | *** | *** | 24.1 | 10.3 | 20.9 | 19.2 | 21.4 | 13.1 | 11.2 | 20.0 | 32.6 |
| Philippines | Metro Manila | 94.4 | 85.5 | 78.2 | 37.6 | 44.0 | 57.1 | 47.4 | 78.1 | 59.2 | 51.3 | 54.2 | 68.3 | 108 | 52.9 | 47.3 | 47.4 | 54.7 | *** |
| | Los Baños | 27.7 | 28.4 | 27.3 | 11.4 | 14.7 | 16.2 | 23.9 | 26.0 | 34.2 | 25.6 | 15.3 | 20.4 | 26.5 | 15.8 | 18.9 | 21.0 | 27.0 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.592 | 19.4 | 17.6 | 23.8 | 17.8 | 21.6 | 41.6 | 33.8 | 16.8 | 24.5 | 24.4 | *** |
| Republic | Kanghwa | 35.3 | 28.5 | 28.4 | 41.1 | 39.3 | 37.9 | 40.3 | 36.4 | 43.2 | 37.0 | 41.3 | 40.1 | 20.3 | 32.4 | 12.5 | 17.3 | 15.8 | 13.8 |
| of Korea | Cheju | 24.5 | 23.0 | 28.5 | 29.3 | 26.8 | 24.0 | 31.6 | 47.1 | 22.1 | 26.3 | 19.4 | 27.4 | 43.9 | 25.9 | 20.5 | 25.1 | 48.3 | 22.6 |
| | Imsil | | 21.3 | 22.7 | 30.6 | 19.9 | 28.4 | 19.0 | 38.8 | 17.9 | 21.0 | 32.0 | 30.9 | 27.2 | 22.6 | 16.7 | 14.5 | 11.6 | 14.2 |
| Russia | Mondy | 2.19 | 3.51 | 2.20 | 3.48 | 2.46 | 1.54 | 1.93 | 3.26 | 1.47 | 0.929 | 0.613 | 0.333 | 0.753 | 1.18 | 0.675 | 0.877 | 0.696 | 1.23 |
| | Listvyanka | 6.79 | 6.60 | 6.56 | 10.3 | 10.6 | 7.80 | 5.90 | 6.99 | 8.33 | 6.02 | 6.76 | 10.6 | 7.33 | 5.02 | 4.85 | 7.04 | 4.74 | 7.09 |
| | Irkutsk | 16.1 | 13.9 | 10.3 | 12.0 | 14.7 | 12.3 | 9.28 | 16.0 | 20.3 | 13.4 | 12.6 | 11.3 | 16.8 | 10.1 | 9.02 | 12.3 | 11.4 | 12.9 |
| | Primorskaya | | | 24.2 | 13.9 | 25.7 | 28.2 | 28.6 | 30.4 | 22.5 | 19.5 | 21.5 | 8.70 | 19.1 | 21.1 | 20.6 | 24.7 | 22.2 | 21.7 |
| Thailand | Bangkok | 24.8 | 21.3 | 24.2 | 25.6 | 19.8 | 39.1 | 35.5 | 27.2 | 32.0 | 26.3 | 24.3 | 23.2 | 19.3 | 9.42 | 8.52 | 12.0 | 23.1 | 27.1 |
| | Samutprakarn | 25.0 | | | | 20.7 | 31.1 | 29.4 | 27.7 | 27.2 | 30.0 | 29.3 | 16.1 | 9.73 | 8.55 | 9.52 | 10.4 | 21.3 | 16.2 |
| | Pathumthani | 18.7 | 23.2 | 14.2 | 20.5 | 17.1 | 16.7 | 21.6 | 16.6 | 17.8 | 11.7 | 14.1 | 14.8 | 12.4 | 11.1 | 8.71 | 12.4 | 10.9 | 12.2 |
| | Khanchanaburi | 3.21 | 7.91 | 12.4 | 5.78 | 4.71 | 5.72 | 10.2 | 4.20 | 7.41 | 7.19 | 2.91 | 9.93 | 8.89 | 1.84 | 3.51 | 2.56 | 10.4 | 3.92 |
| | Mae Hia | | 3.02 | 6.57 | 3.34 | 7.95 | 8.43 | 6.44 | 5.62 | 6.38 | 4.52 | 3.88 | 5.23 | 5.28 | 5.92 | 4.42 | 3.07 | 4.06 | 7.67 |
| | Sakaerat | | | | | | | 9.80 | 8.93 | 12.7 | 8.11 | 11.5 | 7.99 | 7.48 | 10.8 | 4.61 | 9.04 | 7.51 | 8.34 |
| Vietnam | Hanoi | 37.9 | 31.5 | 47.8 | 47.7 | 58.3 | 90.6 | 57.7 | 55.8 | 45.8 | 44.1 | 43.8 | 55.7 | 51.8 | 50.4 | 65.3 | 50.3 | 59.5 | 71.7 |
| | Hoa Binh | 30.8 | 32.6 | 30.5 | 38.0 | 53.9 | 40.6 | 38.5 | 33.1 | 26.9 | 21.8 | 36.1 | 31.7 | 32.7 | 39.6 | 32.9 | 32.3 | 37.9 | 35.9 |
| | Cuc Phuong | | | | | | | | | | 41.9 | 33.7 | 69.7 | 49.0 | 51.1 | 31.5 | 27.5 | 32.3 | 36.1 |
| | Da Nang | | | | | | | | | | 55.6 | 27.6 | 76.7 | 32.9 | 56.1 | 35.0 | 21.6 | 31.9 | 37.0 |
| | Can Tho | | | | | | | | | | | | | | | 16.1 | 67.7 | 26.5 | 30.9 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 46.3 | 67.6 | 49.0 | 80.5 |
| | Yen Bai | | | | | | | | | | | | | | | | 34.2 | 79.1 | 62.9 |

Terms and abbreviations are given in Table 3.5.

**Table 3.84 Annual nss-$SO_4^{2-}$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | *** | *** | 4.82 | 30.2 | 15.9 | 14.9 | 13.3 | 11.3 | 16.6 | 10.5 | 9.07 | 7.35 | 6.53 | 15.2 |
| China | Guanyinqiao | 163 | 154 | 164 | 108 | 228 | 200 | 149 | 169 | | | | | | | | | | |
| | Nanshan | 164 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 145 | 106 | 135 | 115 | 102 | 108 | 119 | 61.1 | 59.1 | 49.5 |
| | Jinyunshan | | 87.3 | 125 | 102 | 165 | 148 | 168 | 148 | 145 | 124 | 148 | 119 | 125 | 91.5 | 89.6 | 56.4 | 48.5 | 46.1 |
| | Shizhan | 198 | 167 | 291 | 253 | 103 | 63.4 | 131 | 96.2 | 73.0 | 80.1 | 45.6 | 71.8 | 42.8 | 58.3 | 65.4 | 45.1 | 24.6 | 40.8 |
| | Weishuiyuan | 239 | 104 | 231 | 177 | 93.5 | 46.6 | 103 | | | | | | | | | | | |
| | Jiwozi | 116 | 66.0 | 41.7 | 51.6 | 54.7 | 41.5 | 29.1 | 17.7 | 61.5 | 57.8 | 36.3 | 60.3 | 35.8 | 29.7 | 35.1 | 11.6 | 6.99 | 17.1 |
| | Hongwen | 28.5 | 16.5 | 61.8 | 45.3 | 70.3 | 75.1 | 57.7 | 99.7 | 28.6 | 18.1 | 39.0 | 25.5 | 28.8 | 29.5 | 29.1 | 17.7 | 37.7 | 15.9 |
| | Xiaoping | 22.0 | 47.2 | 34.1 | 39.0 | 51.8 | 57.3 | 37.9 | 28.4 | 55.6 | 30.9 | 39.7 | 37.1 | 29.5 | 43.5 | 39.6 | 25.9 | 24.7 | 9.57 |
| | Xiang Zhou | 40.3 | 29.1 | 44.0 | 31.6 | 22.4 | 25.3 | 41.3 | 29.5 | 40.6 | 31.7 | 34.5 | 17.0 | 18.4 | 38.4 | 20.9 | 12.3 | 34.4 | 20.9 |
| | Zhuxiandong | 82.4 | 46.2 | 46.3 | 28.8 | 30.4 | 27.7 | 15.9 | *** | 44.0 | 28.9 | 29.4 | 20.3 | *** | *** | *** | 30.8 | 38.3 | 22.8 |
| Indonesia | Jakarta | 87.7 | 74.6 | 57.3 | 105 | 68.2 | 82.7 | 37.6 | 58.5 | 37.9 | 29.3 | 45.4 | 27.7 | 53.9 | 48.8 | 66.3 | 45.7 | 58.9 | 21.8 |
| | Serpong | *** | 59.1 | 60.5 | 48.0 | 39.3 | 26.7 | 44.4 | 60.1 | 64.5 | 30.2 | 34.1 | 27.4 | 25.4 | 59.6 | 63.7 | 54.3 | 73.5 | 79.2 |
| | Kototabang | *** | 5.33 | 12.7 | 26.9 | 9.66 | 11.3 | 9.08 | 17.9 | 6.47 | 11.6 | 14.3 | 16.2 | 14.4 | 12.1 | 20.4 | 21.6 | 10.7 | 10.4 |
| | Bandung | *** | 84.6 | 69.1 | 32.1 | 24.2 | 60.5 | 33.7 | 51.2 | 64.2 | 76.4 | 68.8 | 46.0 | 53.8 | 70.2 | 77.2 | 59.5 | 84.3 | 65.1 |
| | Maros | | | | | | | | | 13.5 | 20.0 | 26.7 | 26.7 | 18.7 | 21.3 | 17.2 | 14.9 | 11.0 | 8.53 |
| Japan | Rishiri | 14.9 | 11.2 | 14.9 | 9.12 | 13.9 | 15.0 | 21.0 | 17.4 | 12.0 | 16.2 | 14.6 | 15.8 | 12.3 | 13.2 | 10.6 | 10.7 | 9.89 | 11.4 |
| | Ochiishi | | | | 5.84 | 8.33 | 8.28 | 11.3 | 8.73 | 6.14 | 9.29 | 10.5 | 5.51 | 7.68 | 7.60 | 5.99 | 7.88 | 4.98 | 4.07 |
| | Tappi | 13.5 | 16.0 | 17.1 | 15.4 | 21.0 | 20.6 | 17.8 | 16.6 | 13.5 | 15.4 | 22.5 | 21.2 | 16.3 | 18.9 | 20.4 | 12.9 | 15.1 | 12.1 |
| | Sado-seki | 20.2 | 18.9 | 18.8 | 12.3 | 14.7 | 19.2 | 18.7 | 24.7 | 18.7 | 14.2 | 18.3 | 21.2 | 19.9 | 22.0 | 21.2 | 13.1 | 10.9 | 13.3 |
| | Happo | 28.1 | 26.6 | 19.3 | 17.8 | 27.1 | 34.5 | 27.8 | 28.0 | 17.6 | 23.1 | 15.4 | 20.9 | 22.0 | 22.9 | 18.8 | 15.0 | 11.8 | 13.6 |
| | Ijira | 50.1 | 45.1 | 47.6 | 54.3 | 43.6 | 46.3 | 56.5 | 40.1 | 39.0 | 41.9 | 39.6 | 37.2 | 35.5 | 31.1 | 33.8 | 33.8 | 31.8 | 26.8 |
| | Oki | 20.4 | 18.4 | 21.2 | 16.4 | 16.8 | 25.3 | 22.0 | 22.8 | 18.2 | 17.0 | 23.6 | 25.6 | 21.2 | 23.1 | 15.8 | 12.3 | 17.8 | 11.4 |
| | Banryu | 21.7 | 25.5 | 18.6 | 22.0 | 22.5 | 27.5 | 35.3 | 29.5 | 27.2 | 25.9 | 22.5 | 20.8 | 24.5 | 26.5 | 24.8 | 18.6 | 21.8 | 16.0 |
| | Yusuhara | 28.4 | 17.6 | 22.1 | 24.0 | 20.9 | 24.5 | 29.7 | 20.6 | 21.2 | 22.6 | 22.6 | 21.3 | 29.4 | 21.1 | 23.3 | 16.1 | 19.5 | 43.4 |
| | Hedo | 17.1 | 13.8 | 15.1 | 15.7 | 43.4 | 23.1 | 14.7 | 17.8 | 13.2 | 11.0 | 15.3 | 14.6 | 17.9 | 13.8 | 14.7 | 8.88 | 9.97 | 9.63 |
| | Ogasawara | 6.22 | 9.23 | 5.25 | 5.71 | 4.02 | 15.0 | 6.58 | 7.61 | 6.38 | 8.72 | 5.60 | 4.62 | 5.27 | 6.31 | 6.44 | 3.79 | 4.72 | 3.45 |
| | Tokyo | | | | | | | | 16.2 | 34.3 | 25.1 | 16.3 | 18.9 | 22.6 | 17.4 | 23.1 | 17.4 | 13.7 | 11.4 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 2.15 | 6.34 | 8.14 | 0.633 | *** | *** | *** | *** | *** | 2.79 | 1.68 | ** |
| Malaysia | Petaling Jaya | 79.3 | 67.7 | 62.3 | 62.9 | 53.5 | 65.3 | 81.4 | 41.2 | 64.6 | 38.4 | 59.3 | 80.2 | 57.3 | 62.6 | 78.1 | 78.9 | 68.1 | 41.1 |
| | Tanah Rata | 12.5 | 9.49 | 12.6 | 11.1 | 9.48 | 14.9 | 12.1 | 10.2 | 12.6 | 9.80 | 7.78 | 16.2 | 12.8 | 12.8 | 17.4 | 18.0 | 8.93 | 10.2 |
| | Danum Valley | | | | | | 5.19 | 9.23 | 6.11 | 6.89 | 8.36 | 10.2 | 6.51 | 6.24 | 9.15 | 6.42 | 6.52 | 4.36 | 7.58 |
| | Kuching | | | | | | | | | 16.4 | 15.6 | 14.7 | 16.3 | 16.5 | 18.7 | 24.1 | 17.3 | 18.8 | 13.2 |
| Mongolia | Ulaanbaatar | 4.69 | 4.08 | 4.34 | 5.73 | 1.81 | 3.95 | 4.68 | 4.63 | 4.22 | 4.47 | 3.36 | 4.53 | *** | 8.00 | *** | *** | 19.0 | 5.32 |
| | Terelj | 3.33 | 0.776 | 3.51 | 2.49 | 2.67 | 4.12 | 4.93 | 4.53 | 3.26 | 1.78 | 3.86 | 3.34 | *** | 4.33 | *** | *** | 13.5 | 1.34 |
| Myanmar | Yangon | | | | | | | | *** | *** | 20.8 | 8.88 | 18.0 | 15.8 | 19.7 | 10.1 | 9.94 | 18.0 | 30.0 |
| Philippines | Metro Manila | 87.0 | 52.0 | 75.6 | 35.2 | 41.9 | 54.8 | 44.6 | 73.9 | 55.7 | 47.7 | 50.6 | 63.6 | 103 | 47.0 | 43.5 | 43.9 | 52.0 | *** |
| | Los Baños | 22.4 | 23.9 | 25.1 | 10.0 | 13.4 | 14.5 | 21.0 | 22.7 | 32.0 | 22.5 | 12.5 | 17.6 | 23.7 | 12.5 | 17.0 | 19.3 | 24.7 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.519 | 18.2 | 16.1 | 21.5 | 16.5 | 20.4 | 38.1 | 32.1 | 15.4 | 21.3 | 20.5 | *** |
| Republic | Kanghwa | 31.6 | 25.6 | 26.0 | 38.6 | 37.6 | 36.3 | 38.5 | 34.0 | 39.5 | 33.6 | 38.8 | 36.9 | 18.3 | 30.8 | 11.4 | 15.7 | 14.3 | 12.9 |
| of Korea | Cheju | 14.8 | 18.0 | 24.9 | 25.6 | 22.9 | 20.4 | 25.9 | 39.5 | 15.3 | 23.0 | 13.1 | 17.6 | 16.9 | 14.8 | 12.1 | 16.2 | 21.7 | 11.3 |
| | Imsil | | 20.1 | 20.4 | 28.0 | 18.6 | 26.8 | 17.6 | 37.5 | 16.3 | 17.7 | 27.2 | 27.5 | 22.8 | 20.4 | 14.7 | 12.5 | 9.88 | 12.5 |
| Russia | Mondy | 2.16 | 3.46 | 2.17 | 3.42 | 2.43 | 1.51 | 1.89 | 3.20 | 1.45 | 0.912 | 0.598 | 0.316 | 0.726 | 1.15 | 0.658 | 0.863 | 0.678 | 1.20 |
| | Listvyanka | 6.67 | 6.50 | 6.47 | 10.1 | 10.4 | 7.72 | 5.85 | 6.93 | 8.27 | 5.94 | 6.69 | 10.4 | 7.25 | 4.91 | 4.77 | 6.98 | 4.63 | 7.03 |
| | Irkutsk | 15.8 | 13.6 | 10.2 | 11.8 | 14.5 | 12.1 | 9.07 | 15.8 | 20.0 | 12.9 | 12.2 | 11.0 | 16.5 | 9.90 | 8.82 | 12.1 | 11.1 | 12.7 |
| | Primorskaya | | | 23.0 | 13.3 | 24.8 | 27.2 | 28.0 | 29.2 | 21.7 | 18.8 | 20.5 | 8.19 | 17.9 | 20.0 | 20.0 | 23.0 | 20.8 | 20.7 |
| Thailand | Bangkok | 24.4 | 20.7 | 22.9 | 24.9 | 19.1 | 37.6 | 34.6 | 26.5 | 31.0 | 25.1 | 23.3 | 22.4 | 18.6 | 8.46 | 7.96 | 11.2 | 22.0 | 26.6 |
| | Samutprakarn | 24.4 | | | | 19.5 | 29.1 | 28.0 | 26.3 | 25.6 | 28.8 | 27.2 | 15.4 | 9.28 | 6.94 | 8.77 | 9.63 | 20.3 | 15.4 |
| | Pathumthani | 18.1 | 22.5 | 13.7 | 20.1 | 16.6 | 16.2 | 20.8 | 16.1 | 17.2 | 11.2 | 13.5 | 14.2 | 11.1 | 10.7 | 8.37 | 12.0 | 10.4 | 11.8 |
| | Khanchanaburi | 2.72 | 6.89 | 11.2 | 4.81 | 3.96 | 4.89 | 9.24 | 3.48 | 6.33 | 6.05 | 2.61 | 9.06 | 7.49 | 1.40 | 3.13 | 2.19 | 9.73 | 3.59 |
| | Mae Hia | | 2.78 | 5.78 | 3.21 | 7.74 | 8.36 | 6.16 | 5.46 | 6.18 | 4.36 | 3.69 | 4.93 | 5.04 | 5.49 | 4.31 | 2.87 | 3.74 | 7.23 |
| | Sakaerat | | | | | | | 9.48 | 8.56 | 12.2 | 7.90 | 11.1 | 7.63 | 7.23 | 10.5 | 4.39 | 8.66 | 7.25 | 8.13 |
| Vietnam | Hanoi | 36.5 | 30.0 | 47.3 | 46.9 | 57.5 | 88.7 | 56.7 | 55.0 | 44.5 | 43.2 | 43.3 | 55.0 | 51.4 | 49.5 | 64.6 | 49.6 | 58.4 | 69.6 |
| | Hoa Binh | 29.4 | 31.3 | 30.3 | 37.8 | 53.5 | 39.6 | 38.1 | 32.7 | 26.5 | 21.5 | 35.7 | 31.5 | 32.4 | 39.1 | 32.7 | 31.9 | 37.5 | 35.4 |
| | Cuc Phuong | | | | | | | | | | 40.4 | 32.5 | 68.2 | 46.5 | 48.0 | 30.4 | 26.8 | 30.8 | 33.7 |
| | Da Nang | | | | | | | | | | 38.7 | 23.4 | 61.3 | 27.1 | 36.0 | 24.0 | 12.6 | 21.1 | 26.1 |
| | Can Tho | | | | | | | | | | | | | | | 14.4 | 63.8 | 25.2 | 29.8 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 43.5 | 64.6 | 46.9 | 76.9 |
| | Yen Bai | | | | | | | | | | | | | | | | 33.7 | 78.1 | 62.4 |

Terms and abbreviations are given in Table 3.5.

**Table 3.85 Annual $NO_3^-$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | 3.22 | *** | 8.59 | 11.3 | 17.2 | 13.7 | 15.5 | 11.3 | 17.4 | 10.3 | 13.3 | 11.4 | 9.78 | 15.1 |
| China | Guanyinqiao | 45.5 | 39.7 | 49.7 | 38.4 | 60.9 | 44.5 | 51.1 | 63.3 | | | | | | | | | | |
| | Nanshan | 52.4 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 65.6 | 56.7 | 75.9 | 67.4 | 74.6 | 75.8 | 90.8 | 57.8 | 66.4 | 63.1 |
| | Jinyunshan | | 28.6 | 47.3 | 42.5 | 55.9 | 50.2 | 55.2 | 51.8 | 56.4 | 59.7 | 73.4 | 65.8 | 70.8 | 59.9 | 68.0 | 46.9 | 45.6 | 46.7 |
| | Shizhan | 48.6 | 55.8 | 52.2 | 86.6 | 37.1 | 6.16 | 39.4 | 40.0 | 15.5 | 34.1 | 18.8 | 11.5 | 19.4 | 15.7 | 61.0 | 42.7 | 26.1 | 14.6 |
| | Weishuiyuan | 42.9 | 14.5 | 39.0 | 70.5 | 32.4 | 5.01 | 32.8 | | | | | | | | | | | |
| | Jiwozi | 24.1 | 29.3 | 12.7 | 26.2 | 26.9 | 3.37 | 11.9 | 6.68 | 44.9 | 17.2 | 14.1 | 8.01 | 18.5 | 5.69 | 7.84 | 12.8 | 2.05 | 1.30 |
| | Hongwen | 28.4 | 11.2 | 48.2 | 43.7 | 53.1 | 63.4 | 47.7 | 50.6 | 21.6 | 17.2 | 44.3 | 19.9 | 32.5 | 29.3 | 29.8 | 26.6 | 55.6 | 23.5 |
| | Xiaoping | 22.8 | 50.1 | 32.0 | 39.9 | 38.5 | 52.9 | 37.7 | 27.3 | 49.2 | 33.2 | 46.0 | 34.6 | 34.4 | 40.9 | 46.3 | 38.0 | 35.7 | 19.0 |
| | Xiang Zhou | 31.8 | 28.0 | 30.9 | 36.0 | 29.6 | 20.3 | 33.3 | 23.9 | 34.7 | 35.5 | 44.3 | 19.8 | 23.1 | 49.3 | 34.9 | 26.9 | 42.6 | 34.5 |
| | Zhuxiandong | 59.6 | 57.1 | 32.9 | 20.2 | 31.9 | 22.8 | 11.7 | *** | 33.9 | 31.3 | 36.6 | 21.5 | *** | *** | *** | 47.0 | 52.2 | 41.5 |
| Indonesia | Jakarta | 27.8 | 66.4 | 44.3 | 94.5 | 114 | 115 | 30.4 | 67.4 | 24.1 | 23.8 | 36.2 | 29.5 | 44.2 | 50.8 | 63.4 | 42.9 | 67.5 | 24.7 |
| | Serpong | *** | 81.4 | 81.6 | 66.1 | 58.0 | 32.5 | 45.4 | 61.3 | 71.8 | 34.2 | 42.4 | 29.5 | 28.2 | 91.9 | 104 | 85.1 | 92.8 | 99.6 |
| | Kototabang | 14.4 | 3.32 | 10.1 | 154 | 9.94 | 3.46 | 1.74 | 9.88 | 6.93 | 0.679 | 5.61 | 11.1 | 12.3 | 6.06 | 18.7 | 9.00 | 8.99 | 9.21 |
| | Bandung | 30.7 | 70.0 | 66.7 | 32.7 | 25.2 | 33.5 | 30.3 | 42.4 | 48.4 | 61.3 | 46.8 | 42.8 | 45.0 | 51.7 | 55.3 | 47.5 | 61.0 | 49.7 |
| | Maros | | | | | | | | | 10.7 | 17.4 | 16.9 | 27.3 | 22.2 | 14.7 | 16.8 | 15.6 | 17.3 | 8.00 |
| Japan | Rishiri | 13.9 | 11.1 | 12.9 | 8.65 | 11.0 | 12.1 | 18.2 | 13.8 | 12.1 | 18.3 | 15.4 | 17.4 | 15.7 | 15.7 | 10.6 | 11.8 | 13.3 | 17.5 |
| | Ochiishi | | | | 6.22 | 8.78 | 7.65 | 11.3 | 8.29 | 6.16 | 8.57 | 10.3 | 7.83 | 8.54 | 9.36 | 7.29 | 9.54 | 6.40 | 5.71 |
| | Tappi | 13.5 | 16.5 | 22.5 | 19.4 | 24.0 | 22.5 | 21.7 | 22.8 | 18.5 | 18.0 | 27.2 | 22.7 | 20.4 | 27.0 | 28.8 | 15.9 | 21.5 | 22.0 |
| | Sado-seki | 19.5 | 21.6 | 21.4 | 15.7 | 17.3 | 21.3 | 23.9 | 30.0 | 24.4 | 17.2 | 24.8 | 27.3 | 26.0 | 30.6 | 27.1 | 18.0 | 18.7 | 23.5 |
| | Happo | 24.3 | 20.8 | 18.2 | 16.2 | 24.7 | 28.6 | 22.7 | 22.9 | 18.2 | 20.1 | 17.1 | 25.1 | 23.3 | 22.1 | 19.1 | 15.2 | 14.2 | 18.6 |
| | Ijira | 64.8 | 48.5 | 57.8 | 64.5 | 52.6 | 61.9 | 68.5 | 49.4 | 54.3 | 52.9 | 57.9 | 46.4 | 47.7 | 40.2 | 44.7 | 52.5 | 51.6 | 44.9 |
| | Oki | 22.4 | 19.5 | 23.7 | 20.7 | 24.0 | 28.7 | 25.4 | 27.6 | 21.5 | 22.7 | 35.2 | 32.6 | 28.0 | 33.7 | 21.4 | 16.1 | 24.9 | 20.8 |
| | Banryu | 21.7 | 31.1 | 25.0 | 27.9 | 27.0 | 32.8 | 38.3 | 37.1 | 31.2 | 34.8 | 33.2 | 27.9 | 33.6 | 32.8 | 32.9 | 26.3 | 32.8 | 32.6 |
| | Yusuhara | 19.7 | 14.2 | 19.8 | 19.7 | 20.9 | 21.8 | 23.9 | 17.1 | 19.7 | 16.2 | 19.1 | 19.6 | 26.1 | 17.5 | 17.2 | 23.0 | 19.1 | 68.2 |
| | Hedo | 16.7 | 14.0 | 19.3 | 13.2 | 23.8 | 19.6 | 15.1 | 17.3 | 13.5 | 12.7 | 16.9 | 13.6 | 20.3 | 13.8 | 16.8 | 12.4 | 13.5 | 14.2 |
| | Ogasawara | 4.73 | 6.67 | 3.61 | 6.55 | 4.30 | 6.58 | 7.57 | 7.64 | 6.27 | 5.67 | 5.70 | 3.80 | 4.53 | 4.83 | 4.76 | 3.82 | 4.47 | 4.65 |
| | Tokyo | | | | | | | | 21.0 | 45.5 | 31.3 | 25.4 | 30.1 | 30.7 | 25.9 | 30.4 | 26.7 | 19.0 | 17.9 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 4.92 | 9.65 | 9.95 | 1.76 | *** | *** | 7.34 | *** | *** | 3.79 | 1.92 | ** |
| Malaysia | Petaling Jaya | 92.9 | 73.2 | 97.9 | 100 | 89.4 | 102 | 120 | 80.5 | 135 | 138 | 174 | 190 | 150 | 119 | 133 | 164 | 151 | 90.1 |
| | Tanah Rata | 10.4 | 8.90 | 16.7 | 14.1 | 11.1 | 17.4 | 14.9 | 12.4 | 17.8 | 16.0 | 10.8 | 7.29 | 10.8 | 10.5 | 13.9 | 20.5 | 14.1 | 23.8 |
| | Danum Valley | | | | | | 3.14 | 4.24 | 2.02 | 4.11 | 5.61 | 3.36 | 3.99 | 2.83 | 6.32 | 2.10 | 3.81 | 2.65 | 0.545 |
| | Kuching | | | | | | | | | 21.3 | 21.2 | 22.8 | 23.1 | 14.5 | 18.6 | 19.4 | 16.0 | 23.5 | 17.8 |
| Mongolia | Ulaanbaatar | 3.91 | 3.43 | 4.23 | 4.62 | 1.32 | 2.83 | 3.50 | 3.27 | 3.12 | 4.35 | 3.26 | 2.75 | *** | 4.76 | *** | 5.20 | 5.87 | 4.86 |
| | Terelj | 3.65 | 0.815 | 4.45 | 3.87 | 3.34 | 2.89 | 3.32 | 3.39 | 3.77 | 2.33 | 3.58 | 2.59 | *** | 2.89 | *** | 2.41 | 5.20 | 4.58 |
| Myanmar | Yangon | | | | | | | | *** | *** | 21.8 | 11.3 | 19.8 | 21.4 | 18.1 | 13.8 | 20.1 | 32.5 | 51.4 |
| Philippines | Metro Manila | 48.9 | 42.5 | 52.3 | 28.8 | 33.4 | 51.1 | 33.1 | 49.4 | 50.2 | 32.8 | 135 | 52.7 | 81.4 | 49.0 | 42.0 | 33.5 | 91.8 | *** |
| | Los Baños | 14.3 | 25.3 | 14.0 | 7.84 | 10.6 | 16.2 | 18.1 | 19.4 | 15.1 | 23.2 | 64.9 | 19.9 | 25.0 | 18.7 | 17.0 | 13.7 | 67.7 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.804 | 18.5 | 19.9 | 18.6 | 15.5 | 11.8 | 34.9 | 37.2 | 18.5 | 21.3 | 25.5 | *** |
| Republic | Kanghwa | 47.4 | 32.6 | 27.0 | 42.9 | 36.1 | 36.5 | 36.1 | 34.5 | 48.0 | 23.9 | 49.8 | 40.9 | 27.2 | 38.8 | 15.7 | 29.7 | 24.7 | 24.6 |
| of Korea | Cheju | 16.2 | 20.5 | 24.4 | 29.7 | 27.9 | 19.2 | 28.8 | 18.7 | 22.3 | 19.3 | 22.7 | 30.0 | 23.1 | 19.3 | 21.8 | 31.4 | 35.6 | 28.4 |
| | Imsil | | 20.2 | 31.8 | 31.7 | 24.8 | 32.9 | 19.6 | 24.4 | 19.3 | 23.9 | 47.6 | 41.3 | 36.7 | 32.0 | 30.8 | 24.3 | 19.0 | 26.5 |
| Russia | Mondy | 3.04 | 3.38 | 2.75 | 2.78 | 2.44 | 1.44 | 2.09 | 2.99 | 1.54 | 0.938 | 0.732 | 0.316 | 0.841 | 1.66 | 0.573 | 0.718 | 1.28 | 1.86 |
| | Listvyanka | 8.25 | 7.26 | 8.99 | 16.1 | 10.9 | 5.34 | 4.54 | 8.33 | 6.02 | 5.10 | 6.59 | 14.6 | 6.64 | 4.37 | 3.68 | 5.18 | 4.73 | 6.08 |
| | Irkutsk | 11.2 | 8.61 | 6.59 | 8.15 | 9.48 | 7.25 | 5.89 | 8.76 | 9.02 | 7.23 | 8.36 | 6.81 | 8.09 | 4.52 | 4.77 | 6.02 | 6.46 | 7.22 |
| | Primorskaya | | | 8.51 | 4.97 | 14.8 | 15.9 | 18.2 | 18.9 | 18.3 | 16.1 | 14.7 | 23.5 | 21.6 | 13.4 | 4.93 | 29.4 | 20.6 | 22.3 |
| Thailand | Bangkok | 24.8 | 21.0 | 32.0 | 31.9 | 19.3 | 46.6 | 52.4 | 44.1 | 55.4 | 58.2 | 54.1 | 44.7 | 49.7 | 17.2 | 15.5 | 25.7 | 51.8 | 32.2 |
| | Samutprakarn | 15.1 | | | | 12.3 | 29.1 | 20.0 | 31.0 | 30.2 | 39.7 | 28.9 | 20.6 | 11.9 | 5.65 | 12.9 | 14.4 | 33.2 | 28.5 |
| | Pathumthani | 17.8 | 26.5 | 17.6 | 28.4 | 23.4 | 24.8 | 35.4 | 31.4 | 35.9 | 21.8 | 36.0 | 30.0 | 29.3 | 22.0 | 15.6 | 31.2 | 28.1 | 38.8 |
| | Khanchanaburi | 5.06 | 10.2 | 13.3 | 7.96 | 6.65 | 5.11 | 15.5 | 5.01 | 9.85 | 9.10 | 6.11 | 14.1 | 16.4 | 2.90 | 4.58 | 4.68 | 5.22 | 5.83 |
| | Mae Hia | | 4.47 | 9.78 | 5.27 | 7.04 | 12.0 | 11.2 | 7.47 | 11.7 | 8.88 | 8.52 | 11.7 | 8.78 | 14.2 | 6.19 | 6.24 | 9.59 | 12.5 |
| | Sakaerat | | | | | | | 13.5 | 15.7 | 19.8 | 16.0 | 23.7 | 15.0 | 12.6 | 15.0 | 10.5 | 17.8 | 14.6 | 17.9 |
| Vietnam | Hanoi | 20.2 | 11.4 | 21.4 | 39.4 | 39.7 | 54.3 | 30.6 | 25.8 | 22.1 | 26.7 | 25.7 | 39.5 | 45.3 | 51.2 | 50.9 | 44.7 | 47.3 | 72.1 |
| | Hoa Binh | 18.3 | 19.5 | 32.8 | 22.6 | 36.4 | 29.5 | 25.0 | 20.4 | 20.2 | 17.5 | 21.3 | 25.4 | 29.5 | 37.7 | 32.8 | 36.0 | 35.7 | 42.1 |
| | Cuc Phuong | | | | | | | | | | 24.6 | 38.4 | 51.5 | 40.5 | 31.6 | 17.4 | 19.6 | 22.1 | 31.4 |
| | Da Nang | | | | | | | | | | 33.7 | 11.9 | 57.5 | 8.06 | 12.5 | 11.7 | 0.941 | 7.58 | 12.1 |
| | Can Tho | | | | | | | | | | | | | | | 15.4 | 25.8 | 5.52 | 7.30 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 34.2 | 25.5 | 18.9 | 37.2 |
| | Yen Bai | | | | | | | | | | | | | | | | 27.0 | 73.2 | 58.6 |

Terms and abbreviations are given in Table 3.5.

**Table 3.86 Annual $Cl^-$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | *** | 8.12 | 5.88 | 17.4 | 15.9 | 13.6 | 9.12 | 7.52 | 10.8 | 10.1 | 14.2 | 9.94 | 8.23 | 8.40 |
| China | Guanyinqiao | 25.9 | 22.4 | 22.5 | 16.0 | 20.3 | 19.7 | 16.2 | 17.9 | | | | | | | | | | |
| | Nanshan | 19.7 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 13.9 | 11.7 | 15.8 | 11.6 | 11.5 | 13.1 | 15.7 | 9.48 | 10.6 | 9.49 |
| | Jinyunshan | | 40.3 | 20.8 | 12.6 | 19.5 | 22.6 | 16.2 | 14.3 | 18.6 | 17.7 | 15.7 | 10.1 | 11.7 | 8.13 | 8.50 | 6.56 | 5.78 | 6.77 |
| | Shizhan | 27.4 | 29.6 | 122 | 106 | 21.7 | 17.5 | 17.3 | 21.0 | 12.9 | 15.5 | 10.5 | 7.07 | 6.28 | 22.4 | 13.1 | 10.6 | 5.96 | 5.15 |
| | Weishuiyuan | 41.0 | 19.3 | 66.0 | 129 | 18.3 | 16.0 | 16.1 | | | | | | | | | | | |
| | Jiwozi | 26.8 | 20.7 | 26.2 | 42.8 | 15.1 | 13.9 | 7.77 | 4.41 | 14.8 | 17.5 | 16.9 | 10.8 | 12.2 | 22.0 | 13.1 | 6.35 | 0.290 | 8.49 |
| | Hongwen | 48.6 | 10.6 | 67.3 | 66.7 | 64.1 | 112 | 98.0 | 52.6 | 29.5 | 23.8 | 23.0 | 21.5 | 22.1 | 27.1 | 32.3 | 26.1 | 55.3 | 38.6 |
| | Xiaoping | 32.4 | 77.3 | 19.9 | 41.6 | 32.5 | 34.9 | 52.4 | 15.2 | 37.1 | 22.8 | 21.1 | 26.1 | 18.8 | 25.7 | 18.8 | 28.8 | 19.7 | 14.5 |
| | Xiang Zhou | 101 | 75.2 | 119 | 81.8 | 48.8 | 77.6 | 68.1 | 44.5 | 98.1 | 90.2 | 41.6 | 37.5 | 65.8 | 112 | 39.8 | 86.1 | 55.3 | 116 |
| | Zhuxiandong | 70.2 | 71.2 | 94.1 | 70.5 | 75.1 | 55.9 | 25.9 | *** | 105 | 81.2 | 40.2 | 21.5 | *** | *** | *** | 116 | 78.9 | 53.3 |
| Indonesia | Jakarta | 33.9 | 48.2 | 44.2 | 84.4 | 57.4 | 88.4 | 23.0 | 40.7 | 19.6 | 18.7 | 32.7 | 19.2 | 35.3 | 45.1 | 91.1 | 48.0 | 61.6 | 16.2 |
| | Serpong | *** | 51.8 | 57.6 | 58.2 | 34.8 | 16.3 | 17.4 | 28.8 | 40.3 | 23.6 | 31.9 | 12.5 | 21.6 | 52.8 | 73.3 | 39.4 | 46.8 | 52.6 |
| | Kototabang | 15.8 | 7.97 | 30.1 | 87.0 | 24.8 | 15.6 | 9.74 | 38.2 | 9.62 | 28.4 | 23.5 | 30.5 | 25.7 | 57.8 | 26.4 | 20.7 | 72.3 | 15.3 |
| | Bandung | 93.7 | 65.1 | 51.5 | 20.9 | 15.6 | 25.5 | 18.6 | 14.8 | 19.4 | 31.6 | 22.4 | 18.9 | 22.1 | 36.5 | 29.8 | 19.1 | 26.0 | 28.7 |
| | Maros | | | | | | | | | 60.9 | 49.7 | 56.2 | 58.4 | 48.9 | 146 | 99.9 | 17.1 | 304 | 262 |
| Japan | Rishiri | 286 | 145 | 207 | 142 | 242 | 224 | 163 | 142 | 222 | 203 | 197 | 192 | 389 | 260 | 190 | 175 | 104 | 219 |
| | Ochiishi | | | | 178 | 266 | 191 | 316 | 189 | 142 | 323 | 288 | 147 | 267 | 514 | 93.8 | 166 | 184 | 216 |
| | Tappi | 187 | 169 | 253 | 178 | 341 | 310 | 314 | 276 | 186 | 290 | 192 | 191 | 191 | 309 | 210 | 315 | 238 | 242 |
| | Sado-seki | 292 | 367 | 439 | 121 | 236 | 385 | 324 | 298 | 241 | 377 | 481 | 252 | 380 | 559 | 447 | 318 | 199 | 214 |
| | Happo | 23.4 | 20.7 | 13.0 | 17.9 | 27.0 | 26.1 | 15.6 | 10.1 | 9.21 | 15.6 | 13.1 | 13.6 | 23.3 | 13.0 | 15.2 | 15.7 | 15.7 | 19.3 |
| | Ijira | 61.8 | 73.0 | 88.2 | 56.6 | 94.2 | 43.3 | 40.8 | 56.1 | 42.5 | 47.4 | 62.4 | 52.8 | 70.2 | 53.2 | 59.8 | 62.3 | 48.0 | 51.7 |
| | Oki | 543 | 448 | 658 | 321 | 453 | 914 | 353 | 362 | 412 | 489 | 684 | 847 | 532 | 807 | 649 | 502 | 583 | 551 |
| | Banryu | 48.5 | 155 | 116 | 162 | 232 | 142 | 149 | 114 | 105 | 197 | 157 | 179 | 125 | 164 | 155 | 157 | 168 | 147 |
| | Yusuhara | 52.4 | 25.6 | 74.6 | 45.4 | 112 | 69.4 | 44.4 | 38.5 | 22.0 | 28.8 | 27.3 | 49.8 | 66.5 | 33.4 | 24.5 | 83.4 | 27.4 | 157 |
| | Hedo | 1500 | 373 | 1200 | 628 | 1750 | 869 | 404 | 394 | 270 | 278 | 751 | 410 | 1407 | 424 | 383 | 648 | 429 | 696 |
| | Ogasawara | 325 | 222 | 370 | 400 | 162 | 235 | 188 | 241 | 165 | 379 | 391 | 313 | 210 | 210 | 236 | 587 | 122 | 344 |
| | Tokyo | | | | | | | | 44.4 | 44.0 | 48.0 | 32.1 | 63.8 | 58.5 | 44.5 | 41.8 | 36.4 | 27.6 | 60.8 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 3.38 | 10.4 | 12.4 | 1.12 | *** | *** | 5.89 | *** | *** | 4.58 | 2.48 | ** |
| Malaysia | Petaling Jaya | 29.1 | 23.2 | 19.5 | 28.1 | 22.2 | 25.0 | 27.8 | 17.2 | 28.1 | 23.4 | 32.6 | 30.2 | 27.2 | 27.3 | 33.0 | 38.7 | 35.3 | 31.3 |
| | Tanah Rata | 21.3 | 7.87 | 6.29 | 7.19 | 5.86 | 7.61 | 5.85 | 5.05 | 5.78 | 6.96 | 4.67 | 9.70 | 9.07 | 8.19 | 10.1 | 10.1 | 7.82 | 10.1 |
| | Danum Valley | | | | | | 7.54 | 21.5 | 14.6 | 18.3 | 23.0 | 40.5 | 21.6 | 12.3 | 24.1 | 18.5 | 15.1 | 14.6 | 13.6 |
| | Kuching | | | | | | | | | 27.2 | 39.3 | 37.3 | 53.2 | 25.7 | 36.2 | 40.4 | 64.1 | 81.8 | 44.0 |
| Mongolia | Ulaanbaatar | 1.76 | 1.60 | 1.37 | 2.27 | 0.670 | 1.17 | 1.46 | 1.18 | 1.56 | 2.20 | 1.30 | 1.22 | *** | 0.628 | *** | 0.774 | 0.740 | 0.569 |
| | Terelj | 1.86 | 0.767 | 2.80 | 2.06 | 1.85 | 2.44 | 1.99 | 1.91 | 1.90 | 1.10 | 1.37 | 1.41 | *** | 0.630 | *** | 0.793 | 1.03 | 0.913 |
| Myanmar | Yangon | | | | | | | | *** | *** | 75.3 | 30.0 | 49.6 | 68.3 | 72.9 | 56.0 | 83.6 | 68.2 | 99.1 |
| Philippines | Metro Manila | 103 | 264 | 55.9 | 53.5 | 52.0 | 33.7 | 62.3 | 97.8 | 68.4 | 92.9 | 55.2 | 109 | 90.1 | 101 | 68.6 | 68.2 | 79.0 | *** |
| | Los Baños | 87.1 | 62.7 | 41.9 | 26.1 | 24.9 | 29.7 | 46.7 | 75.5 | 35.5 | 72.6 | 52.3 | 62.5 | 45.4 | 61.7 | 38.0 | 143 | 44.3 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.677 | 24.9 | 26.6 | 39.3 | 18.3 | 20.3 | 37.2 | 31.2 | 15.3 | 47.6 | 24.1 | *** |
| Republic | Kanghwa | 61.4 | 48.6 | 35.5 | 96.4 | 48.9 | 45.5 | 39.2 | 50.9 | 70.5 | 76.2 | 68.9 | 71.6 | 50.5 | 32.6 | 26.3 | 95.0 | 41.9 | 32.8 |
| of Korea | Cheju | 222 | 125 | 85.3 | 88.4 | 88.9 | 73.1 | 116 | 130 | 114 | 66.1 | 114 | 158 | 545 | 219 | 148 | 159 | 498 | 200 |
| | Imsil | | 37.3 | 36.7 | 71.5 | 32.2 | 54.9 | 54.9 | 30.1 | 31.2 | 55.5 | 72.9 | 37.9 | 124 | 27.8 | 33.8 | 33.7 | 25.1 | 24.4 |
| Russia | Mondy | 0.785 | 0.463 | 1.81 | 1.25 | 0.991 | 1.69 | 1.83 | 1.38 | 0.869 | 0.391 | 0.306 | 0.388 | 0.626 | 1.22 | 0.440 | 0.501 | 0.369 | 1.01 |
| | Listvyanka | 2.22 | 1.07 | 2.45 | 2.23 | 2.72 | 2.43 | 1.09 | 1.75 | 2.00 | 0.942 | 1.12 | 3.17 | 1.13 | 1.62 | 1.02 | 1.82 | 0.975 | 1.30 |
| | Irkutsk | 6.19 | 5.72 | 5.45 | 8.07 | 4.71 | 5.47 | 4.48 | 6.30 | 8.39 | 10.7 | 8.95 | 7.23 | 6.69 | 5.30 | 3.82 | 6.96 | 4.76 | 5.13 |
| | Primorskaya | | | 28.3 | 11.5 | 14.7 | 16.0 | 11.2 | 18.3 | 14.2 | 12.7 | 19.8 | 41.9 | 27.5 | 30.9 | 16.1 | 29.4 | 30.9 | 23.6 |
| Thailand | Bangkok | 14.4 | 11.1 | 18.0 | 12.0 | 13.7 | 24.7 | 17.1 | 13.0 | 20.1 | 15.9 | 18.9 | 17.3 | 15.0 | 9.63 | 9.32 | 11.7 | 18.1 | 13.0 |
| | Samutprakarn | 12.6 | | | | 16.2 | 30.9 | 17.7 | 21.0 | 22.1 | 16.8 | 30.4 | 16.0 | 9.45 | 10.2 | 11.2 | 13.9 | 17.0 | 15.1 |
| | Pathumthani | 9.96 | 10.5 | 11.0 | 10.6 | 13.9 | 9.04 | 11.0 | 9.17 | 11.0 | 8.18 | 10.2 | 10.6 | 24.9 | 8.08 | 8.34 | 10.7 | 9.24 | 10.2 |
| | Khanchanaburi | 15.5 | 15.1 | 30.9 | 14.3 | 13.9 | 15.9 | 15.9 | 11.3 | 20.1 | 17.6 | 5.37 | 17.2 | 27.8 | 4.34 | 6.75 | 6.22 | 9.58 | 6.97 |
| | Mae Hia | | 4.91 | 14.8 | 3.81 | 4.40 | 6.01 | 5.29 | 5.48 | 5.90 | 5.16 | 4.17 | 4.65 | 4.59 | 8.51 | 2.84 | 2.89 | 5.49 | 7.07 |
| | Sakaerat | | | | | | | 6.56 | 7.08 | 10.2 | 5.81 | 7.82 | 7.24 | 7.17 | 9.14 | 4.76 | 9.68 | 7.12 | 6.90 |
| Vietnam | Hanoi | 30.5 | 61.2 | 13.5 | 33.7 | 23.2 | 47.9 | 19.2 | 19.5 | 19.8 | 15.5 | 13.4 | 15.6 | 11.8 | 19.3 | 17.2 | 18.8 | 18.9 | 30.3 |
| | Hoa Binh | 38.4 | 49.2 | 11.3 | 11.7 | 21.6 | 30.9 | 9.99 | 12.3 | 8.35 | 7.30 | 8.70 | 7.58 | 8.91 | 12.4 | 5.53 | 8.49 | 11.4 | 27.6 |
| | Cuc Phuong | | | | | | | | | | 100 | 40.2 | 28.7 | 41.0 | 47.9 | 19.8 | 31.1 | 33.1 | 79.6 |
| | Da Nang | | | | | | | | | | 325 | 85.2 | 340 | 140 | 403 | 206 | 138 | 191 | 182 |
| | Can Tho | | | | | | | | | | | | | | | 50.4 | 90.8 | 60.3 | 55.6 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 85.8 | 73.9 | 95.2 | 164 |
| | Yen Bai | | | | | | | | | | | | | | | | 11.3 | 25.9 | 41.4 |

Terms and abbreviations are given in Table 3.5.

**Table 3.87 Annual $NH_4^+$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | 4.51 | 21.3 | 17.0 | 27.0 | 21.6 | 17.3 | 41.9 | 28.0 | 34.9 | 18.1 | 21.7 | 19.9 | 24.9 | 30.7 |
| China | Guanyinqiao | 174 | 158 | 173 | 131 | 189 | 169 | 151 | 181 | | | | | | | | | | |
| | Nanshan | 132 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 149 | 112 | 137 | 117 | 118 | 145 | 164 | 116 | 125 | 117 |
| | Jinyunshan | | 79.1 | 134 | 106 | 160 | 154 | 145 | 124 | 120 | 121 | 121 | 98.8 | 125 | 102 | 105 | 80.6 | 80.1 | 76.1 |
| | Shizhan | 235 | 92.8 | 70.7 | 183 | 87.5 | 39.3 | 80.7 | 109 | 63.3 | 99.7 | 85.6 | 40.0 | 42.7 | 105 | 106 | 115 | 49.0 | 85.0 |
| | Weishuiyuan | 190 | 24.5 | 74.1 | 188 | 70.5 | 28.2 | 75.4 | | | | | | | | | | | |
| | Jiwozi | 165 | 35.7 | 10.1 | 50.5 | 37.8 | 13.7 | 11.4 | 1.12 | 13.8 | 32.7 | 20.0 | 22.5 | 10.4 | 36.0 | 18.6 | 29.4 | 1.06 | 0.544 |
| | Hongwen | 47.9 | 19.2 | 69.3 | 38.3 | 48.8 | 60.2 | 62.0 | 51.8 | 32.8 | 34.4 | 60.9 | 35.7 | 39.9 | 25.7 | 29.1 | 29.6 | 65.9 | 18.2 |
| | Xiaoping | 31.0 | 88.9 | 67.5 | 67.5 | 74.4 | 94.0 | 50.5 | 55.0 | 65.9 | 52.0 | 65.1 | 59.6 | 39.2 | 50.0 | 53.0 | 58.8 | 45.5 | 20.0 |
| | Xiang Zhou | 41.7 | 49.8 | 166 | 58.7 | 67.9 | 121 | 86.6 | 28.0 | 55.0 | 44.4 | 45.4 | 26.1 | 44.2 | 42.9 | 39.9 | 27.3 | 69.4 | 46.6 |
| | Zhuxiandong | 90.7 | 77.8 | 76.5 | 52.5 | 75.9 | 27.8 | 24.3 | *** | 42.9 | 40.5 | 42.1 | 28.4 | *** | *** | *** | 38.9 | 99.8 | 46.7 |
| Indonesia | Jakarta | 122 | 81.9 | 49.8 | 33.6 | 32.8 | 26.4 | 25.7 | 52.6 | 43.6 | 27.6 | 48.8 | 33.4 | 62.9 | 40.0 | 55.7 | 53.2 | 74.1 | 31.4 |
| | Serpong | *** | 109 | 115 | 96.4 | 61.9 | 36.8 | 64.6 | 89.2 | 112 | 57.7 | 74.6 | 51.6 | 63.6 | 193 | 189 | 112 | 163 | 161 |
| | Kototabang | 2.66 | 2.88 | 9.21 | 5.78 | 25.9 | 20.7 | 12.3 | 50.5 | 18.7 | 7.15 | 6.72 | 21.9 | 22.4 | 14.7 | 30.2 | 4764 | 10.7 | 13.6 |
| | Bandung | 29.3 | 98.8 | 75.9 | 52.6 | 32.9 | 62.6 | 61.0 | 94.3 | 104 | 130 | 83.7 | 93.0 | 112 | 111 | 113 | 114 | 157 | 120 |
| | Maros | | | | | | | | | 26.9 | 41.2 | 27.0 | 33.8 | 34.5 | 27.2 | 19.9 | 51.4 | 106 | 12.0 |
| Japan | Rishiri | 26.2 | 16.0 | 19.2 | 12.9 | 16.2 | 18.1 | 22.6 | 22.9 | 19.5 | 18.7 | 16.8 | 17.3 | 13.3 | 15.1 | 12.9 | 14.5 | 13.5 | 20.9 |
| | Ochiishi | | | | 5.98 | 7.64 | 6.17 | 15.6 | 6.79 | 4.71 | 13.3 | 11.6 | 8.98 | 10.7 | 10.3 | 9.05 | 9.45 | 5.70 | 5.24 |
| | Tappi | 10.1 | 13.8 | 19.6 | 18.6 | 22.9 | 19.6 | 18.2 | 18.7 | 15.0 | 14.0 | 23.3 | 19.4 | 16.3 | 20.4 | 27.2 | 14.5 | 18.8 | 17.9 |
| | Sado-seki | 18.1 | 19.2 | 20.7 | 17.6 | 15.5 | 20.9 | 21.0 | 29.3 | 22.2 | 12.9 | 16.2 | 20.2 | 20.1 | 28.6 | 25.6 | 16.7 | 16.0 | 25.2 |
| | Happo | 31.0 | 25.3 | 20.2 | 15.7 | 25.6 | 32.3 | 24.7 | 25.8 | 16.6 | 22.9 | 15.4 | 18.6 | 21.5 | 23.8 | 19.8 | 17.6 | 11.7 | 13.5 |
| | Ijira | 63.8 | 39.4 | 60.4 | 53.6 | 50.2 | 52.1 | 64.5 | 46.8 | 40.6 | 52.4 | 46.9 | 43.4 | 42.2 | 36.6 | 40.8 | 42.3 | 45.1 | 36.4 |
| | Oki | 23.5 | 18.4 | 19.5 | 14.1 | 15.3 | 20.8 | 17.8 | 18.3 | 17.4 | 19.1 | 25.8 | 28.6 | 22.0 | 24.4 | 14.7 | 10.2 | 21.9 | 17.6 |
| | Banryu | 18.2 | 24.6 | 23.4 | 21.9 | 19.5 | 28.1 | 29.1 | 28.4 | 24.3 | 28.3 | 31.8 | 22.5 | 25.9 | 27.9 | 26.2 | 21.8 | 27.4 | 24.0 |
| | Yusuhara | 14.2 | 10.7 | 17.8 | 17.1 | 19.0 | 20.6 | 23.8 | 17.7 | 16.5 | 17.1 | 16.3 | 16.4 | 23.0 | 17.8 | 17.3 | 12.3 | 16.6 | 56.9 |
| | Hedo | 21.0 | 9.52 | 37.6 | 15.2 | 30.6 | 23.6 | 15.9 | 20.2 | 12.0 | 12.7 | 24.6 | 16.1 | 53.5 | 16.0 | 20.2 | 19.4 | 14.7 | 11.4 |
| | Ogasawara | 4.62 | 8.70 | 7.18 | 5.07 | 5.96 | 7.10 | 7.27 | 12.1 | 5.74 | 8.07 | 9.82 | 5.88 | 8.14 | 7.64 | 5.94 | 4.19 | 5.59 | 3.80 |
| | Tokyo | | | | | | | | 29.9 | 55.6 | 45.3 | 31.8 | 35.3 | 39.8 | 36.9 | 41.8 | 33.0 | 27.7 | 23.3 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 5.47 | 15.3 | 14.0 | 3.13 | *** | *** | *** | *** | *** | 7.17 | 3.53 | ** |
| Malaysia | Petaling Jaya | 149 | 179 | 43.0 | 37.1 | 39.4 | 57.3 | 93.3 | 57.7 | 77.9 | 22.5 | 16.2 | 17.5 | 4.40 | 57.8 | 102 | 95.5 | 44.6 | 53.3 |
| | Tanah Rata | 129 | 93.0 | 11.2 | 6.92 | 5.77 | 8.13 | 9.84 | 11.6 | 12.2 | 16.7 | 9.92 | 47.2 | 16.1 | 6.69 | 9.97 | 20.2 | 8.31 | 9.45 |
| | Danum Valley | | | | | | 2.55 | 6.15 | 3.95 | 29.3 | 11.7 | 11.6 | 7.19 | 1.90 | 2.48 | 2.60 | 8.53 | 0.827 | 0.590 |
| | Kuching | | | | | | | | | 19.7 | 23.1 | 9.03 | 23.3 | 23.4 | 11.8 | 34.3 | 24.3 | 13.9 | 13.3 |
| Mongolia | Ulaanbaatar | 10.2 | 8.28 | 13.0 | 14.1 | 3.86 | 8.18 | 10.1 | 11.0 | 8.26 | 10.6 | 8.35 | 7.50 | *** | 9.58 | *** | *** | 6.50 | 7.81 |
| | Terelj | 9.20 | 2.70 | 16.2 | 9.86 | 7.37 | 8.87 | 11.7 | 7.19 | 10.5 | 4.54 | 4.53 | 5.66 | *** | 0.487 | *** | *** | 6.41 | 4.40 |
| Myanmar | Yangon | | | | | | | | *** | *** | 48.9 | 33.3 | 46.9 | 45.6 | 45.8 | 47.6 | 54.3 | 37.4 | 38.2 |
| Philippines | Metro Manila | 143 | 177 | 137 | 52.2 | 76.6 | 71.0 | 109 | 118 | 148 | 79.7 | 142 | 667 | 1218 | 145 | 162 | 215 | 283 | *** |
| | Los Baños | 35.9 | 40.7 | 58.8 | 23.3 | 24.3 | 24.7 | 36.2 | 52.1 | 37.1 | 33.9 | 79.1 | 70.1 | 142 | 53.3 | 116 | 85.6 | 149 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.293 | 29.4 | 53.3 | 66.7 | 16.8 | 3.79 | 19.6 | 20.7 | 49.0 | 58.4 | 34.5 | *** |
| Republic | Kanghwa | 42.0 | 42.7 | 33.0 | 90.6 | 66.4 | 53.8 | 57.9 | 51.5 | 54.8 | 38.6 | 41.6 | 63.8 | 36.9 | 70.5 | 25.7 | 58.3 | 48.6 | 49.6 |
| of Korea | Cheju | 21.3 | 36.0 | 44.0 | 54.1 | 40.4 | 21.6 | 29.5 | 35.9 | 22.1 | 47.0 | 26.8 | 30.2 | 40.1 | 22.9 | 30.4 | 40.9 | 45.2 | 27.3 |
| | Imsil | | 54.9 | 41.9 | 61.0 | 34.0 | 40.5 | 35.5 | 53.7 | 25.5 | 37.6 | 51.2 | 56.3 | 55.4 | 49.4 | 36.7 | 36.4 | 30.2 | 39.2 |
| Russia | Mondy | 3.47 | 7.08 | 6.89 | 6.00 | 4.03 | 2.79 | 1.52 | 10.6 | 2.03 | 2.40 | 1.58 | 0.672 | 2.00 | 0.894 | 0.444 | 1.84 | 1.10 | 1.99 |
| | Listvyanka | 7.29 | 5.34 | 9.66 | 11.3 | 6.74 | 7.50 | 4.82 | 6.35 | 7.40 | 4.18 | 5.99 | 8.22 | 9.17 | 2.74 | 3.83 | 12.3 | 4.56 | 6.50 |
| | Irkutsk | 17.2 | 11.7 | 13.0 | 19.2 | 15.1 | 15.6 | 8.89 | 16.2 | 18.1 | 15.7 | 12.9 | 10.8 | 15.1 | 8.15 | 9.28 | 21.3 | 10.7 | 10.3 |
| | Primorskaya | | | 30.0 | 12.6 | 21.0 | 30.7 | 31.0 | 29.2 | 28.0 | 24.9 | 28.8 | 33.6 | 24.9 | 28.6 | 27.2 | 29.8 | 21.0 | 29.7 |
| Thailand | Bangkok | 47.4 | 42.5 | 60.9 | 51.9 | 45.8 | 87.1 | 89.0 | 91.3 | 95.5 | 134 | 76.5 | 87.3 | 79.4 | 61.6 | 52.9 | 96.7 | 104 | 87.0 |
| | Samutprakarn | 31.1 | | | | 43.5 | 60.8 | 70.8 | 88.1 | 97.8 | 81.5 | 52.9 | 58.5 | 32.5 | 42.1 | 48.2 | 66.3 | 78.4 | 88.1 |
| | Pathumthani | 36.6 | 47.9 | 32.4 | 48.2 | 33.2 | 39.6 | 53.9 | 47.5 | 49.6 | 43.3 | 49.4 | 59.5 | 59.2 | 53.1 | 37.4 | 48.6 | 56.7 | 56.3 |
| | Khanchanaburi | 6.03 | 16.7 | 24.0 | 20.3 | 11.7 | 10.1 | 44.1 | 23.7 | 19.8 | 52.1 | 14.5 | 25.2 | 21.4 | 10.2 | 13.7 | 11.7 | 17.2 | 16.6 |
| | Mae Hia | | 17.1 | 27.3 | 12.8 | 18.1 | 30.1 | 21.6 | 17.7 | 25.6 | 21.2 | 22.5 | 21.9 | 21.8 | 27.7 | 14.1 | 13.1 | 21.8 | 32.3 |
| | Sakaerat | | | | | | | 27.5 | 25.4 | 36.4 | 28.8 | 40.0 | 36.7 | 29.0 | 34.4 | 18.0 | 43.3 | 36.8 | 39.4 |
| Vietnam | Hanoi | 34.5 | 45.7 | 78.6 | 87.4 | 83.0 | 174 | 56.2 | 80.1 | 69.4 | 81.4 | 64.8 | 95.9 | 108 | 104 | 113 | 82.6 | 102 | 109 |
| | Hoa Binh | 15.2 | 27.8 | 45.9 | 48.5 | 75.0 | 68.5 | 42.7 | 41.4 | 33.8 | 42.6 | 38.8 | 48.9 | 57.4 | 50.7 | 59.5 | 62.0 | 81.8 | 37.8 |
| | Cuc Phuong | | | | | | | | | | 14.3 | 16.4 | 35.5 | 48.3 | 48.5 | 34.9 | 43.8 | 38.9 | 19.5 |
| | Da Nang | | | | | | | | | | 40.0 | 14.6 | 78.3 | 35.8 | 57.0 | 32.2 | 16.5 | 14.8 | 46.8 |
| | Can Tho | | | | | | | | | | | | | | | 33.7 | 46.9 | 38.0 | 41.0 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 46.6 | 41.8 | 73.6 | 132 |
| | Yen Bai | | | | | | | | | | | | | | | | 46.1 | 166 | 80.5 |

Terms and abbreviations are given in Table 3.5.

**Table 3.88 Annual $Na^+$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | *** | *** | 1.75 | 11.3 | 18.8 | 9.22 | 5.74 | 4.54 | 5.90 | 4.16 | 11.9 | 6.92 | 5.40 | 6.14 |
| China | Guanyinqiao | 12.8 | 8.11 | 8.01 | 4.85 | 10.1 | 8.99 | 6.66 | 7.69 | | | | | | | | | | |
| | Nanshan | 9.73 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 7.06 | 4.48 | 7.38 | 7.99 | 6.10 | 7.48 | 9.01 | 4.40 | 7.85 | 5.38 |
| | Jinyunshan | | 7.25 | 9.48 | 6.15 | 18.7 | 22.3 | 7.95 | 10.2 | 12.5 | 8.45 | 8.00 | 5.19 | 6.32 | 4.41 | 6.70 | 2.87 | 3.10 | 3.74 |
| | Shizhan | 24.7 | 59.8 | 85.7 | 88.1 | 11.5 | 8.18 | 21.8 | 8.22 | 9.41 | 7.91 | 3.35 | 11.7 | 2.20 | 60.9 | 78.1 | 67.3 | 22.2 | 16.6 |
| | Weishuiyuan | 30.8 | 15.1 | 48.0 | 147 | 10.9 | 9.01 | 21.1 | | | | | | | | | | | |
| | Jiwozi | 19.8 | 33.1 | 24.2 | 62.2 | 25.5 | 21.6 | 15.4 | 8.58 | 35.5 | 15.8 | 7.47 | 7.63 | 17.3 | 72.8 | 70.9 | 41.3 | 3.09 | 17.1 |
| | Hongwen | 36.1 | 3.20 | 87.2 | 45.2 | 53.7 | 87.4 | 65.6 | 32.4 | 21.7 | 18.1 | 29.6 | 15.2 | 15.0 | 20.1 | 22.3 | 18.8 | 48.2 | 19.2 |
| | Xiaoping | 13.6 | 31.7 | 35.6 | 43.6 | 25.5 | 28.3 | 54.5 | 13.0 | 44.9 | 18.5 | 28.6 | 16.6 | 10.9 | 23.9 | 12.0 | 17.0 | 12.1 | 4.64 |
| | Xiang Zhou | 85.4 | 49.0 | 71.9 | 67.5 | 96.6 | 52.0 | 54.3 | 27.9 | 97.5 | 80.7 | 36.8 | 40.7 | 69.7 | 131 | 51.4 | 75.7 | 52.8 | 99.5 |
| | Zhuxiandong | 55.5 | 70.7 | 71.4 | 63.2 | 120 | 64.7 | 20.0 | *** | 94.1 | 71.5 | 37.0 | 51.5 | *** | *** | *** | 107 | 80.4 | 47.7 |
| Indonesia | Jakarta | 82.6 | 48.8 | 55.6 | 43.8 | 54.6 | 49.4 | 19.3 | 34.4 | 17.1 | 14.5 | 16.8 | 11.6 | 34.5 | 37.7 | 67.8 | 5.65 | 41.5 | 12.8 |
| | Serpong | *** | 38.2 | 63.2 | 24.2 | 28.7 | 13.2 | 12.0 | 23.7 | 24.8 | 13.7 | 11.9 | 8.36 | 9.71 | 32.5 | 54.1 | 25.9 | 42.1 | 38.7 |
| | Kototabang | *** | 5.46 | 11.3 | 30.2 | 23.0 | 12.5 | 7.75 | 24.0 | 13.2 | 16.3 | 12.4 | 14.3 | 25.4 | 18.0 | 14.2 | 1.95 | 45.7 | 8.43 |
| | Bandung | *** | 52.7 | 22.0 | 11.4 | 9.66 | 20.9 | 24.0 | 13.1 | 20.1 | 31.6 | 25.4 | 18.7 | 22.5 | 31.9 | 26.3 | 17.3 | 30.3 | 35.9 |
| | Maros | | | | | | | | | 47.5 | 43.0 | 35.3 | 54.1 | 48.8 | 77.7 | 80.5 | 9.10 | 233 | 240 |
| Japan | Rishiri | 250 | 130 | 188 | 125 | 217 | 195 | 142 | 126 | 204 | 185 | 173 | 171 | 343 | 234 | 168 | 153 | 90.6 | 194 |
| | Ochiishi | | | | 155 | 233 | 171 | 277 | 161 | 125 | 287 | 252 | 126 | 239 | 446 | 81.5 | 147 | 158 | 183 |
| | Tappi | 156 | 145 | 219 | 162 | 292 | 270 | 278 | 247 | 162 | 266 | 177 | 171 | 166 | 275 | 187 | 264 | 206 | 213 |
| | Sado-seki | 275 | 345 | 384 | 106 | 208 | 332 | 283 | 264 | 219 | 333 | 437 | 213 | 319 | 517 | 397 | 283 | 175 | 189 |
| | Happo | 17.2 | 14.6 | 8.85 | 11.8 | 18.4 | 21.1 | 11.4 | 7.29 | 6.77 | 12.1 | 9.86 | 10.3 | 19.2 | 10.8 | 13.0 | 13.1 | 11.8 | 15.5 |
| | Ijira | 53.5 | 66.4 | 75.6 | 39.4 | 74.0 | 34.9 | 30.7 | 47.1 | 34.5 | 39.0 | 50.0 | 42.3 | 55.2 | 41.3 | 47.5 | 49.6 | 39.1 | 42.7 |
| | Oki | 479 | 394 | 570 | 296 | 416 | 791 | 315 | 319 | 360 | 422 | 594 | 737 | 462 | 705 | 574 | 437 | 505 | 482 |
| | Banryu | 45.2 | 140 | 104 | 142 | 197 | 119 | 130 | 100 | 91.6 | 171 | 139 | 155 | 111 | 140 | 132 | 133 | 150 | 129 |
| | Yusuhara | 42.6 | 24.5 | 67.8 | 40.7 | 95.8 | 58.5 | 37.5 | 32.1 | 18.8 | 24.9 | 21.8 | 41.8 | 55.1 | 24.6 | 18.3 | 69.8 | 21.9 | 126 |
| | Hedo | 1320 | 341 | 1050 | 599 | 1550 | 800 | 351 | 349 | 243 | 250 | 670 | 360 | 1186 | 366 | 335 | 552 | 365 | 597 |
| | Ogasawara | 277 | 189 | 314 | 351 | 146 | 199 | 163 | 209 | 144 | 315 | 386 | 262 | 179 | 178 | 201 | 486 | 105 | 298 |
| | Tokyo | | | | | | | | 37.3 | 36.2 | 40.7 | 28.7 | 52.3 | 48.2 | 36.7 | 34.2 | 29.6 | 23.2 | 51.5 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 5.04 | 3.32 | 4.86 | 1.66 | *** | *** | *** | *** | *** | 2.56 | 0.713 | ** |
| Malaysia | Petaling Jaya | 17.0 | 11.4 | 13.5 | 17.0 | 17.0 | 18.9 | 17.1 | 10.9 | 15.8 | 13.6 | 17.6 | 16.5 | 13.1 | 15.3 | 18.7 | 23.3 | 21.1 | 18.9 |
| | Tanah Rata | 5.94 | 5.05 | 4.56 | 5.70 | 4.42 | 19.2 | 3.93 | 4.57 | 4.73 | 4.87 | 3.15 | 6.56 | 4.29 | 6.02 | 8.17 | 7.36 | 6.44 | 7.45 |
| | Danum Valley | | | | | | 5.59 | 16.9 | 12.4 | 9.65 | 19.8 | 32.7 | 20.9 | 8.49 | 16.5 | 15.4 | 10.9 | 9.87 | 7.47 |
| | Kuching | | | | | | | | | 23.1 | 34.3 | 31.0 | 42.1 | 19.8 | 31.0 | 33.8 | 56.9 | 71.7 | 35.5 |
| Mongolia | Ulaanbaatar | 1.55 | 1.51 | 1.12 | 1.14 | 0.483 | 1.08 | 1.58 | 0.660 | 0.556 | 1.11 | 0.535 | 0.924 | *** | 12.1 | *** | *** | 27.6 | 3.50 |
| | Terelj | 1.34 | 1.41 | 4.15 | 1.40 | 1.31 | 2.83 | 2.68 | 1.74 | 1.13 | 0.843 | 1.44 | 0.873 | *** | 1.54 | *** | *** | 21.9 | 1.42 |
| Myanmar | Yangon | | | | | | | | *** | *** | 55.7 | 29.3 | 47.2 | 56.7 | 42.6 | 49.6 | 21.3 | 34.3 | 42.2 |
| Philippines | Metro Manila | 123 | 470 | 43.3 | 40.5 | 35.3 | 37.9 | 46.3 | 70.8 | 58.7 | 76.5 | 59.7 | 78.2 | 74.6 | 98.3 | 64.4 | 58.5 | 43.7 | *** |
| | Los Baños | 91.7 | 67.6 | 35.9 | 24.6 | 20.9 | 28.3 | 50.5 | 54.4 | 36.2 | 50.5 | 46.9 | 46.3 | 46.7 | 54.5 | 32.0 | 27.4 | 39.3 | *** |
| | Mt.Sto.Tomas | | | | | | | 1.21 | 19.2 | 25.9 | 39.1 | 22.7 | 19.9 | 58.9 | 29.4 | 23.0 | 53.2 | 65.7 | *** |
| Republic | Kanghwa | 62.9 | 47.5 | 40.6 | 40.0 | 28.5 | 27.3 | 31.5 | 39.1 | 60.8 | 57.1 | 42.4 | 52.8 | 37.9 | 26.6 | 18.4 | 26.5 | 23.8 | 16.3 |
| of Korea | Cheju | 161 | 83.2 | 59.3 | 60.3 | 64.9 | 59.3 | 95.8 | 126 | 112 | 55.7 | 103 | 163 | 449 | 184 | 139 | 147 | 442 | 187 |
| | Imsil | | 20.0 | 38.3 | 42.7 | 21.6 | 27.0 | 22.0 | 20.2 | 27.3 | 53.7 | 79.2 | 55.9 | 72.6 | 36.9 | 32.8 | 33.9 | 28.4 | 27.5 |
| Russia | Mondy | 0.560 | 0.726 | 0.392 | 0.927 | 0.693 | 0.436 | 0.643 | 1.10 | 0.379 | 0.270 | 0.253 | 0.283 | 0.455 | 0.449 | 0.277 | 0.219 | 0.306 | 0.493 |
| | Listvyanka | 2.02 | 1.67 | 1.37 | 2.76 | 2.57 | 1.36 | 0.870 | 1.05 | 0.972 | 1.19 | 1.18 | 2.59 | 1.44 | 1.86 | 1.34 | 0.989 | 0.883 | 1.03 |
| | Irkutsk | 4.73 | 3.88 | 2.78 | 3.01 | 3.68 | 3.04 | 3.58 | 4.75 | 5.29 | 8.06 | 6.91 | 5.52 | 4.41 | 3.55 | 3.35 | 3.71 | 3.57 | 4.01 |
| | Primorskaya | | | 19.3 | 10.9 | 15.6 | 16.0 | 10.5 | 19.6 | 12.7 | 11.0 | 16.1 | 8.48 | 21.3 | 18.4 | 10.1 | 28.7 | 23.3 | 16.5 |
| Thailand | Bangkok | 7.95 | 9.78 | 20.9 | 10.6 | 12.3 | 25.6 | 13.8 | 11.2 | 17.3 | 20.3 | 17.8 | 14.0 | 10.9 | 16.0 | 9.26 | 12.7 | 17.9 | 9.28 |
| | Samutprakarn | 9.91 | | | | 20.8 | 32.2 | 20.8 | 22.8 | 26.8 | 19.9 | 35.0 | 12.0 | 7.51 | 28.2 | 12.5 | 13.5 | 16.1 | 12.9 |
| | Pathumthani | 10.4 | 10.9 | 9.15 | 7.84 | 8.72 | 8.32 | 12.0 | 7.97 | 9.95 | 7.34 | 13.1 | 9.16 | 22.0 | 7.04 | 5.62 | 7.42 | 6.85 | 6.60 |
| | Khanchanaburi | 8.55 | 17.1 | 18.3 | 16.7 | 12.5 | 13.7 | 17.3 | 12.0 | 18.1 | 19.0 | 5.05 | 14.5 | 23.2 | 8.19 | 6.28 | 6.46 | 11.0 | 5.54 |
| | Mae Hia | | 4.27 | 14.2 | 2.60 | 3.52 | 1.31 | 5.02 | 2.75 | 3.35 | 2.83 | 3.17 | 5.17 | 4.22 | 8.07 | 1.93 | 3.34 | 5.21 | 7.58 |
| | Sakaerat | | | | | | | 5.30 | 6.17 | 7.24 | 3.44 | 5.22 | 6.10 | 4.18 | 4.27 | 3.78 | 6.36 | 4.36 | 3.53 |
| Vietnam | Hanoi | 22.8 | 25.9 | 8.41 | 14.2 | 12.7 | 31.2 | 16.6 | 13.6 | 21.7 | 14.8 | 9.00 | 11.2 | 7.54 | 15.0 | 12.0 | 11.5 | 18.9 | 33.9 |
| | Hoa Binh | 24.1 | 21.8 | 3.34 | 3.98 | 7.16 | 17.0 | 6.94 | 6.23 | 6.08 | 4.60 | 6.65 | 4.32 | 5.81 | 8.29 | 4.12 | 6.14 | 6.33 | 7.56 |
| | Cuc Phuong | | | | | | | | | | 25.5 | 19.8 | 25.2 | 40.4 | 50.7 | 18.2 | 12.8 | 24.6 | 39.3 |
| | Da Nang | | | | | | | | | | 281 | 69.9 | 255 | 106 | 333 | 182 | 151 | 179 | 182 |
| | Can Tho | | | | | | | | | | | | | | | 28.4 | 64.8 | 21.0 | 18.3 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 47.9 | 49.1 | 34.4 | 59.8 |
| | Yen Bai | | | | | | | | | | | | | | | | 8.18 | 16.3 | 8.81 |

Terms and abbreviations are given in Table 3.5.

**Table 3.89 Annual $K^+$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | 0.682 | *** | 1.41 | 5.00 | 19.0 | 1.98 | 1.59 | 1.47 | 1.23 | 1.42 | 4.20 | 2.18 | 2.70 | 1.68 |
| China | Guanyinqiao | 15.3 | 14.0 | 15.3 | 10.9 | 15.1 | 13.4 | 10.6 | 11.4 | | | | | | | | | | |
| | Nanshan | 20.5 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 11.6 | 8.23 | 9.78 | 7.60 | 6.64 | 13.1 | 13.2 | 7.30 | 5.91 | 5.84 |
| | Jinyunshan | | 31.6 | 16.5 | 10.6 | 17.8 | 16.6 | 13.6 | 11.1 | 11.6 | 9.56 | 10.2 | 8.80 | 7.69 | 6.19 | 6.59 | 4.38 | 4.10 | 4.56 |
| | Shizhan | 14.8 | 15.3 | 14.1 | 23.9 | 5.75 | 7.85 | 8.67 | 10.2 | 5.11 | 6.03 | 14.9 | 8.83 | 2.23 | 12.4 | 156 | 3.16 | 1.56 | 2.65 |
| | Weishuiyuan | 15.5 | 5.19 | 17.8 | 26.5 | 5.25 | 5.52 | 10.6 | | | | | | | | | | | |
| | Jiwozi | 14.8 | 9.11 | 5.99 | 13.0 | 8.65 | 10.0 | 4.88 | 2.80 | 12.7 | 8.58 | 5.64 | 7.07 | 3.80 | 6.64 | 9.33 | 2.96 | 1.69 | 6.59 |
| | Hongwen | 7.56 | 3.06 | 6.73 | 5.63 | 7.70 | 8.65 | 7.14 | 5.03 | 2.00 | 1.66 | 3.42 | 1.68 | 2.64 | 2.67 | 1.60 | 6.08 | 9.45 | 18.8 |
| | Xiaoping | 4.40 | 11.3 | 8.17 | 8.39 | 9.96 | 8.06 | 31.7 | 7.63 | 20.3 | 2.64 | 2.94 | 4.29 | 4.48 | 3.29 | 1.98 | 13.1 | 10.3 | 8.37 |
| | Xiang Zhou | 13.4 | 8.00 | 30.4 | 9.91 | 10.3 | 3.13 | 12.5 | 11.9 | 4.65 | 4.23 | 4.10 | 4.71 | 14.0 | 20.0 | 11.5 | 6.31 | 8.63 | 4.87 |
| | Zhuxiandong | 11.0 | 15.1 | 20.8 | 11.6 | 28.9 | 5.95 | 2.32 | *** | 10.4 | 4.04 | 6.10 | 6.78 | *** | *** | *** | 13.3 | 13.7 | 4.08 |
| Indonesia | Jakarta | *** | 30.1 | 17.8 | 15.0 | 15.2 | 12.2 | 11.9 | 24.3 | 6.03 | 3.46 | 4.72 | 2.26 | 7.79 | 6.61 | 11.5 | 35.2 | 20.7 | 3.10 |
| | Serpong | *** | 11.3 | 9.89 | 17.0 | 8.26 | 5.09 | 7.14 | 5.56 | 5.24 | 2.36 | 4.57 | 2.61 | 3.87 | 11.4 | 16.3 | 13.8 | 14.2 | 12.1 |
| | Kototabang | *** | 1.59 | 9.16 | 62.6 | 13.2 | 9.57 | 5.69 | 23.3 | 8.42 | 24.8 | 10.5 | 8.69 | 14.6 | 40.9 | 25.8 | 12387 | 24.9 | 4.54 |
| | Bandung | *** | 32.7 | 5.19 | 6.63 | 2.95 | 8.15 | 6.31 | 4.01 | 5.38 | 11.0 | 11.0 | 7.30 | 7.01 | 18.7 | 11.4 | 7.11 | 7.79 | 8.10 |
| | Maros | | | | | | | | | 17.5 | 12.6 | 6.71 | 6.74 | 8.57 | 7.41 | 52.7 | 4427 | 29.7 | 14.4 |
| Japan | Rishiri | 7.66 | 3.71 | 4.86 | 3.47 | 5.68 | 4.89 | 4.85 | 3.65 | 5.44 | 4.54 | 4.59 | 4.24 | 7.51 | 5.40 | 4.23 | 3.95 | 2.69 | 5.63 |
| | Ochiishi | | | | 3.62 | 5.23 | 4.34 | 7.64 | 3.97 | 2.78 | 6.47 | 6.68 | 3.02 | 5.89 | 9.91 | 2.14 | 4.00 | 3.91 | 4.48 |
| | Tappi | 3.82 | 3.55 | 5.41 | 3.97 | 7.28 | 6.19 | 6.86 | 5.97 | 4.42 | 6.62 | 5.45 | 4.96 | 4.66 | 6.65 | 4.74 | 6.20 | 5.46 | 5.33 |
| | Sado-seki | 6.80 | 7.95 | 9.30 | 2.78 | 5.48 | 7.60 | 7.20 | 6.84 | 7.31 | 8.26 | 11.1 | 6.18 | 8.58 | 12.1 | 10.6 | 8.40 | 7.54 | 5.95 |
| | Happo | 1.76 | 1.50 | 1.03 | 0.942 | 1.55 | 2.14 | 1.42 | 1.41 | 0.962 | 1.58 | 0.934 | 1.38 | 1.73 | 1.54 | 1.83 | 1.53 | 1.12 | 1.17 |
| | Ijira | 7.91 | 9.09 | 5.57 | 3.69 | 3.75 | 2.39 | 2.77 | 2.60 | 1.43 | 1.95 | 1.64 | 1.64 | 1.74 | 1.60 | 1.86 | 2.19 | 1.57 | 1.68 |
| | Oki | 12.7 | 10.9 | 15.0 | 8.70 | 13.6 | 20.4 | 9.16 | 10.6 | 13.2 | 11.3 | 14.7 | 19.5 | 11.9 | 17.8 | 13.8 | 10.5 | 12.2 | 11.5 |
| | Banryu | 2.12 | 4.89 | 3.76 | 4.36 | 5.25 | 4.76 | 4.37 | 3.89 | 3.22 | 5.20 | 7.98 | 4.85 | 3.93 | 4.71 | 4.02 | 3.70 | 4.17 | 3.54 |
| | Yusuhara | 2.15 | 1.05 | 2.37 | 1.30 | 3.72 | 2.27 | 2.15 | 1.51 | 0.928 | 1.59 | 1.52 | 1.58 | 3.25 | 0.962 | 2.47 | 2.31 | 1.39 | 4.74 |
| | Hedo | 26.3 | 7.57 | 24.3 | 14.0 | 43.7 | 20.2 | 8.77 | 8.95 | 6.23 | 6.49 | 16.4 | 8.73 | 30.2 | 8.82 | 8.08 | 12.8 | 8.22 | 13.0 |
| | Ogasawara | 7.10 | 7.37 | 8.21 | 7.82 | 3.59 | 4.68 | 4.01 | 4.97 | 4.36 | 7.61 | 9.32 | 6.42 | 4.26 | 4.60 | 4.79 | 12.8 | 2.56 | 6.84 |
| | Tokyo | | | | | | | | 1.51 | 2.12 | 1.90 | 1.64 | 1.79 | 1.45 | 1.14 | 1.13 | 1.05 | 0.868 | 1.42 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 2.49 | 2.37 | 2.82 | 0.168 | *** | *** | *** | *** | *** | 1.61 | 0.451 | ** |
| Malaysia | Petaling Jaya | 6.06 | 4.39 | 3.37 | 9.25 | 4.91 | 6.99 | 6.23 | 2.97 | 4.45 | 4.47 | 5.26 | 4.71 | 4.53 | 4.07 | 5.46 | 6.39 | 6.27 | 4.83 |
| | Tanah Rata | 3.41 | 2.40 | 2.21 | 2.15 | 3.68 | 2.57 | 1.74 | 1.92 | 1.70 | 3.05 | 2.60 | 6.70 | 4.78 | 4.85 | 4.69 | 6.35 | 2.88 | 5.82 |
| | Danum Valley | | | | | | 1.47 | 3.05 | 3.22 | 7.58 | 5.39 | 7.67 | 6.56 | 3.59 | 3.22 | 6.15 | 4.83 | 3.02 | 3.83 |
| | Kuching | | | | | | | | | 2.77 | 3.24 | 3.02 | 3.95 | 3.51 | 2.85 | 11.9 | 6.37 | 6.40 | 5.48 |
| Mongolia | Ulaanbaatar | 0.771 | 0.770 | 0.679 | 1.01 | 0.237 | 0.651 | 0.968 | 0.161 | 0.435 | 0.577 | 0.416 | 0.650 | *** | 0.598 | *** | *** | 0.0990 | 0.207 |
| | Terelj | 0.935 | 0.337 | 2.50 | 1.28 | 0.970 | 1.59 | 1.93 | 0.703 | 1.33 | 0.455 | 0.703 | 0.719 | *** | 0.725 | *** | *** | 0.754 | 0.358 |
| Myanmar | Yangon | | | | | | | | *** | *** | 19.4 | 4.71 | 5.21 | 17.4 | 7.17 | 13.5 | 32.2 | 7.30 | 29.4 |
| Philippines | Metro Manila | 62.6 | 53.1 | 29.4 | 5.55 | 8.50 | 9.28 | 34.0 | 18.9 | 37.1 | 15.1 | 45.6 | 85.9 | 117 | 22.7 | 25.7 | 32.7 | 35.8 | *** |
| | Los Baños | 4.58 | 17.3 | 10.9 | 2.94 | 3.74 | 3.62 | 5.53 | 15.2 | 5.51 | 26.3 | 15.4 | 16.3 | 17.1 | 15.3 | 17.0 | 114 | 24.3 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.569 | 7.73 | 3.57 | 9.24 | 5.09 | 3.78 | 5.07 | 3.30 | 4.57 | 9.93 | 3.93 | *** |
| Republic of Korea | Kanghwa | 6.27 | 5.40 | 7.28 | 14.8 | 10.00 | 5.26 | 5.31 | 9.51 | 8.35 | 11.3 | 12.2 | 5.34 | 4.78 | 2.94 | 5.73 | 62.7 | 11.2 | 9.72 |
| | Cheju | 6.69 | 10.4 | 6.55 | 10.5 | 9.11 | 6.02 | 6.80 | 8.94 | 8.78 | 10.1 | 7.98 | 7.04 | 18.8 | 7.65 | 13.5 | 20.1 | 17.0 | 5.31 |
| | Imsil | | 19.3 | 6.50 | 21.0 | 6.90 | 60.6 | 29.9 | 19.2 | 4.79 | 11.7 | 16.8 | 5.81 | 66.5 | 7.72 | 10.8 | 6.61 | 2.84 | 6.70 |
| Russia | Mondy | 0.361 | 0.661 | 0.473 | 0.659 | 0.965 | 0.300 | 0.455 | 0.867 | 0.416 | 0.390 | 0.237 | 0.366 | 0.952 | 0.759 | 0.248 | 0.462 | 0.233 | 0.371 |
| | Listvyanka | 2.06 | 0.855 | 0.800 | 1.42 | 1.30 | 0.520 | 0.479 | 0.521 | 1.32 | 0.646 | 0.543 | 1.16 | 0.686 | 1.21 | 0.868 | 0.702 | 0.540 | 1.15 |
| | Irkutsk | 2.34 | 3.45 | 0.703 | 1.20 | 1.50 | 1.50 | 2.73 | 3.72 | 4.74 | 11.4 | 2.07 | 1.51 | 2.21 | 1.44 | 1.15 | 1.31 | 1.49 | 1.47 |
| | Primorskaya | | | 4.47 | 3.25 | 5.01 | 5.21 | 3.41 | 6.11 | 4.97 | 3.81 | 3.93 | 4.19 | 4.69 | 4.01 | 3.30 | 9.01 | 17.6 | 6.41 |
| Thailand | Bangkok | 3.70 | 4.83 | 4.36 | 3.63 | 1.96 | 4.34 | 4.50 | 2.48 | 3.61 | 4.10 | 5.22 | 3.95 | 2.74 | 2.54 | 1.40 | 2.78 | 2.77 | 1.97 |
| | Samutprakarn | 5.17 | | | | 6.15 | 7.99 | 6.12 | 5.38 | 10.6 | 5.51 | 31.9 | 2.33 | 1.45 | 5.83 | 2.30 | 2.79 | 3.10 | 2.48 |
| | Pathumthani | 2.16 | 2.27 | 1.41 | 1.93 | 1.16 | 1.52 | 2.67 | 2.23 | 2.51 | 2.12 | 3.26 | 3.06 | 2.57 | 2.51 | 1.98 | 1.97 | 2.24 | 2.90 |
| | Khanchanaburi | 7.82 | 7.54 | 5.23 | 3.29 | 1.52 | 1.40 | 6.16 | 1.21 | 2.26 | 2.41 | 1.15 | 4.30 | 3.75 | 1.43 | 1.19 | 0.916 | 1.60 | 1.69 |
| | Mae Hia | | 3.19 | 6.49 | 3.19 | 1.62 | 1.02 | 2.41 | 2.69 | 3.38 | 1.55 | 1.41 | 2.33 | 1.40 | 2.12 | 0.935 | 0.924 | 2.35 | 3.35 |
| | Sakaerat | | | | | | | 0.791 | 1.91 | 2.13 | 1.65 | 1.53 | 1.81 | 1.42 | 1.17 | 1.12 | 2.10 | 1.73 | 0.866 |
| Vietnam | Hanoi | 5.14 | 8.59 | 2.93 | 4.08 | 4.65 | 9.19 | 4.65 | 4.48 | 6.28 | 2.53 | 3.43 | 4.12 | 5.39 | 5.13 | 6.23 | 4.73 | 6.03 | 14.7 |
| | Hoa Binh | 6.74 | 5.19 | 2.40 | 2.50 | 3.06 | 8.29 | 3.76 | 4.36 | 6.40 | 3.69 | 3.94 | 4.23 | 2.88 | 14.3 | 3.61 | 4.63 | 3.73 | 5.46 |
| | Cuc Phuong | | | | | | | | | | 31.7 | 9.28 | 6.14 | 12.2 | 16.3 | 8.04 | 6.83 | 11.2 | 7.63 |
| | Da Nang | | | | | | | | | | 18.6 | 5.76 | 50.9 | 19.3 | 41.5 | 30.5 | 22.6 | 9.24 | 22.1 |
| | Can Tho | | | | | | | | | | | | | | | 13.7 | 15.8 | 10.1 | 10.4 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 20.3 | 17.1 | 16.9 | 35.7 |
| | Yen Bai | | | | | | | | | | | | | | | | 6.09 | 9.03 | 14.9 |

Terms and abbreviations are given in Table 3.5.

**Table 3.90 Annual $Ca^{2+}$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | 0 | *** | 8.64 | 26.4 | 59.9 | 27.1 | 15.4 | 11.9 | 17.4 | 12.9 | 14.8 | 12.8 | 18.2 | 13.4 |
| China | Guanyinqiao | 68.1 | 103 | 94.5 | 64.5 | 153 | 168 | 120 | 97.7 | | | | | | | | | | |
| | Nanshan | 69.5 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 66.0 | 46.1 | 67.6 | 55.5 | 58.5 | 71.2 | 77.4 | 52.5 | 85.4 | 65.1 |
| | Jinyunshan | | 31.9 | 47.7 | 37.8 | 107 | 84.3 | 118 | 90.7 | 82.9 | 73.2 | 67.3 | 55.2 | 59.5 | 35.1 | 38.8 | 28.0 | 46.3 | 65.8 |
| | Shizhan | 128 | 246 | 167 | 329 | 88.5 | 54.4 | 145 | 61.3 | 57.6 | 81.7 | 48.1 | 60.1 | 50.1 | 143 | 57.7 | 53.2 | 14.5 | 39.4 |
| | Weishuiyuan | 136 | 80.0 | 143 | 313 | 88.3 | 39.9 | 104 | | | | | | | | | | | |
| | Jiwozi | 103 | 89.5 | 39.1 | 140 | 89.7 | 46.7 | 51.9 | 34.7 | 116 | 58.9 | 47.0 | 88.9 | 79.3 | 86.2 | 84.4 | 25.8 | 13.6 | 48.3 |
| | Hongwen | 10.2 | 10.7 | 77.0 | 40.0 | 89.1 | 63.7 | 54.4 | 74.0 | 13.3 | 9.71 | 13.9 | 11.9 | 16.1 | 30.8 | 28.8 | 16.6 | 23.3 | 15.2 |
| | Xiaoping | 1.21 | 13.8 | 23.0 | 30.6 | 12.5 | 30.9 | 24.7 | 17.4 | 31.2 | 10.2 | 12.7 | 17.9 | 25.9 | 44.9 | 57.8 | 14.3 | 11.8 | 10.2 |
| | Xiang Zhou | 43.1 | 15.8 | 26.9 | 39.3 | 24.1 | 8.62 | 21.6 | 6.78 | 15.3 | 9.87 | 13.7 | 22.1 | 16.3 | 105 | 28.5 | 22.7 | 25.4 | 19.1 |
| | Zhuxiandong | 44.4 | 36.8 | 32.7 | 35.5 | 31.5 | 18.1 | 15.2 | *** | 31.4 | 11.7 | 30.3 | 21.8 | *** | *** | *** | 40.2 | 40.9 | 25.2 |
| Indonesia | Jakarta | 138 | 79.6 | 67.5 | 164 | 74.8 | 36.9 | 27.9 | 30.2 | 7.48 | 19.6 | 21.9 | 11.0 | 32.6 | 33.0 | 47.4 | 21.0 | 49.8 | 22.9 |
| | Serpong | *** | 21.8 | 24.9 | 14.1 | 15.4 | 9.89 | 11.5 | 14.9 | 18.9 | 6.95 | 13.2 | 9.08 | 8.31 | 32.5 | 37.4 | 34.9 | 40.7 | 38.6 |
| | Kototabang | 9.28 | 1.73 | 8.84 | 17.3 | 14.7 | 7.42 | 6.48 | 13.0 | 12.1 | 14.5 | 11.3 | 12.9 | 20.7 | 20.2 | 9.82 | 4.98 | 8.28 | 28.4 |
| | Bandung | *** | 63.0 | 43.4 | 17.5 | 16.3 | 27.7 | 19.4 | 18.7 | 26.4 | 41.1 | 35.1 | 32.0 | 27.8 | 45.9 | 46.4 | 35.4 | 41.0 | 27.7 |
| | Maros | | | | | | | | | 25.5 | 26.3 | 25.5 | 23.6 | 39.4 | 41.9 | 77.0 | 41.5 | 27.2 | 33.0 |
| Japan | Rishiri | 10.6 | 6.21 | 9.73 | 5.49 | 8.13 | 7.32 | 6.90 | 5.15 | 7.22 | 10.6 | 7.39 | 6.93 | 9.89 | 8.58 | 5.97 | 5.75 | 4.68 | 7.64 |
| | Ochiishi | | | | 4.49 | 7.92 | 7.37 | 10.2 | 6.03 | 3.86 | 8.21 | 8.95 | 4.44 | 6.41 | 12.2 | 3.40 | 5.56 | 4.86 | 5.17 |
| | Tappi | 6.68 | 6.25 | 12.0 | 8.02 | 11.4 | 13.3 | 12.3 | 11.7 | 8.52 | 8.58 | 13.3 | 9.17 | 9.45 | 15.0 | 8.89 | 8.90 | 9.10 | 7.66 |
| | Sado-seki | 12.5 | 15.4 | 13.0 | 5.72 | 7.23 | 11.6 | 15.3 | 13.7 | 10.5 | 11.5 | 17.4 | 11.5 | 14.8 | 16.4 | 13.4 | 9.83 | 11.4 | 8.41 |
| | Happo | 8.49 | 10.1 | 5.21 | 4.72 | 7.29 | 12.4 | 17.3 | 6.77 | 4.44 | 11.0 | 6.30 | 7.89 | 8.29 | 7.37 | 5.67 | 3.82 | 1.84 | 5.54 |
| | Ijira | 18.2 | 12.6 | 11.1 | 8.55 | 7.92 | 7.25 | 8.17 | 8.23 | 4.94 | 7.89 | 9.55 | 6.05 | 7.16 | 7.45 | 5.02 | 6.26 | 5.92 | 6.41 |
| | Oki | 19.4 | 16.1 | 18.1 | 11.0 | 16.7 | 24.4 | 15.9 | 15.8 | 12.1 | 16.3 | 23.3 | 26.2 | 15.7 | 23.8 | 17.3 | 12.8 | 16.2 | 15.0 |
| | Banryu | 6.64 | 10.7 | 6.99 | 5.95 | 9.20 | 7.57 | 18.6 | 9.37 | 9.40 | 9.46 | 11.8 | 8.38 | 8.03 | 7.92 | 7.20 | 7.83 | 9.45 | 7.55 |
| | Yusuhara | 7.55 | 7.09 | 4.17 | 4.04 | 7.32 | 5.55 | 8.25 | 4.66 | 3.71 | 4.07 | 4.44 | 7.71 | 7.28 | 5.37 | 5.64 | 3.11 | 3.13 | 13.5 |
| | Hedo | 29.3 | 10.4 | 28.5 | 15.1 | 40.3 | 25.1 | 17.2 | 13.3 | 8.19 | 8.83 | 21.1 | 10.7 | 32.6 | 11.1 | 10.4 | 14.5 | 9.79 | 15.7 |
| | Ogasawara | 10.1 | 9.81 | 11.5 | 11.2 | 3.93 | 5.25 | 5.68 | 6.83 | 4.27 | 8.71 | 10.8 | 7.21 | 5.44 | 5.82 | 6.10 | 12.9 | 3.00 | 7.51 |
| | Tokyo | | | | | | | | 5.38 | 7.61 | 5.91 | 6.59 | 6.72 | 6.88 | 7.00 | 6.88 | 5.84 | 3.99 | 4.27 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 6.20 | 4.25 | 9.62 | 0.996 | *** | *** | *** | *** | *** | 3.68 | 1.04 | ** |
| Malaysia | Petaling Jaya | 23.4 | 19.4 | 19.8 | 23.8 | 15.1 | 17.3 | 15.2 | 11.9 | 14.7 | 14.8 | 19.0 | 14.3 | 13.5 | 21.9 | 22.3 | 25.1 | 22.2 | 13.1 |
| | Tanah Rata | 7.06 | 8.13 | 8.56 | 10.1 | 5.60 | 5.28 | 3.20 | 3.11 | 3.03 | 3.17 | 2.99 | 6.84 | 6.73 | 8.06 | 7.75 | 5.36 | 5.15 | 6.80 |
| | Danum Valley | | | | | | 1.70 | 3.79 | 1.53 | 1.06 | 3.43 | 9.05 | 3.36 | 2.37 | 4.59 | 4.02 | 4.62 | 2.95 | 4.38 |
| | Kuching | | | | | | | | | 8.19 | 8.35 | 12.1 | 14.6 | 13.0 | 17.2 | 22.4 | 19.2 | 18.9 | 14.8 |
| Mongolia | Ulaanbaatar | 7.41 | 7.86 | 8.91 | 7.88 | 3.60 | 7.49 | 8.63 | 5.19 | 6.66 | 9.63 | 5.23 | 5.54 | *** | 14.7 | *** | *** | 4.65 | 6.68 |
| | Terelj | 3.16 | 1.33 | 6.72 | 3.32 | 3.36 | 3.33 | 5.32 | 2.52 | 3.68 | 3.97 | 5.48 | 2.93 | *** | 6.28 | *** | *** | 1.78 | 1.67 |
| Myanmar | Yangon | | | | | | | | *** | *** | 29.1 | 14.5 | 21.7 | 20.0 | 2.87 | 40.6 | 216 | 12.1 | 29.5 |
| Philippines | Metro Manila | 58.6 | 164 | 25.9 | 19.3 | 24.1 | 25.2 | 36.8 | 36.4 | 32.7 | 24.2 | 34.2 | 47.0 | 61.8 | 40.5 | 38.2 | 43.6 | 51.6 | *** |
| | Los Baños | 18.3 | 119 | 12.3 | 12.5 | 9.41 | 5.82 | 15.4 | 16.1 | 7.10 | 14.7 | 41.6 | 15.2 | 19.8 | 15.3 | 14.5 | 13.7 | 20.7 | *** |
| | Mt.Sto.Tomas | | | | | | | 2.43 | 79.0 | 15.7 | 27.8 | 81.8 | 36.1 | 80.4 | 37.7 | 29.3 | 41.8 | 59.5 | *** |
| Republic | Kanghwa | 29.6 | 15.9 | 9.14 | 17.9 | 12.3 | 8.98 | 17.2 | 11.0 | 16.8 | 6.57 | 11.0 | 6.48 | 6.46 | 7.83 | 3.81 | 5.61 | 3.22 | 3.96 |
| of Korea | Cheju | 14.6 | 6.56 | 9.53 | 10.5 | 8.66 | 7.89 | 10.2 | 13.2 | 8.86 | 4.23 | 6.74 | 7.10 | 13.4 | 8.64 | 4.92 | 6.74 | 18.1 | 9.15 |
| | Imsil | | 7.60 | 9.76 | 10.1 | 8.16 | 6.24 | 10.4 | 18.4 | 5.91 | 4.14 | 9.42 | 10.2 | 6.03 | 3.59 | 3.85 | 3.71 | 2.26 | 2.82 |
| Russia | Mondy | 1.76 | 2.24 | 1.74 | 1.55 | 1.92 | 1.19 | 2.24 | 2.42 | 1.64 | 0.616 | 0.830 | 0.663 | 1.28 | 1.52 | 0.866 | 1.14 | 1.20 | 1.66 |
| | Listvyanka | 5.66 | 3.58 | 4.11 | 7.70 | 7.80 | 3.72 | 2.74 | 3.68 | 3.19 | 3.92 | 4.12 | 7.72 | 4.03 | 3.30 | 3.56 | 3.34 | 2.51 | 3.86 |
| | Irkutsk | 14.9 | 16.3 | 9.53 | 10.9 | 12.1 | 9.53 | 10.7 | 12.7 | 15.5 | 12.6 | 12.1 | 11.4 | 13.9 | 9.12 | 10.3 | 8.88 | 8.18 | 11.3 |
| | Primorskaya | | | 15.1 | 8.16 | 14.9 | 15.6 | 15.6 | 13.8 | 10.7 | 10.1 | 11.3 | 8.52 | 11.2 | 13.0 | 11.6 | 15.2 | 12.1 | 13.3 |
| Thailand | Bangkok | 13.0 | 14.1 | 20.5 | 16.5 | 13.3 | 37.4 | 29.2 | 21.5 | 28.7 | 20.8 | 22.8 | 22.9 | 24.2 | 33.5 | 14.6 | 27.0 | 26.0 | 18.0 |
| | Samutprakarn | 10.8 | | | | 9.88 | 15.7 | 21.0 | 20.5 | 24.0 | 26.2 | 14.6 | 12.5 | 7.99 | 22.2 | 14.5 | 8.98 | 16.8 | 14.4 |
| | Pathumthani | 12.6 | 17.5 | 16.5 | 10.5 | 11.1 | 10.8 | 20.6 | 11.7 | 19.4 | 12.1 | 16.2 | 18.9 | 32.2 | 32.0 | 23.8 | 17.8 | 14.7 | 16.8 |
| | Khanchanaburi | 4.19 | 13.7 | 10.8 | 13.7 | 6.65 | 5.01 | 6.82 | 5.16 | 9.00 | 9.85 | 2.93 | 7.84 | 41.7 | 4.90 | 3.98 | 3.97 | 5.48 | 4.28 |
| | Mae Hia | | 7.53 | 26.5 | 4.62 | 5.50 | 5.36 | 6.72 | 7.53 | 8.60 | 5.98 | 5.14 | 4.20 | 8.64 | 15.1 | 5.13 | 3.07 | 7.99 | 10.6 |
| | Sakaerat | | | | | | | 11.4 | 5.20 | 5.78 | 3.19 | 3.60 | 2.83 | 4.21 | 2.83 | 3.73 | 9.46 | 8.93 | 7.78 |
| Vietnam | Hanoi | 26.2 | 24.1 | 23.8 | 28.2 | 39.3 | 45.9 | 43.4 | 30.0 | 26.7 | 19.3 | 29.2 | 26.6 | 27.0 | 31.6 | 41.2 | 46.8 | 37.8 | 73.2 |
| | Hoa Binh | 24.8 | 23.1 | 20.5 | 20.2 | 36.4 | 32.6 | 27.5 | 18.2 | 28.7 | 12.8 | 28.9 | 22.1 | 21.2 | 34.0 | 17.4 | 16.3 | 18.9 | 43.8 |
| | Cuc Phuong | | | | | | | | | | 56.2 | 63.3 | 59.8 | 61.8 | 46.2 | 39.2 | 28.3 | 52.4 | 53.7 |
| | Da Nang | | | | | | | | | | 18.8 | 15.0 | 36.4 | 28.4 | 49.7 | 60.6 | 65.0 | 105 | 76.0 |
| | Can Tho | | | | | | | | | | | | | | | 23.5 | 59.1 | 19.8 | 20.1 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 49.7 | 62.8 | 30.8 | 51.0 |
| | Yen Bai | | | | | | | | | | | | | | | | 24.1 | 36.9 | 55.4 |

Terms and abbreviations are given in Table 3.5.

**Table 3.91 Annual nss-$Ca^{2+}$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | *** | *** | 8.61 | 26.2 | 59.5 | 26.9 | 15.3 | 11.8 | 17.3 | 12.8 | 14.5 | 12.6 | 18.1 | 13.3 |
| China | Guanyinqiao | 67.9 | 103 | 94.3 | 64.4 | 153 | 168 | 120 | 97.5 | | | | | | | | | | |
| | Nanshan | 69.3 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 65.8 | 46.0 | 67.5 | 55.3 | 58.3 | 71.1 | 77.2 | 52.4 | 85.2 | 65.0 |
| | Jinyunshan | | 31.7 | 47.5 | 37.7 | 107 | 83.9 | 117 | 90.4 | 82.6 | 73.0 | 67.1 | 55.1 | 59.4 | 35.0 | 38.6 | 27.9 | 46.2 | 65.7 |
| | Shizhan | 128 | 244 | 165 | 327 | 88.3 | 54.3 | 145 | 61.2 | 57.4 | 81.5 | 48.0 | 59.8 | 50.1 | 142 | 56.0 | 51.8 | 14.1 | 39.0 |
| | Weishuiyuan | 136 | 79.7 | 142 | 310 | 88.1 | 39.8 | 104 | | | | | | | | | | | |
| | Jiwozi | 102 | 88.8 | 38.6 | 139 | 89.1 | 46.2 | 51.6 | 34.5 | 116 | 58.5 | 46.9 | 88.8 | 78.9 | 84.6 | 82.9 | 24.9 | 13.5 | 47.9 |
| | Hongwen | 9.59 | 10.7 | 75.1 | 39.0 | 88.0 | 61.8 | 53.0 | 73.3 | 12.8 | 9.32 | 13.3 | 11.5 | 15.8 | 30.3 | 28.4 | 16.2 | 22.2 | 14.8 |
| | Xiaoping | 0.938 | 13.1 | 22.3 | 29.6 | 12.0 | 30.3 | 23.5 | 17.1 | 30.2 | 9.85 | 12.1 | 17.6 | 25.6 | 44.4 | 57.6 | 13.9 | 11.6 | 10.1 |
| | Xiang Zhou | 41.3 | 14.8 | 25.3 | 37.9 | 22.0 | 7.62 | 20.4 | 6.25 | 13.2 | 8.13 | 13.0 | 21.2 | 14.8 | 102 | 27.4 | 21.1 | 24.4 | 16.9 |
| | Zhuxiandong | 43.2 | 35.3 | 31.1 | 34.1 | 28.9 | 16.7 | 14.8 | *** | 29.3 | 10.2 | 29.5 | 20.7 | *** | *** | *** | 37.9 | 39.1 | 24.2 |
| Indonesia | Jakarta | 136 | 78.5 | 66.3 | 163 | 73.8 | 35.9 | 27.5 | 29.5 | 7.11 | 19.2 | 21.6 | 10.7 | 31.9 | 32.2 | 46.0 | 20.8 | 48.9 | 22.7 |
| | Serpong | *** | 21.0 | 23.5 | 13.7 | 14.7 | 9.60 | 11.3 | 14.5 | 18.4 | 6.76 | 12.9 | 8.91 | 8.10 | 31.8 | 36.2 | 34.3 | 39.8 | 37.8 |
| | Kototabang | *** | 1.65 | 8.60 | 16.6 | 14.2 | 7.15 | 6.31 | 12.5 | 11.8 | 14.2 | 11.0 | 12.6 | 20.2 | 19.9 | 9.51 | 5.09 | 7.64 | 28.2 |
| | Bandung | *** | 61.8 | 42.9 | 17.2 | 16.1 | 26.9 | 18.9 | 18.4 | 25.9 | 40.4 | 34.6 | 31.6 | 27.4 | 45.2 | 45.9 | 35.1 | 40.4 | 27.0 |
| | Maros | | | | | | | | | 24.4 | 25.3 | 24.8 | 22.4 | 38.4 | 40.3 | 75.2 | 41.4 | 22.8 | 28.1 |
| Japan | Rishiri | 5.14 | 3.40 | 5.66 | 2.82 | 3.46 | 3.15 | 3.87 | 2.44 | 2.81 | 6.74 | 3.69 | 3.24 | 2.58 | 3.58 | 2.39 | 2.51 | 2.72 | 3.45 |
| | Ochiishi | | | | 1.25 | 2.90 | 3.65 | 4.29 | 2.56 | 1.21 | 2.18 | 3.52 | 1.73 | 1.31 | 2.57 | 1.64 | 2.38 | 1.45 | 1.22 |
| | Tappi | 3.36 | 3.25 | 7.30 | 4.53 | 5.19 | 7.62 | 6.26 | 6.34 | 5.02 | 3.02 | 9.58 | 5.57 | 5.23 | 9.14 | 4.98 | 3.36 | 4.65 | 3.06 |
| | Sado-seki | 6.60 | 8.08 | 4.86 | 3.44 | 2.90 | 4.46 | 9.20 | 7.99 | 5.79 | 4.36 | 8.12 | 6.92 | 8.03 | 6.04 | 4.88 | 3.76 | 7.66 | 4.33 |
| | Happo | 8.12 | 9.80 | 5.02 | 4.46 | 6.91 | 12.0 | 17.0 | 6.63 | 4.30 | 10.7 | 6.09 | 7.67 | 7.87 | 7.14 | 5.39 | 3.54 | 1.58 | 5.20 |
| | Ijira | 17.0 | 11.1 | 9.45 | 7.71 | 6.39 | 6.49 | 7.51 | 7.21 | 4.21 | 7.06 | 8.49 | 5.23 | 5.99 | 6.61 | 4.07 | 5.20 | 5.08 | 5.49 |
| | Oki | 9.07 | 7.60 | 6.14 | 4.55 | 7.76 | 7.24 | 9.57 | 8.91 | 4.37 | 7.23 | 10.5 | 10.3 | 5.71 | 8.53 | 4.88 | 3.34 | 5.39 | 4.68 |
| | Banryu | 5.74 | 7.68 | 4.76 | 2.89 | 4.97 | 5.02 | 15.8 | 7.21 | 7.42 | 5.76 | 8.80 | 5.04 | 5.62 | 4.90 | 4.35 | 5.09 | 6.31 | 4.75 |
| | Yusuhara | 6.80 | 6.68 | 2.91 | 3.23 | 5.25 | 4.28 | 7.44 | 3.97 | 3.30 | 3.53 | 4.07 | 6.94 | 6.09 | 4.84 | 5.25 | 1.61 | 2.66 | 10.7 |
| | Hedo | 2.35 | 3.64 | 5.87 | 4.84 | 7.64 | 7.81 | 9.59 | 5.75 | 2.95 | 3.46 | 6.61 | 2.88 | 6.93 | 3.21 | 3.14 | 2.60 | 2.05 | 3.38 |
| | Ogasawara | 4.24 | 5.77 | 4.77 | 3.68 | 1.22 | 1.18 | 2.17 | 2.34 | 1.44 | 1.95 | 2.51 | 1.56 | 1.58 | 1.97 | 1.76 | 2.40 | 0.736 | 1.07 |
| | Tokyo | | | | | | | | 4.58 | 6.83 | 5.03 | 5.97 | 5.59 | 5.84 | 6.21 | 6.14 | 5.20 | 3.49 | 3.16 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 6.09 | 4.18 | 9.51 | 0.960 | *** | *** | *** | *** | *** | 3.63 | 1.02 | ** |
| Malaysia | Petaling Jaya | 23.0 | 19.2 | 19.5 | 23.4 | 14.8 | 16.9 | 14.9 | 11.7 | 14.4 | 14.5 | 18.6 | 14.0 | 13.2 | 21.6 | 21.9 | 24.6 | 21.8 | 12.7 |
| | Tanah Rata | 6.93 | 8.02 | 8.46 | 9.95 | 5.51 | 4.92 | 3.13 | 3.02 | 2.95 | 3.10 | 2.93 | 6.71 | 6.64 | 7.95 | 7.60 | 5.22 | 5.01 | 6.64 |
| | Danum Valley | | | | | | 1.58 | 3.49 | 1.36 | 0.944 | 3.12 | 8.51 | 3.01 | 2.22 | 4.30 | 3.76 | 4.40 | 2.75 | 4.24 |
| | Kuching | | | | | | | | | 7.77 | 7.76 | 11.4 | 13.7 | 12.6 | 16.6 | 21.7 | 18.0 | 17.4 | 14.2 |
| Mongolia | Ulaanbaatar | 7.38 | 7.83 | 8.88 | 7.85 | 3.59 | 7.46 | 8.59 | 5.17 | 6.64 | 9.60 | 5.22 | 5.53 | *** | 14.4 | *** | *** | 4.05 | 6.60 |
| | Terelj | 3.13 | 1.30 | 6.46 | 3.29 | 3.33 | 3.27 | 5.26 | 2.48 | 3.66 | 3.95 | 5.45 | 2.91 | *** | 6.25 | *** | *** | 1.46 | 1.64 |
| Myanmar | Yangon | | | | | | | | *** | *** | 27.9 | 13.9 | 20.7 | 18.8 | 2.13 | 39.6 | 215 | 11.4 | 28.6 |
| Philippines | Metro Manila | 56.0 | 154 | 25.0 | 18.5 | 23.4 | 24.4 | 35.8 | 34.9 | 31.4 | 22.6 | 32.9 | 45.4 | 60.2 | 38.4 | 36.8 | 42.3 | 50.8 | *** |
| | Los Baños | 16.3 | 117 | 11.5 | 12.0 | 8.95 | 5.22 | 14.3 | 14.9 | 6.32 | 13.7 | 40.7 | 14.2 | 18.7 | 14.2 | 13.8 | 13.1 | 19.9 | *** |
| | Mt.Sto.Tomas | | | | | | | 2.40 | 78.7 | 15.1 | 26.9 | 81.4 | 35.7 | 79.1 | 37.0 | 28.8 | 40.7 | 58.0 | *** |
| Republic | Kanghwa | 28.2 | 14.9 | 8.27 | 17.0 | 11.7 | 8.39 | 16.6 | 10.1 | 15.5 | 5.35 | 10.1 | 5.40 | 5.64 | 7.26 | 3.47 | 5.04 | 2.71 | 3.61 |
| of Korea | Cheju | 11.1 | 4.79 | 8.28 | 9.16 | 7.25 | 6.61 | 8.13 | 10.5 | 6.43 | 3.15 | 4.72 | 4.00 | 3.78 | 4.66 | 2.13 | 3.66 | 8.65 | 5.42 |
| | Imsil | | 7.16 | 8.93 | 9.18 | 7.70 | 5.65 | 9.93 | 17.9 | 5.32 | 3.02 | 7.87 | 8.99 | 4.76 | 2.80 | 3.19 | 3.01 | 1.68 | 2.26 |
| Russia | Mondy | 1.75 | 2.22 | 1.73 | 1.53 | 1.90 | 1.18 | 2.23 | 2.40 | 1.63 | 0.610 | 0.824 | 0.657 | 1.27 | 1.51 | 0.860 | 1.13 | 1.20 | 1.65 |
| | Listvyanka | 5.61 | 3.54 | 4.08 | 7.64 | 7.74 | 3.69 | 2.72 | 3.66 | 3.17 | 3.89 | 4.09 | 7.67 | 4.00 | 3.26 | 3.53 | 3.31 | 2.49 | 3.83 |
| | Irkutsk | 14.8 | 16.2 | 9.47 | 10.8 | 12.0 | 9.46 | 10.6 | 12.6 | 15.4 | 12.4 | 11.9 | 11.3 | 13.8 | 9.04 | 10.2 | 8.80 | 8.10 | 11.2 |
| | Primorskaya | | | 14.7 | 7.92 | 14.5 | 15.2 | 15.4 | 13.4 | 10.4 | 9.86 | 11.0 | 8.34 | 10.8 | 12.6 | 11.4 | 14.5 | 11.6 | 12.9 |
| Thailand | Bangkok | 12.9 | 13.9 | 20.0 | 16.2 | 13.0 | 36.8 | 28.9 | 21.3 | 28.3 | 20.3 | 22.4 | 22.6 | 24.0 | 33.2 | 14.4 | 26.7 | 25.6 | 17.8 |
| | Samutprakarn | 10.6 | | | | 9.43 | 15.0 | 20.6 | 20.0 | 23.4 | 25.8 | 13.9 | 12.3 | 7.83 | 21.6 | 14.2 | 8.69 | 16.5 | 14.2 |
| | Pathumthani | 12.3 | 17.3 | 16.3 | 10.3 | 11.0 | 10.6 | 20.4 | 11.6 | 19.2 | 11.9 | 15.9 | 18.7 | 31.8 | 31.9 | 23.7 | 17.7 | 14.5 | 16.6 |
| | Khanchanaburi | 4.02 | 13.4 | 10.4 | 13.4 | 6.38 | 4.72 | 6.44 | 4.90 | 8.61 | 9.44 | 2.82 | 7.53 | 41.2 | 4.72 | 3.85 | 3.83 | 5.24 | 4.16 |
| | Mae Hia | | 7.44 | 26.2 | 4.57 | 5.42 | 5.33 | 6.64 | 7.47 | 8.52 | 5.92 | 5.09 | 4.10 | 8.54 | 15.0 | 5.09 | 3.00 | 7.87 | 10.4 |
| | Sakaerat | | | | | | | 11.2 | 5.07 | 5.62 | 3.12 | 3.50 | 2.73 | 4.13 | 2.75 | 3.66 | 9.32 | 8.83 | 7.70 |
| Vietnam | Hanoi | 25.7 | 23.5 | 23.6 | 27.8 | 39.1 | 45.2 | 43.0 | 29.7 | 26.2 | 19.0 | 29.0 | 26.3 | 26.9 | 31.2 | 40.9 | 46.5 | 37.4 | 72.5 |
| | Hoa Binh | 24.2 | 22.6 | 20.4 | 20.1 | 36.2 | 32.2 | 27.4 | 18.0 | 28.5 | 12.7 | 28.7 | 22.0 | 21.0 | 33.8 | 17.3 | 16.2 | 18.7 | 43.7 |
| | Cuc Phuong | | | | | | | | | | 55.7 | 62.9 | 59.2 | 60.9 | 45.2 | 38.8 | 28.0 | 51.9 | 52.9 |
| | Da Nang | | | | | | | | | | 12.8 | 13.5 | 30.9 | 26.1 | 42.5 | 56.7 | 61.8 | 101 | 72.1 |
| | Can Tho | | | | | | | | | | | | | | | 22.9 | 57.7 | 19.4 | 19.7 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 48.7 | 61.8 | 30.1 | 49.7 |
| | Yen Bai | | | | | | | | | | | | | | | | 23.9 | 36.5 | 55.2 |

Terms and abbreviations are given in Table 3.5.

**Table 3.92 Annual $Mg^{2+}$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | 0.00 | *** | 0.627 | 4.49 | 6.33 | 2.66 | 1.33 | 1.55 | 1.98 | 1.50 | 2.54 | 2.82 | 1.84 | 1.94 |
| China | Guanyinqiao | 9.23 | 8.73 | 8.67 | 4.40 | 12.7 | 13.7 | 10.6 | 10.4 | | | | | | | | | | |
| | Nanshan | 8.87 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 7.15 | 5.81 | 8.75 | 6.98 | 6.94 | 8.44 | 9.92 | 5.85 | 7.22 | 4.96 |
| | Jinyunshan | | 4.09 | 5.41 | 3.56 | 5.39 | 4.63 | 4.78 | 4.61 | 5.62 | 6.10 | 5.64 | 5.20 | 5.85 | 4.99 | 6.52 | 4.17 | 4.73 | 6.01 |
| | Shizhan | 13.2 | 17.6 | 23.7 | 42.7 | 9.18 | 6.69 | 13.6 | 11.3 | 17.5 | 7.34 | 5.04 | 6.55 | 1.36 | 24.0 | 7.34 | 5.49 | 0.819 | 6.45 |
| | Weishuiyuan | 14.2 | 6.13 | 21.1 | 52.0 | 8.99 | 4.77 | 13.3 | | | | | | | | | | | |
| | Jiwozi | 12.1 | 8.58 | 7.09 | 20.7 | 16.9 | 11.2 | 9.51 | 4.88 | 33.8 | 12.7 | 8.28 | 9.37 | 17.3 | 14.5 | 12.3 | 4.97 | 4.66 | 10.0 |
| | Hongwen | 6.40 | 1.86 | 15.1 | 7.76 | 12.2 | 15.4 | 11.6 | 8.32 | 4.65 | 3.01 | 3.06 | 3.56 | 4.34 | 4.71 | 4.82 | 4.26 | 8.65 | 3.87 |
| | Xiaoping | 2.07 | 6.77 | 3.50 | 7.15 | 2.81 | 3.35 | 6.52 | 2.16 | 6.78 | 3.67 | 2.88 | 3.39 | 4.46 | 7.97 | 4.98 | 3.54 | 3.96 | 1.88 |
| | Xiang Zhou | 14.1 | 5.83 | 9.56 | 12.3 | 8.51 | 8.10 | 18.3 | 3.43 | 11.2 | 9.08 | 4.77 | 5.53 | 10.5 | 33.9 | 12.1 | 10.3 | 9.42 | 10.7 |
| | Zhuxiandong | 14.1 | 8.56 | 11.2 | 12.9 | 10.8 | 9.65 | 4.43 | *** | 13.2 | 9.71 | 5.30 | 7.74 | *** | *** | *** | 14.0 | 12.2 | 5.82 |
| Indonesia | Jakarta | 346 | 85.3 | 20.7 | 20.6 | 9.25 | 7.72 | 12.7 | 4.79 | 2.87 | 3.06 | 4.72 | 3.42 | 8.06 | 6.11 | 11.5 | 5.07 | 8.90 | 3.86 |
| | Serpong | *** | 5.67 | 11.3 | 5.76 | 5.84 | 3.09 | 2.78 | 5.33 | 9.76 | 1.83 | 4.40 | 2.59 | 1.80 | 8.97 | 9.31 | 6.84 | 8.96 | 8.01 |
| | Kototabang | *** | 1.25 | 4.63 | 21.1 | 3.76 | 2.06 | 2.82 | 10.6 | 2.48 | 2.92 | 3.67 | 2.08 | 3.69 | 5.09 | 2.27 | 53.7 | 2.57 | 2.63 |
| | Bandung | *** | 10.6 | 4.16 | 2.73 | 2.93 | 4.29 | 4.27 | 3.31 | 10.3 | 11.1 | 11.6 | 8.85 | 6.61 | 14.8 | 15.3 | 11.3 | 9.45 | 7.30 |
| | Maros | | | | | | | | | 7.77 | 6.02 | 5.79 | 9.07 | 17.2 | 11.3 | 37.7 | 74.5 | 5.76 | 5.16 |
| Japan | Rishiri | 28.0 | 15.2 | 21.4 | 14.4 | 25.0 | 22.4 | 16.3 | 15.0 | 24.8 | 21.0 | 20.0 | 18.9 | 37.8 | 26.3 | 18.7 | 17.7 | 10.3 | 22.7 |
| | Ochiishi | | | | 17.3 | 27.3 | 18.2 | 31.1 | 18.6 | 14.5 | 31.4 | 31.0 | 15.1 | 26.6 | 51.0 | 9.28 | 16.9 | 18.0 | 21.3 |
| | Tappi | 18.3 | 16.7 | 26.1 | 19.3 | 34.5 | 30.0 | 32.1 | 27.9 | 19.1 | 28.2 | 20.1 | 19.9 | 18.2 | 32.1 | 21.6 | 28.0 | 23.8 | 24.5 |
| | Sado-seki | 30.9 | 39.3 | 44.0 | 12.7 | 24.1 | 37.7 | 32.7 | 30.3 | 24.0 | 37.6 | 51.6 | 26.4 | 38.1 | 58.2 | 45.8 | 32.3 | 20.8 | 21.6 |
| | Happo | 3.66 | 3.73 | 2.42 | 3.06 | 3.90 | 3.59 | 2.64 | 1.57 | 1.15 | 2.73 | 2.12 | 2.76 | 4.60 | 3.63 | 3.11 | 2.98 | 2.11 | 3.83 |
| | Ijira | 7.75 | 8.93 | 9.34 | 6.42 | 9.43 | 4.51 | 4.63 | 6.23 | 3.92 | 4.80 | 6.22 | 5.19 | 7.27 | 5.70 | 6.00 | 6.40 | 4.94 | 5.38 |
| | Oki | 54.4 | 45.6 | 63.8 | 33.9 | 48.4 | 91.8 | 37.6 | 36.8 | 40.8 | 48.3 | 69.9 | 85.2 | 53.4 | 78.3 | 63.9 | 50.8 | 58.5 | 54.8 |
| | Banryu | 5.22 | 16.3 | 12.1 | 16.3 | 23.0 | 13.9 | 16.3 | 12.5 | 11.3 | 20.4 | 17.7 | 18.3 | 13.5 | 17.2 | 16.4 | 15.7 | 17.3 | 14.6 |
| | Yusuhara | 6.09 | 3.80 | 8.34 | 5.21 | 11.4 | 7.07 | 5.25 | 4.27 | 2.42 | 3.33 | 3.86 | 8.71 | 8.65 | 5.98 | 6.43 | 8.45 | 3.33 | 15.6 |
| | Hedo | 145 | 35.8 | 120 | 68.7 | 162 | 84.3 | 40.7 | 40.0 | 27.9 | 28.6 | 77.2 | 40.9 | 136 | 41.5 | 38.2 | 63.0 | 42.5 | 69.2 |
| | Ogasawara | 38.2 | 23.9 | 43.1 | 43.5 | 15.3 | 21.8 | 18.1 | 23.4 | 17.7 | 36.6 | 45.4 | 30.5 | 21.3 | 21.5 | 23.2 | 54.8 | 12.1 | 35.2 |
| | Tokyo | | | | | | | | 4.56 | 5.17 | 5.13 | 3.98 | 6.65 | 6.18 | 4.89 | 4.58 | 4.02 | 2.97 | 6.30 |
| Lao PDR | Vientiane | | | | *** | *** | *** | 2.47 | 0.977 | 2.18 | 0.131 | *** | *** | *** | *** | *** | 0.564 | 0.130 | ** |
| Malaysia | Petaling Jaya | 4.74 | 4.02 | 3.79 | 2.15 | 2.66 | 2.40 | 2.85 | 1.16 | 1.95 | 1.39 | 2.46 | 2.09 | 1.69 | 2.45 | 4.07 | 3.46 | 2.81 | 1.77 |
| | Tanah Rata | 1.30 | 1.07 | 1.17 | 1.36 | 0.749 | 1.42 | 0.452 | 0.329 | 0.192 | 0.0927 | 0.210 | 0.869 | 0.528 | 0.835 | 0.964 | 0.636 | 0.647 | 0.327 |
| | Danum Valley | | | | | | 0.406 | 1.45 | 1.20 | 1.58 | 1.86 | 3.51 | 2.05 | 0.830 | 1.38 | 1.57 | 1.89 | 0.956 | 1.12 |
| | Kuching | | | | | | | | | 1.24 | 1.84 | 2.12 | 3.45 | 1.04 | 2.42 | 4.10 | 5.35 | 5.37 | 2.75 |
| Mongolia | Ulaanbaatar | 0.814 | 0.897 | 0.636 | 1.10 | 0.488 | 0.783 | 0.825 | 0.597 | 0.568 | 1.21 | 0.455 | 1.51 | *** | 0.576 | *** | *** | 0.968 | 0.489 |
| | Terelj | 0.656 | 0.224 | 1.01 | 0.706 | 1.07 | 0.901 | 1.04 | 0.384 | 0.619 | 0.604 | 0.718 | 1.06 | *** | 0.451 | *** | *** | 0.233 | 0.139 |
| Myanmar | Yangon | | | | | | | | *** | *** | 8.54 | 4.11 | 9.52 | 16.9 | 33.1 | 9.79 | 14.3 | 9.98 | 9.75 |
| Philippines | Metro Manila | 25.5 | 34.4 | 9.72 | 6.60 | 9.47 | 5.86 | 14.7 | 14.5 | 11.1 | 9.69 | 24.4 | 26.1 | 29.1 | 16.0 | 12.2 | 16.0 | 13.3 | *** |
| | Los Baños | 9.78 | 20.1 | 5.00 | 4.18 | 6.25 | 3.84 | 7.65 | 10.7 | 8.80 | 10.8 | 17.0 | 11.3 | 8.96 | 7.77 | 6.88 | 6.86 | 7.28 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.418 | 7.03 | 1.76 | 7.23 | 12.1 | 7.41 | 16.6 | 7.41 | 4.92 | 21.0 | 12.3 | *** |
| Republic | Kanghwa | 10.4 | 6.00 | 5.22 | 4.50 | 4.82 | 5.03 | 5.57 | 5.95 | 4.26 | 6.67 | 5.71 | 4.70 | 4.11 | 2.96 | 1.39 | 2.12 | 0.994 | 1.37 |
| of Korea | Cheju | 19.7 | 11.1 | 7.60 | 7.57 | 8.17 | 10.5 | 10.8 | 9.09 | 8.16 | 6.25 | 6.91 | 11.3 | 41.4 | 16.3 | 9.38 | 8.60 | 42.2 | 15.3 |
| | Imsil | | 2.49 | 3.28 | 3.00 | 2.89 | 2.27 | 2.83 | 4.80 | 1.70 | 4.14 | 7.69 | 3.02 | 4.27 | 2.28 | 1.95 | 2.38 | 1.30 | 1.45 |
| Russia | Mondy | 0.333 | 0.467 | 0.447 | 0.316 | 0.456 | 0.275 | 0.405 | 0.623 | 0.408 | 0.138 | 0.163 | 0.191 | 0.427 | 0.290 | 0.146 | 0.292 | 0.192 | 0.334 |
| | Listvyanka | 1.30 | 0.881 | 1.10 | 1.97 | 1.76 | 0.715 | 0.532 | 0.755 | 0.687 | 0.884 | 0.970 | 1.49 | 0.867 | 0.810 | 0.662 | 0.689 | 0.604 | 0.993 |
| | Irkutsk | 2.66 | 2.60 | 1.71 | 1.97 | 2.64 | 2.24 | 2.06 | 3.00 | 3.40 | 3.25 | 2.53 | 2.40 | 2.88 | 1.77 | 1.43 | 1.60 | 1.91 | 2.36 |
| | Primorskaya | | | 4.73 | 3.60 | 4.87 | 4.18 | 3.43 | 4.25 | 3.46 | 2.68 | 2.88 | 2.66 | 4.08 | 3.53 | 3.99 | 6.49 | 5.09 | 7.57 |
| Thailand | Bangkok | 2.30 | 3.71 | 4.61 | 3.22 | 2.59 | 7.58 | 3.72 | 2.65 | 4.15 | 3.09 | 3.07 | 2.72 | 2.43 | 3.50 | 2.40 | 3.02 | 4.04 | 2.50 |
| | Samutprakarn | 2.33 | | | | 2.36 | 5.57 | 6.57 | 5.03 | 6.91 | 5.57 | 4.14 | 2.52 | 1.46 | 4.97 | 3.09 | 2.26 | 3.24 | 2.83 |
| | Pathumthani | 2.30 | 2.93 | 2.63 | 1.76 | 1.55 | 1.66 | 2.82 | 1.77 | 2.84 | 1.62 | 2.43 | 2.46 | 4.91 | 3.06 | 2.03 | 2.02 | 2.25 | 1.92 |
| | Khanchanaburi | 1.47 | 3.82 | 3.85 | 3.63 | 2.29 | 2.30 | 2.47 | 1.70 | 3.16 | 2.87 | 0.935 | 2.47 | 6.59 | 1.55 | 1.30 | 1.16 | 1.84 | 1.35 |
| | Mae Hia | | 1.19 | 5.22 | 1.68 | 2.10 | 1.43 | 3.44 | 1.16 | 2.29 | 2.87 | 0.526 | 0.367 | 0.936 | 2.15 | 1.01 | 1.05 | 1.15 | 1.69 |
| | Sakaerat | | | | | | | 2.36 | 2.47 | 2.11 | 1.60 | 1.14 | 0.410 | 0.477 | 0.289 | 0.557 | 3.01 | 4.60 | 2.97 |
| Vietnam | Hanoi | 6.27 | 8.94 | 4.18 | 5.77 | 5.98 | 15.2 | 10.5 | 6.91 | 8.27 | 7.70 | 7.02 | 7.41 | 3.87 | 5.42 | 5.83 | 5.85 | 7.28 | 15.1 |
| | Hoa Binh | 8.84 | 8.25 | 2.31 | 3.62 | 4.62 | 9.59 | 8.17 | 5.38 | 3.17 | 2.51 | 7.61 | 4.21 | 4.15 | 5.40 | 3.54 | 3.95 | 3.63 | 3.73 |
| | Cuc Phuong | | | | | | | | | | 9.89 | 7.30 | 8.86 | 14.3 | 23.1 | 8.30 | 7.94 | 16.1 | 18.6 |
| | Da Nang | | | | | | | | | | 30.1 | 14.4 | 34.3 | 15.4 | 43.4 | 23.9 | 16.6 | 24.6 | 25.4 |
| | Can Tho | | | | | | | | | | | | | | | 8.19 | 20.2 | 11.4 | 10.2 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 16.7 | 25.4 | 17.6 | 31.0 |
| | Yen Bai | | | | | | | | | | | | | | | | 4.06 | 5.88 | 3.99 |

Terms and abbreviations are given in Table 3.5.

**Table 3.93 Annual $H^+$ deposition amount from 2000 to 2017**

unit: mmol $m^{-2}y^{-1}$

| Country | Name of sites | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | 2.01 | 0.625 | 0.181 | 0.279 | 2.65 | 0.861 | 1.98 | 1.41 | 1.12 | 0.890 | 0.969 | 0.791 | 0.496 | 0.920 |
| China | Guanyinqiao | 50.5 | 12.1 | 36.4 | 31.7 | 36.0 | 12.1 | 11.6 | 29.3 | | | | | | | | | | |
| | Nanshan | 76.2 | | | | | | | | | | | | | | | | | |
| | Haifu | | | | | | | | | 64.1 | 64.3 | 69.3 | 53.4 | 58.1 | 30.8 | 17.1 | 4.65 | 0.832 | 1.79 |
| | Jinyunshan | | 46.5 | 70.1 | 62.0 | 39.3 | 34.7 | 24.4 | 49.4 | 53.3 | 51.7 | 112 | 77.1 | 82.0 | 71.4 | 61.3 | 25.7 | 12.9 | 8.96 |
| | Shizhan | 1.17 | 0.153 | 0.201 | 1.27 | 0.304 | 1.96 | 1.33 | 1.60 | 0.155 | 0.176 | 0.0965 | 0.352 | 0.217 | 0.0514 | 0.154 | 0.131 | 0.0852 | 0.148 |
| | Weishuiyuan | 0.171 | 0.0335 | 0.216 | 1.02 | 0.489 | 3.09 | 0.460 | | | | | | | | | | | |
| | Jiwozi | 3.14 | 0.120 | 0.142 | 0.543 | 0.791 | 0.227 | 0.318 | 0.0143 | 0.0498 | 0.498 | 3.36 | 1.10 | 0.0295 | 0.412 | 0.0591 | 0.0556 | 0.0875 | 0.103 |
| | Hongwen | 29.0 | 8.75 | 25.4 | 44.8 | 20.6 | 33.8 | 31.4 | 21.8 | 24.3 | 22.2 | 40.7 | 19.0 | 28.6 | 18.5 | 9.48 | 12.9 | 21.5 | 2.46 |
| | Xiaoping | 19.1 | 33.8 | 72.9 | 73.2 | 48.3 | 48.1 | 38.9 | 26.5 | 55.8 | 38.7 | 40.2 | 23.4 | 20.3 | 19.6 | 26.7 | 17.6 | 34.2 | 0.856 |
| | Xiang Zhou | 14.2 | 22.7 | 13.5 | 13.6 | 22.1 | 32.2 | 20.4 | 33.7 | 33.0 | 26.9 | 26.2 | 11.1 | 11.7 | 14.1 | 16.6 | 3.96 | 15.9 | 20.0 |
| | Zhuxiandong | 40.8 | 43.0 | 20.3 | 13.8 | 29.6 | 25.9 | 13.3 | *** | 30.2 | 28.0 | 21.0 | 19.1 | *** | *** | *** | 5.25 | 16.2 | 15.4 |
| Indonesia | Jakarta | 10.4 | 4.68 | 26.5 | 11.3 | 30.0 | 104 | 61.4 | 59.7 | 38.6 | 36.6 | 39.5 | 27.9 | 47.4 | 39.3 | 62.2 | 40.5 | 22.3 | 16.8 |
| | Serpong | *** | 38.0 | 56.6 | 51.6 | 30.5 | 21.1 | 40.1 | 52.0 | 56.7 | 25.9 | 25.0 | 16.4 | 11.1 | 20.1 | 20.8 | 20.1 | 19.2 | 20.3 |
| | Kototabang | 73.0 | 10.3 | 8.78 | 15.6 | 39.0 | 46.0 | 36.6 | 14.7 | 14.9 | 59.9 | 37.9 | 20.2 | 25.7 | 22.5 | 38.0 | 30.9 | 10.9 | 15.3 |
| | Bandung | *** | 26.4 | 88.7 | 16.1 | 8.31 | 16.3 | 9.18 | 23.2 | 15.9 | 13.4 | 20.8 | 6.12 | 7.25 | 9.42 | 12.5 | 8.87 | 22.4 | 10.8 |
| | Maros | | | | | | | | | 7.15 | 15.0 | 16.4 | 16.1 | 5.90 | 13.7 | 16.2 | 14.3 | 11.4 | 11.2 |
| Japan | Rishiri | 12.1 | 10.3 | 14.4 | 9.43 | 13.6 | 17.7 | 27.8 | 23.3 | 10.2 | 19.3 | 20.1 | 24.8 | 23.6 | 24.8 | 19.2 | 18.4 | 16.4 | 16.2 |
| | Ochiishi | | | | 9.53 | 13.4 | 12.0 | 13.8 | 14.5 | 9.86 | 15.2 | 16.0 | 10.7 | 13.3 | 9.94 | 6.55 | 8.23 | 7.28 | 6.21 |
| | Tappi | 19.9 | 24.9 | 27.8 | 31.0 | 37.5 | 30.9 | 25.5 | 25.1 | 21.4 | 24.4 | 31.7 | 28.2 | 24.1 | 17.1 | 26.1 | 15.7 | 18.5 | 20.4 |
| | Sado-seki | 28.7 | 22.5 | 32.5 | 24.2 | 30.4 | 31.5 | 24.9 | 36.5 | 28.5 | 18.4 | 27.0 | 28.8 | 24.1 | 28.7 | 27.8 | 18.9 | 13.9 | 16.0 |
| | Happo | 40.6 | 34.1 | 30.7 | 30.5 | 43.0 | 47.6 | 29.4 | 37.8 | 24.2 | 25.2 | 21.0 | 28.2 | 26.6 | 26.7 | 24.0 | 18.3 | 20.0 | 24.9 |
| | Ijira | 80.7 | 82.9 | 80.5 | 115 | 75.8 | 79.4 | 87.6 | 66.3 | 80.2 | 66.0 | 66.6 | 55.2 | 58.7 | 48.8 | 58.8 | 62.7 | 55.2 | 53.5 |
| | Oki | 27.6 | 21.1 | 29.2 | 27.9 | 22.4 | 36.0 | 26.1 | 26.8 | 27.7 | 21.8 | 31.7 | 28.8 | 34.2 | 34.3 | 23.4 | 20.3 | 20.3 | 14.8 |
| | Banryu | 35.9 | 39.1 | 26.5 | 40.7 | 34.7 | 42.2 | 40.1 | 41.1 | 37.2 | 38.3 | 29.2 | 31.3 | 40.5 | 46.2 | 42.3 | 32.4 | 28.2 | 25.2 |
| | Yusuhara | 54.7 | 31.1 | 40.8 | 52.3 | 42.1 | 52.9 | 45.4 | 36.4 | 47.3 | 35.5 | 40.1 | 39.7 | 51.3 | 41.4 | 46.5 | 41.2 | 38.9 | 80.7 |
| | Hedo | 21.5 | 23.1 | 22.9 | 17.4 | 29.4 | 26.2 | 18.9 | 27.7 | 19.6 | 15.4 | 16.8 | 22.1 | 21.3 | 17.6 | 23.3 | 12.6 | 12.2 | 16.1 |
| | Ogasawara | 11.7 | 14.6 | 10.9 | 12.7 | 8.75 | 31.5 | 16.1 | 14.7 | 16.8 | 11.4 | 10.5 | 6.46 | 7.28 | 7.15 | 12.8 | 9.35 | 9.21 | 10.1 |
| | Tokyo | | | | | | | | 17.6 | 46.2 | 30.6 | 18.6 | 20.7 | 23.5 | 14.2 | 26.7 | 26.8 | 18.4 | 16.3 |
| Lao PDR | Vientiane | | | | 0.0277 | 0.999 | 0.320 | 0.231 | 3.02 | 1.65 | 0.600 | *** | *** | 0.463 | *** | 0.366 | 1.06 | 0.0807 | ** |
| Malaysia | Petaling Jaya | 153 | 173 | 157 | 158 | 142 | 123 | 151 | 83.2 | 140 | 134 | 191 | 250 | 210 | 136 | 142 | 153 | 189 | 96.6 |
| | Tanah Rata | 50.4 | 33.4 | 30.1 | 38.3 | 33.1 | 41.4 | 31.3 | 33.0 | 31.4 | 25.6 | 21.2 | 32.1 | 31.0 | 31.1 | 40.3 | 51.4 | 33.3 | 41.9 |
| | Danum Valley | | | | | | 13.1 | 26.8 | 24.0 | 18.1 | 20.4 | 14.2 | 23.5 | 19.5 | 17.1 | 13.9 | 12.4 | 16.6 | 18.0 |
| | Kuching | | | | | | | | | 23.8 | 25.5 | 24.4 | 17.3 | 18.4 | 21.2 | 16.8 | 21.6 | 40.4 | 23.4 |
| Mongolia | Ulaanbaatar | 0.108 | 0.107 | 0.0749 | 0.564 | 0.0289 | 0.153 | 0.0666 | 0.0692 | 0.0807 | 0.177 | 0.202 | 0.595 | 0.224 | 0.161 | *** | 0.0569 | 1.52 | 0.471 |
| | Terelj | 0.626 | 0.0809 | 0.436 | 1.24 | 0.340 | 1.34 | 1.48 | 1.12 | 0.768 | 0.0675 | 0.316 | 0.786 | 0.211 | 1.11 | *** | 0.315 | 0.689 | 0.962 |
| Myanmar | Yangon | | | | | | | | 10.6 | 2.50 | 1.04 | 0.875 | 1.09 | 0.831 | 0.948 | 0.571 | 0.526 | 0.387 | 0.575 |
| Philippines | Metro Manila | 13.2 | 8.86 | 24.1 | 79.8 | 14.4 | 26.8 | 13.5 | 18.7 | 6.75 | 22.2 | 6.01 | 8.29 | 26.9 | 10.0 | 1.93 | 1.32 | 7.68 | *** |
| | Los Baños | 9.58 | 5.41 | 3.07 | 52.2 | 9.54 | 11.9 | 5.42 | 9.01 | 21.2 | 7.64 | 2.73 | 6.43 | 4.61 | 3.37 | 3.34 | 0.791 | 33.9 | *** |
| | Mt.Sto.Tomas | | | | | | | 0.204 | 10.0 | 16.3 | 6.96 | 0.726 | 20.6 | 6.41 | 22.7 | 2.64 | 6.72 | 1.52 | *** |
| Republic | Kanghwa | 11.2 | 11.6 | 18.3 | 33.5 | 23.8 | 46.1 | 23.0 | 21.2 | 43.9 | 32.7 | 61.2 | 33.9 | 18.3 | 23.6 | 5.72 | 11.9 | 13.7 | 21.4 |
| of Korea | Cheju | 15.0 | 14.4 | 24.8 | 19.3 | 20.5 | 19.9 | 51.8 | 38.2 | 18.1 | 8.09 | 9.21 | 7.32 | 5.93 | 2.66 | 1.93 | 3.12 | 8.90 | 3.76 |
| | Imsil | | 10.5 | 2.00 | 15.7 | 14.2 | 1.24 | 4.57 | 2.49 | 11.2 | 8.62 | 22.1 | 8.09 | 10.9 | 7.33 | 5.69 | 5.78 | 2.64 | 3.83 |
| Russia | Mondy | 1.68 | 1.00 | 0.828 | 1.83 | 1.64 | 1.24 | 1.67 | 1.06 | 1.38 | 0.395 | 0.253 | 0.213 | 0.250 | 1.60 | 0.573 | 0.487 | 0.957 | 0.928 |
| | Listvyanka | 3.78 | 5.42 | 4.74 | 5.24 | 6.67 | 6.62 | 7.10 | 8.82 | 9.06 | 4.49 | 5.74 | 9.00 | 5.73 | 4.41 | 3.53 | 4.91 | 3.94 | 5.38 |
| | Irkutsk | 4.15 | 2.49 | 2.86 | 1.94 | 6.74 | 3.36 | 2.52 | 5.59 | 9.01 | 1.67 | 2.78 | 3.13 | 5.15 | 2.71 | 3.35 | 1.79 | 5.68 | 5.73 |
| | Primorskaya | | | 5.26 | 4.27 | 10.0 | 6.39 | 9.32 | 14.4 | 9.02 | 9.11 | 7.23 | 14.6 | 7.88 | 6.36 | 2.19 | 7.98 | 3.68 | 1.31 |
| Thailand | Bangkok | 12.8 | 12.6 | 10.3 | 40.8 | 7.86 | 25.6 | 11.0 | 14.1 | 9.39 | 16.7 | 17.2 | 19.5 | 3.74 | 3.35 | 0.0953 | 8.10 | 4.75 | 1.72 |
| | Samutprakarn | 14.5 | | | | 4.29 | 5.55 | 1.93 | 4.60 | 8.81 | 14.7 | 9.06 | 2.66 | 0.647 | 1.18 | 0.307 | 3.66 | 6.46 | 2.49 |
| | Pathumthani | 5.41 | 10.0 | 4.39 | 22.7 | 13.3 | 16.4 | 20.9 | 21.5 | 15.4 | 9.26 | 10.3 | 15.6 | 5.62 | 4.60 | 3.27 | 5.48 | 4.29 | 6.21 |
| | Khanchanaburi | 2.41 | 8.29 | 5.05 | 5.65 | 1.18 | 5.86 | 4.48 | 2.83 | 4.30 | 4.35 | 3.30 | 6.24 | 2.30 | 7.08 | 1.58 | 3.76 | 1.10 | 2.02 |
| | Mae Hia | | 2.10 | 2.79 | 2.00 | 2.93 | 8.50 | 2.83 | 1.05 | 1.34 | 1.26 | 0.789 | 8.29 | 0.876 | 1.30 | 0.278 | 1.70 | 1.85 | 3.42 |
| | Sakaerat | | | | | | | 9.06 | 11.5 | 16.0 | 17.1 | 29.0 | 15.0 | 9.66 | 8.23 | 6.42 | 12.8 | 5.92 | 6.50 |
| Vietnam | Hanoi | 4.48 | 3.31 | 3.95 | 2.45 | 3.56 | 1.25 | 2.28 | 4.32 | 3.24 | 3.46 | 1.44 | 9.13 | 4.29 | 4.29 | 3.04 | 0.826 | 4.19 | 0.604 |
| | Hoa Binh | 14.7 | 20.2 | 10.6 | 7.02 | 4.61 | 4.63 | 3.98 | 17.0 | 6.42 | 6.96 | 5.84 | 6.42 | 4.50 | 1.83 | 4.69 | 8.20 | 3.32 | 11.4 |
| | Cuc Phuong | | | | | | | | | | 23.4 | 9.73 | 16.8 | 7.42 | 7.16 | 5.10 | 6.99 | 3.03 | 18.8 |
| | Da Nang | | | | | | | | | | 49.9 | 13.0 | 38.0 | 6.16 | 6.07 | 6.69 | 1.98 | 2.99 | 3.06 |
| | Can Tho | | | | | | | | | | | | | | | 1.01 | 3.71 | 2.39 | 2.05 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 2.72 | 1.10 | 4.46 | 2.97 |
| | Yen Bai | | | | | | | | | | | | | | | | 8.93 | 12.0 | 15.3 |

Terms and abbreviations are given in Table 3.5.

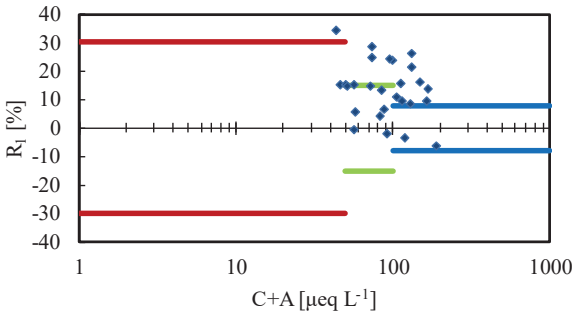



**Fig. 3.2 a) Phnom Penh Ion Balance ($R_1$)**

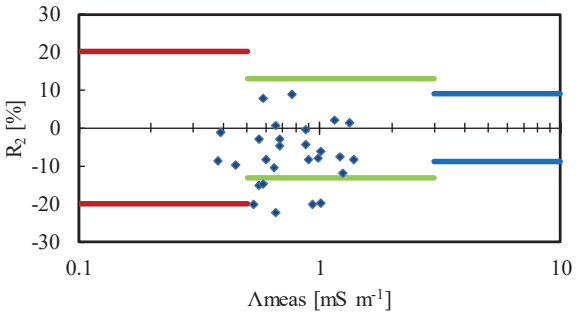



**Fig. 3.2 b) Phnom Penh Conductivity Agreement ($R_2$)**

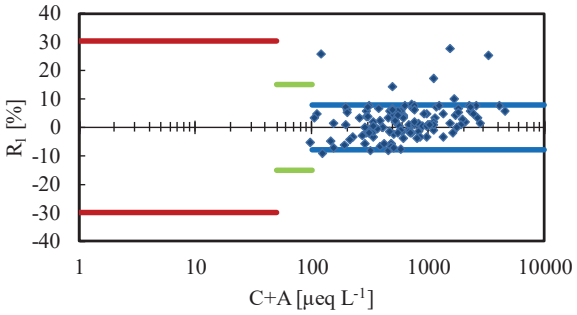



**Fig. 3.3 a) Haifu Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$ and $F^-$*

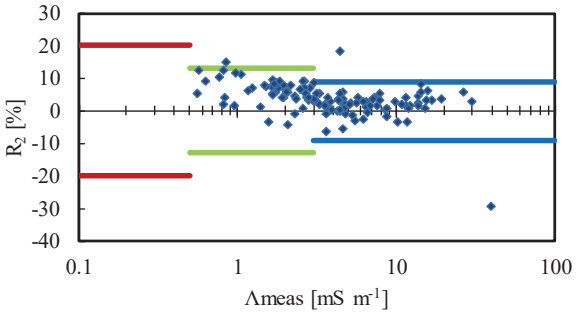



**Fig. 3.3 b) Haifu Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$ and $F^-$*

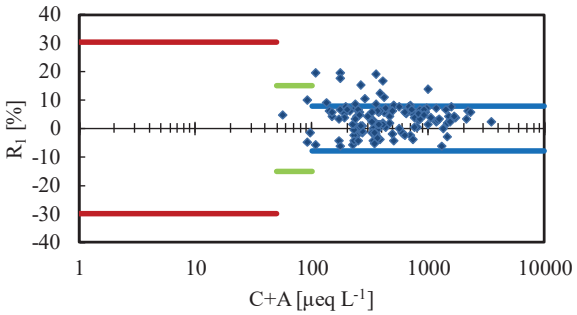



**Fig. 3.4 a) Jinyunshan Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$ and $F^-$*

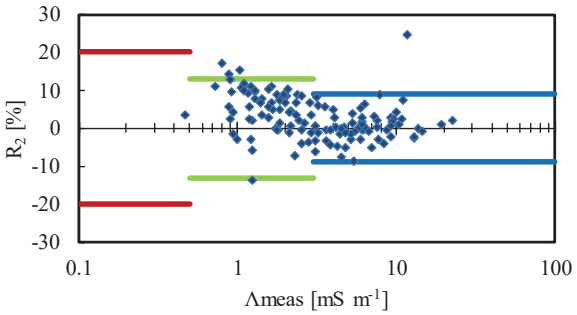



**Fig. 3.4 b) Jinyunshan Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$ and $F^-$*

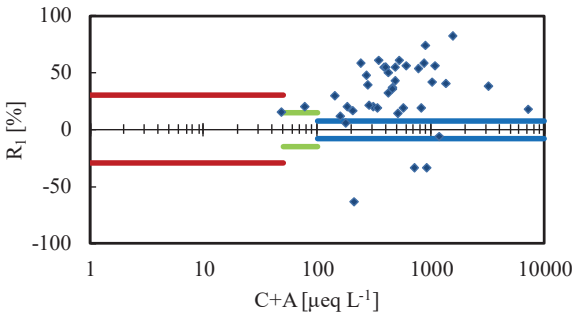



**Fig. 3.5 a) Shizhan Ion Balance ($R_1$)**

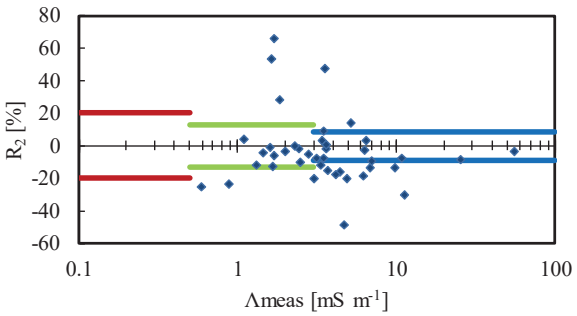



**Fig. 3.5 b) Shizhan Conductivity Agreement ($R_2$)**

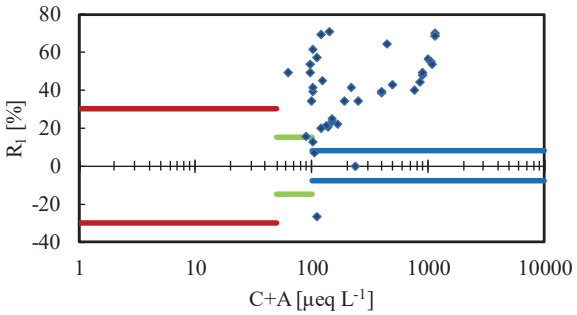



**Fig. 3.6 a) Jiwozi Ion Balance ($R_1$)**

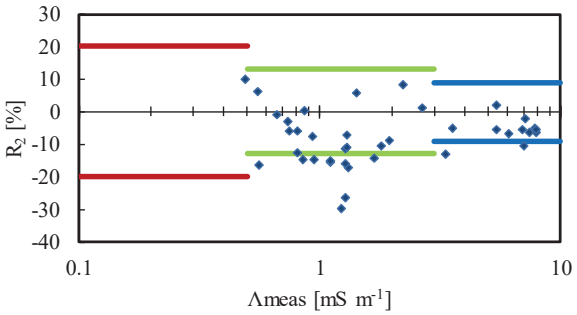



**Fig. 3.6 b) Jiwozi Conductivity Agreement ($R_2$)**

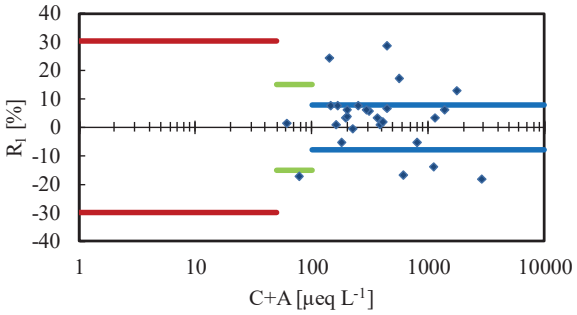



**Fig. 3.7 a) Hongwen Ion Balance ($R_1$)**

*Calculated including $F^-$*

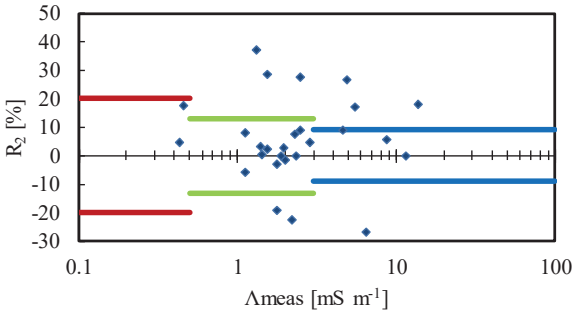



**Fig. 3.7 b) Hongwen Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

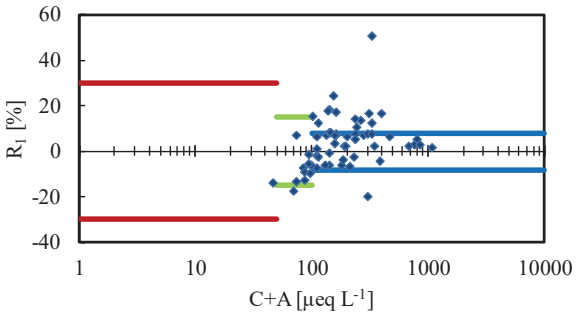



**Fig. 3.8 a) Xiaoping Ion Balance ($R_1$)**

*Calculated including $F^-$*

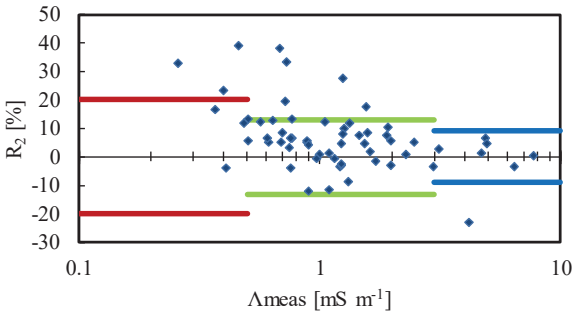



**Fig. 3.8 b) Xiaoping Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

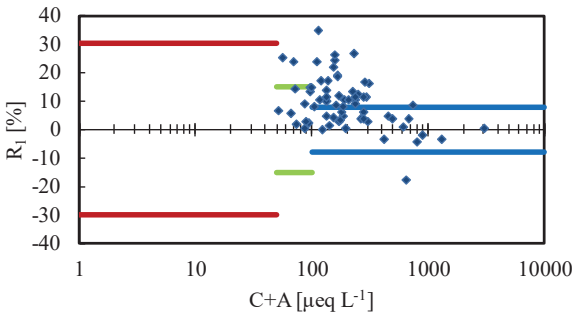



**Fig. 3.9 a) Xiang Zhou Ion Balance ($R_1$)**

*Calculated including $F^-$*

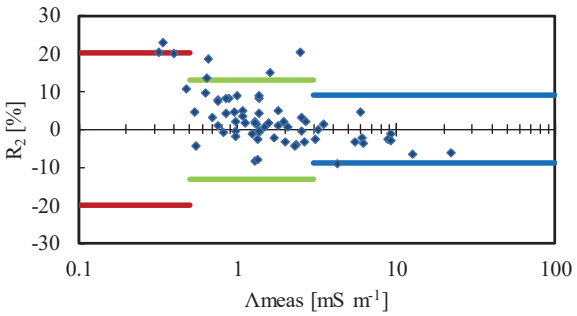



**Fig. 3.9 b) Xiang Zhou Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

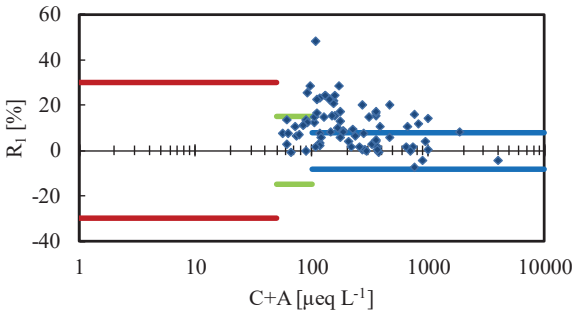



**Fig. 3.10 a) Zhuxiandong Ion Balance ($R_1$)**

*Calculated including $F^-$*

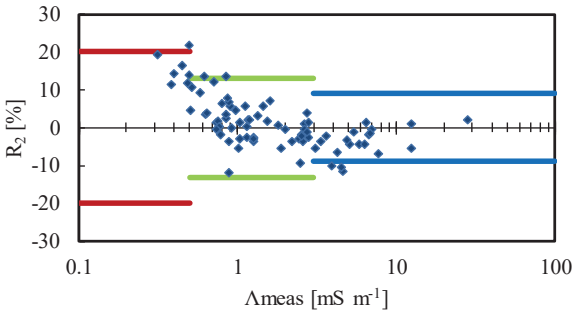



**Fig. 3.10 b) Zhuxiandong Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

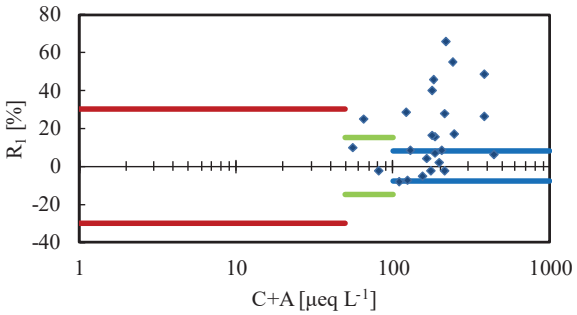



**Fig. 3.11 a) Jakarta Ion Balance ($R_1$)**

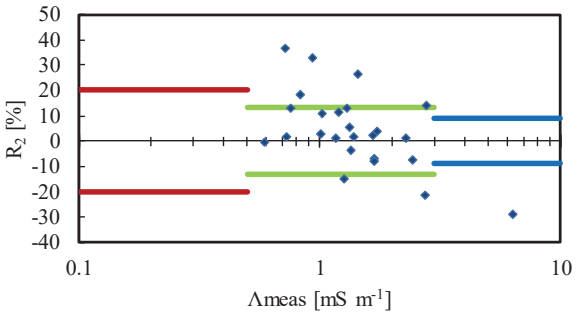



**Fig. 3.11 b) Jakarta Conductivity Agreement ($R_2$)**

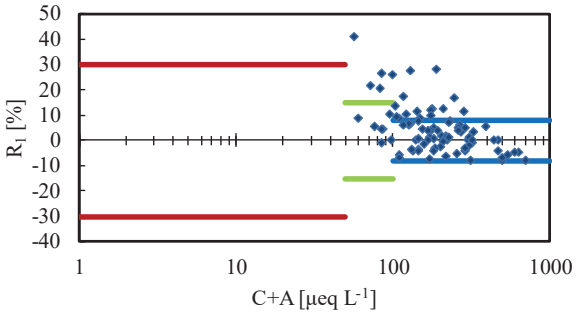



**Fig. 3.12 a) Serpong Ion Balance ($R_1$)**

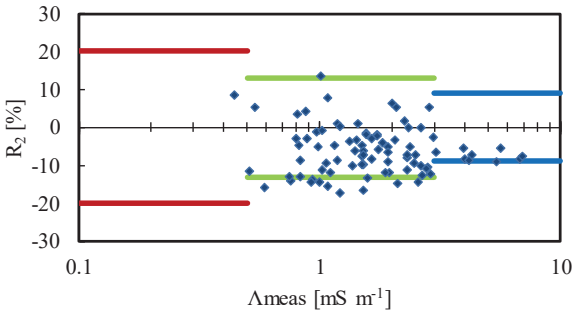



**Fig. 3.12 b) Serpong Conductivity Agreement ($R_2$)**

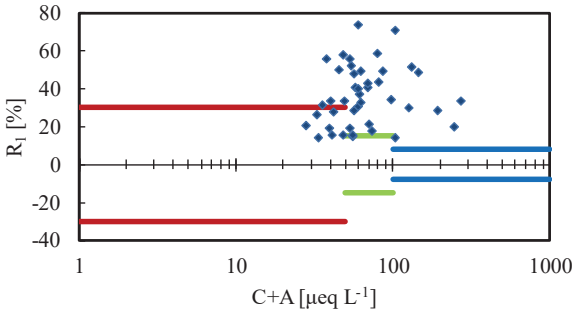



**Fig. 3.13 a) Kototabang Ion Balance ($R_1$)**

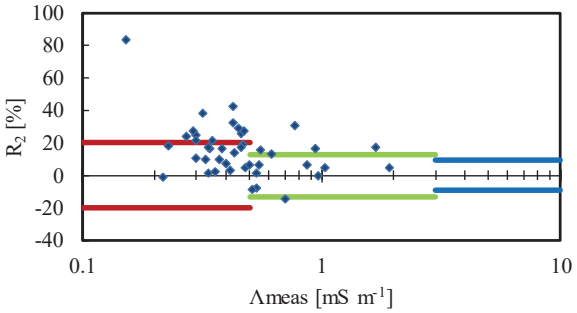



**Fig. 3.13 b) Kototabang Conductivity Agreement ($R_2$)**

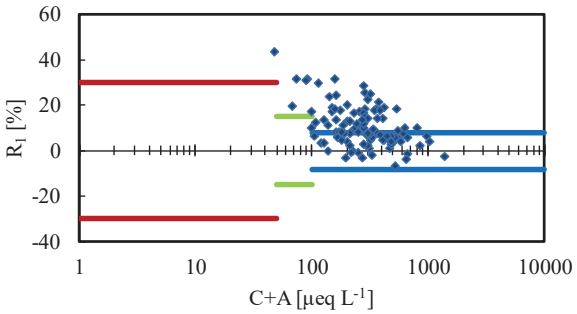



**Fig. 3.14 a) Bandung Ion Balance ($R_1$)**

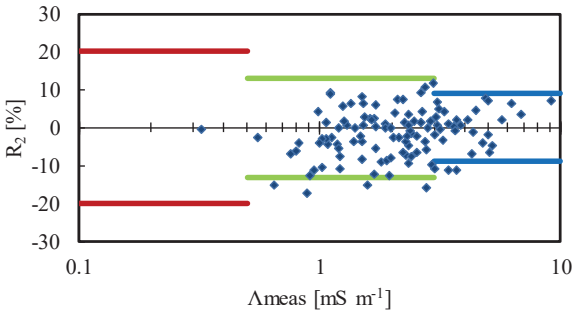



**Fig. 3.14 b) Bandung Conductivity Agreement ($R_2$)**

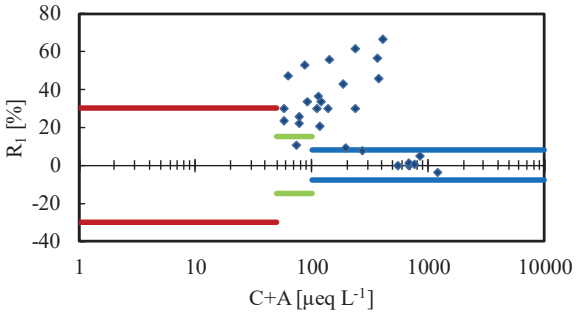



**Fig. 3.15 a) Maros Ion Balance ($R_1$)**

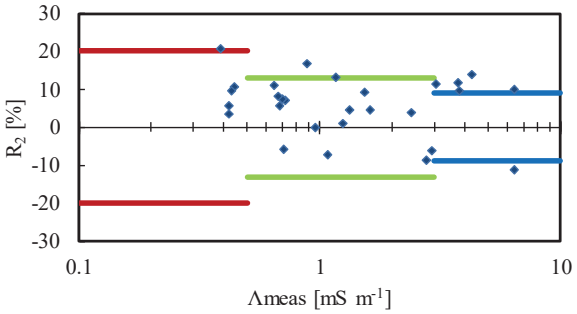



**Fig. 3.15 b) Maros Conductivity Agreement ($R_2$)**

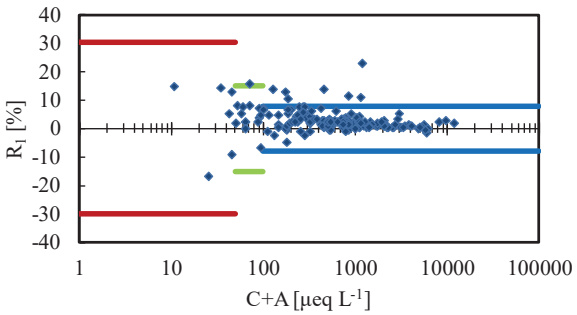



**Fig. 3.16 a) Rishiri Ion Balance ($R_1$)**

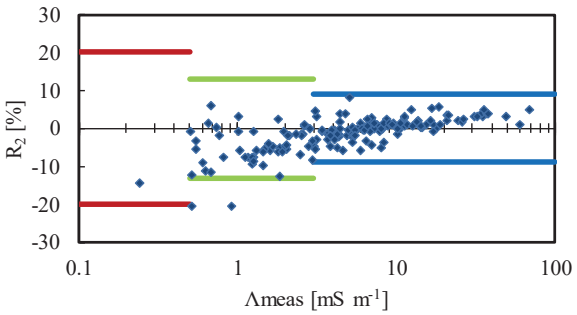



**Fig. 3.16 b) Rishiri Conductivity Agreement ($R_2$)**

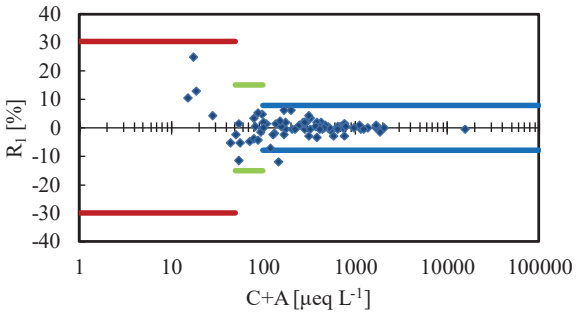



**Fig. 3.17 a) Ochiishi Ion Balance ($R_1$)**

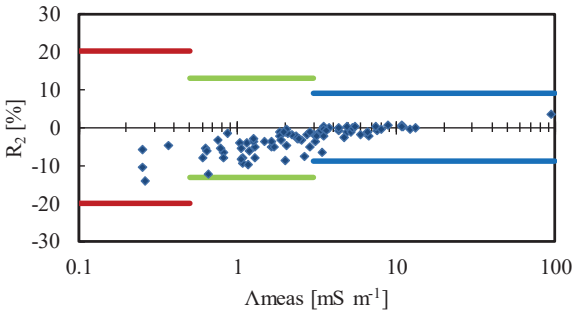



**Fig. 3.17 b) Ochiishi Conductivity Agreement ($R_2$)**

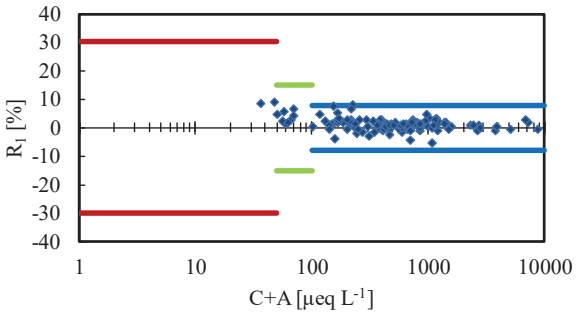



**Fig. 3.18 a) Tappi Ion Balance ($R_1$)**

*Calculated including Formic, Acetic and Oxialic acid*

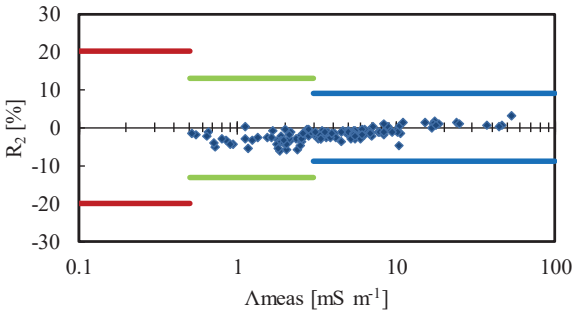



**Fig. 3.18 b) Tappi Conductivity Agreement ($R_2$)**

*Calculated including Formic, Acetic and Oxialic acid*

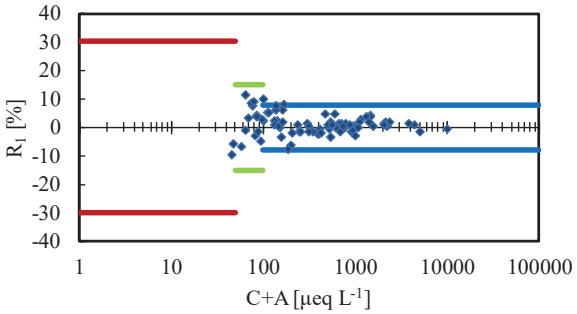



**Fig. 3.19 a) Sado-seki Ion Balance ($R_1$)**

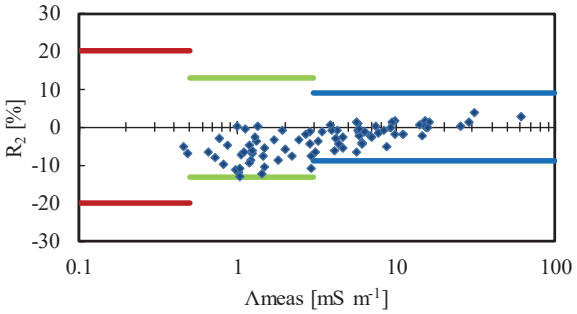



**Fig. 3.19 b) Sado-seki Conductivity Agreement ($R_2$)**

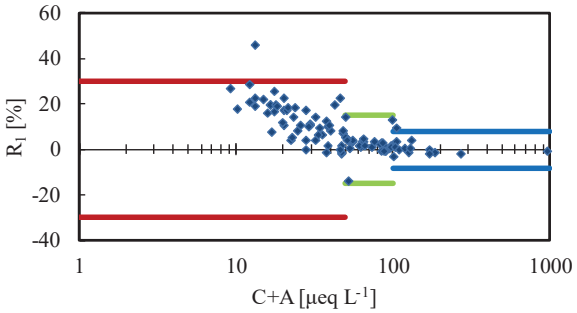



**Fig. 3.20 a) Happo Ion Balance ($R_1$)**

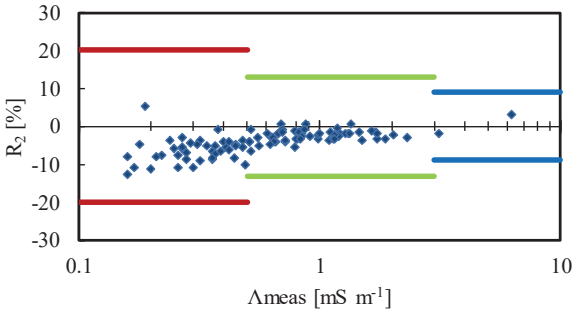



**Fig. 3.20 b) Happo Conductivity Agreement ($R_2$)**

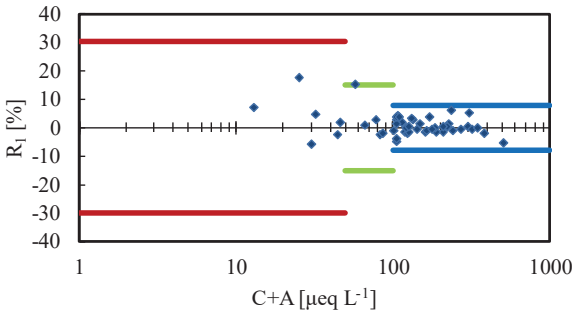



**Fig. 3.21 a) Ijira Ion Balance ($R_1$)**

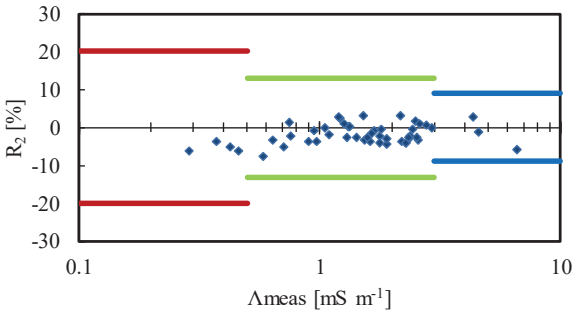



**Fig. 3.21 b) Ijira Conductivity Agreement ($R_2$)**

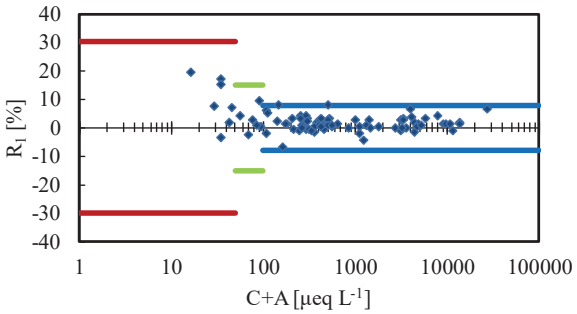



**Fig. 3.22 a) Oki Ion Balance ($R_1$)**

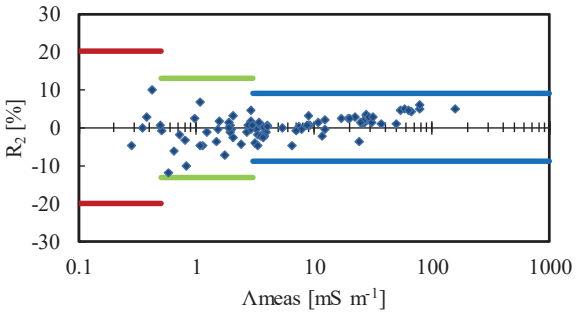



**Fig. 3.22 b) Oki Conductivity Agreement ($R_2$)**

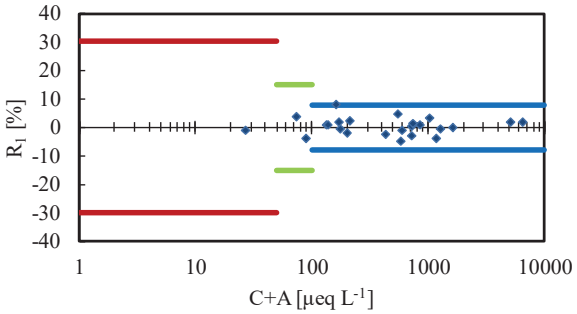



**Fig. 3.23 a) Banryu Ion Balance ($R_1$)**

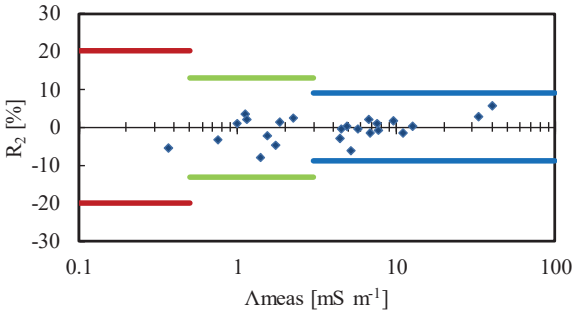



**Fig. 3.23 b) Banryu Conductivity Agreement ($R_2$)**

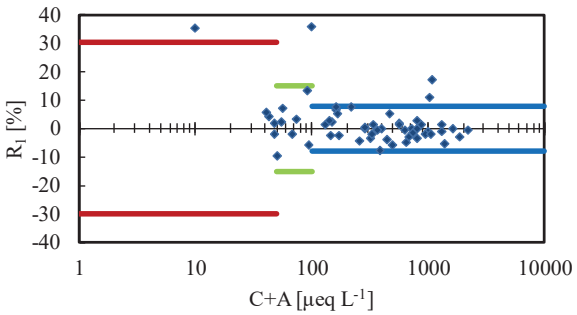



**Fig. 3.24 a) Yusuhara Ion Balance ($R_1$)**

*Calculated including $F^-$, $NO_2^-$ and $PO_4^{3-}$*

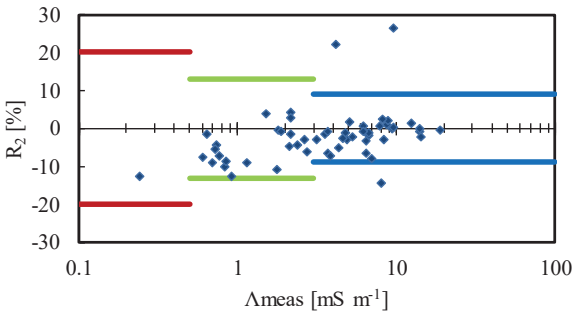



**Fig. 3.24 b) Yusuhara Conductivity Agreement ($R_2$)**

*Calculated including $F^-$, $NO_2^-$ and $PO_4^{3-}$*

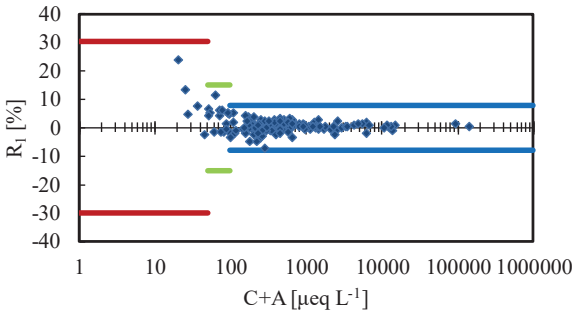



**Fig. 3.25 a) Hedo Ion Balance ($R_1$)**

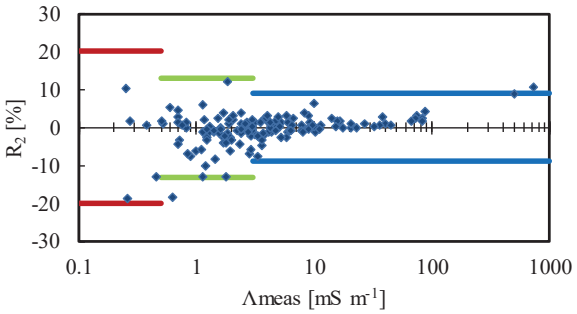



**Fig. 3.25 b) Hedo Conductivity Agreement ($R_2$)**

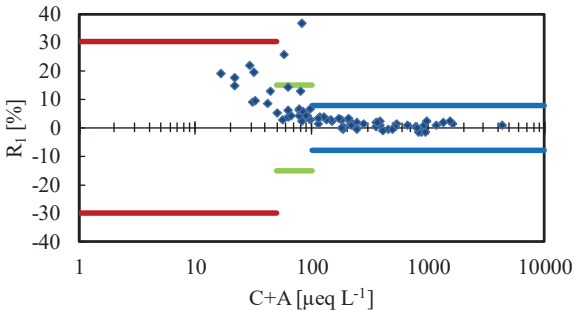



**Fig. 3.26 a) Ogasawara Ion Balance ($R_1$)**

*Calculated including $F^-$ and $NO_2^-$*

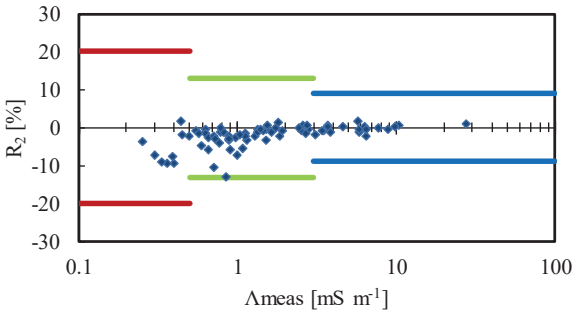



**Fig. 3.26 b) Ogasawara Conductivity Agreement ($R_2$)**

*Calculated including $F^-$ and $NO_2^-$*

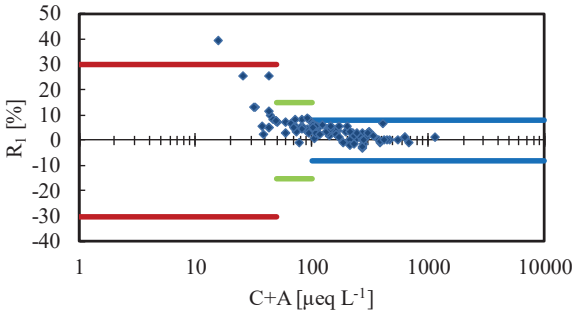



**Fig. 3.27 a) Tokyo Ion Balance ($R_1$)**

*Calculated including $F^-$ and $NO_2^-$*

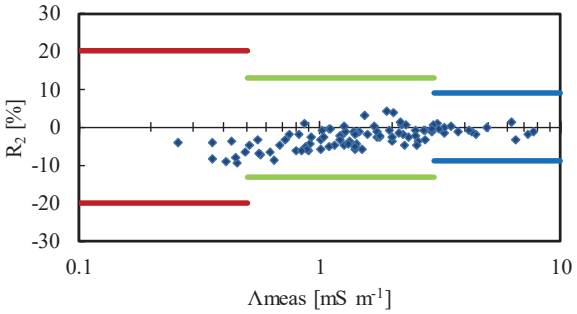



**Fig. 3.27 b) Tokyo Conductivity Agreement ($R_2$)**

*Calculated including $F^-$ and $NO_2^-$*

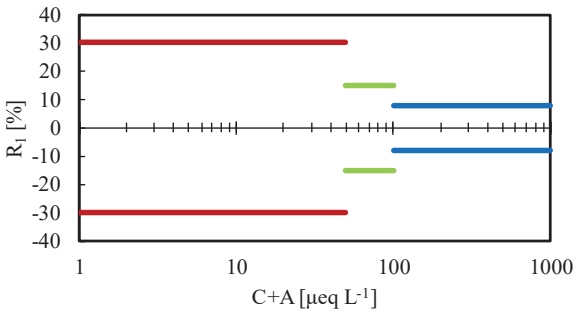



**Fig. 3.28 a) Vientiane Ion Balance ($R_1$)**

*Not calculated*

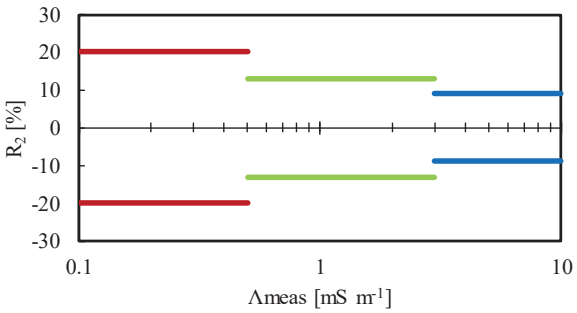



**Fig. 3.28 b) Vientiane Conductivity Agreement ($R_2$)**

*Not calculated*

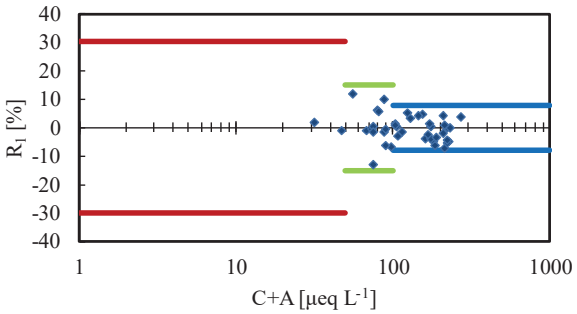



**Fig. 3.29 a) Petaling Jaya Ion Balance ($R_1$)**

*Calculated including Formic, Acetic and Oxialic acid*

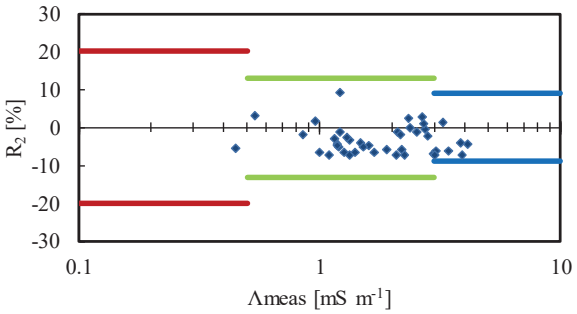



**Fig. 3.29 b) Petaling Jaya Conductivity Agreement ($R_2$)**

*Calculated including Formic, Acetic and Oxialic acid*

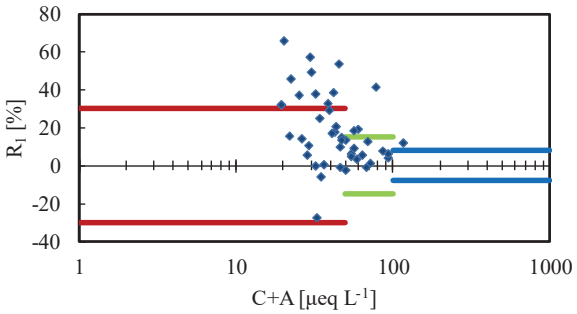



**Fig. 3.30 a) Tanah Rata Ion Balance ($R_1$)**
*Calculated including Formic, Acetic and Oxialic acid*

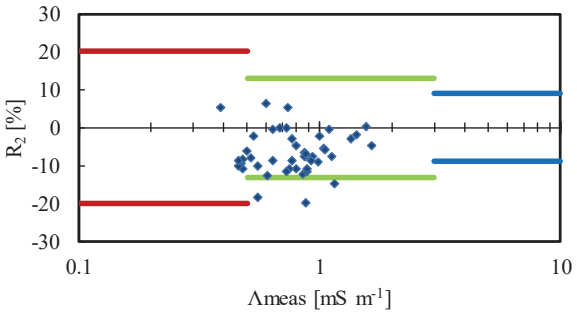



**Fig. 3.30 b) Tanah Rata Conductivity Agreement ($R_2$)**
*Calculated including Formic, Acetic and Oxialic acid*

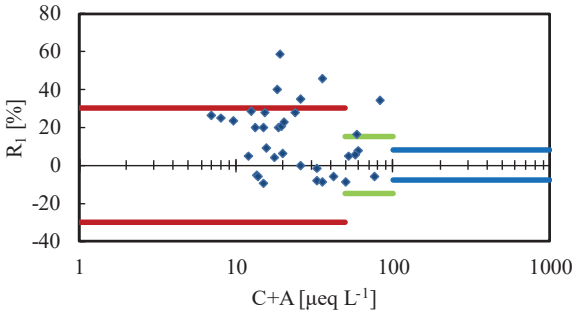



**Fig. 3.31 a) Danum Valley Ion Balance ($R_1$)**
*Calculated including Formic, Acetic and Oxialic acid*

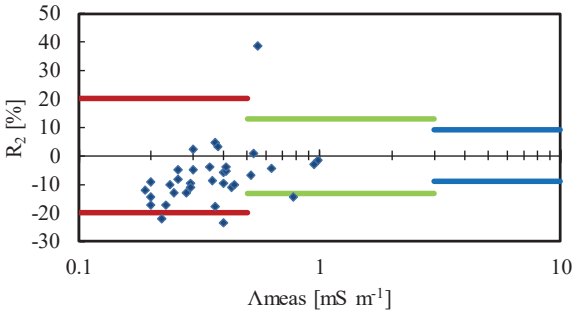



**Fig. 3.31 b) Danum Valley Conductivity Agreement ($R_2$)**
*Calculated including Formic, Acetic and Oxialic acid*

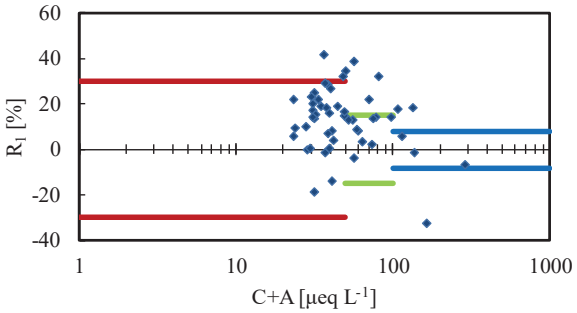



**Fig. 3.32 a) Kuching Ion Balance ($R_1$)**
*Calculated including Formic, Acetic and Oxialic acid*

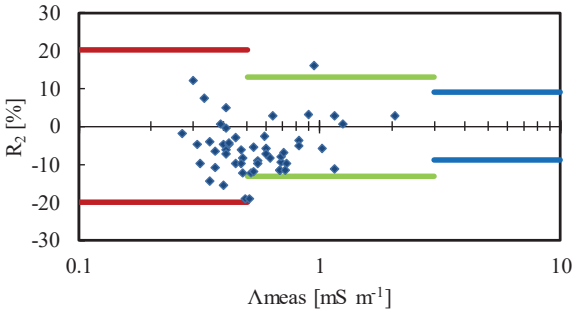



**Fig. 3.32 b) Kuching Conductivity Agreement ($R_2$)**
*Calculated including Formic, Acetic and Oxialic acid*

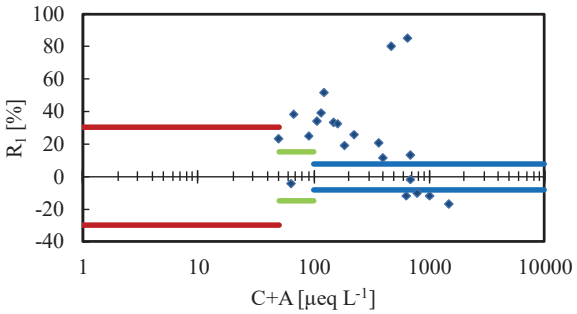



**Fig. 3.33 a) Ulaanbaatar Ion Balance ($R_1$)**

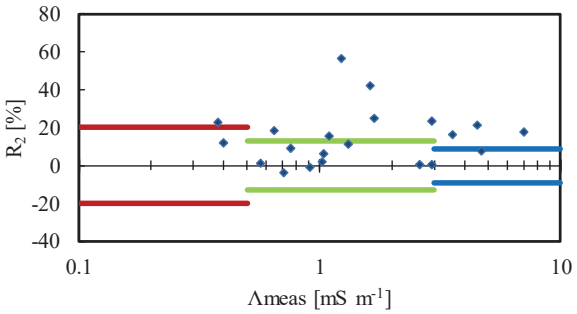



**Fig. 3.33 b) Ulaanbaatar Conductivity Agreement ($R_2$)**

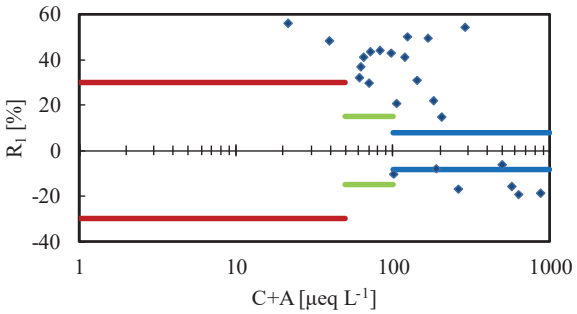



**Fig. 3.34 a) Terelj Ion Balance ($R_1$)**

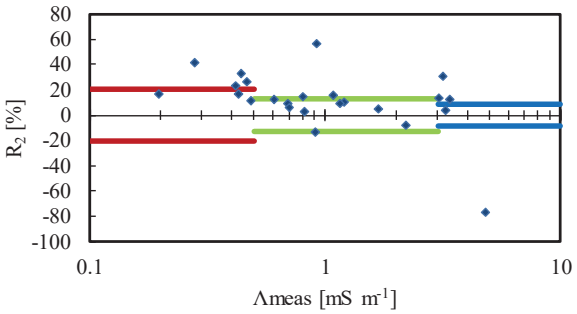



**Fig. 3.34 b) Terelj Conductivity Agreement ($R_2$)**

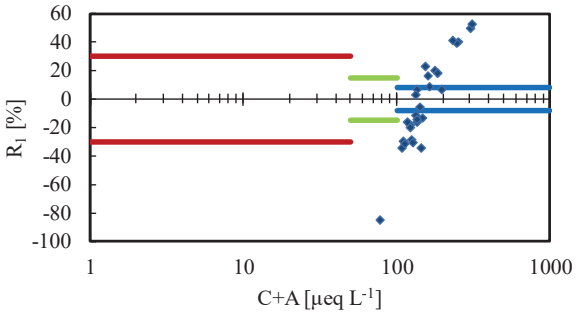



**Fig. 3.35 a) Yangon Ion Balance ($R_1$)**

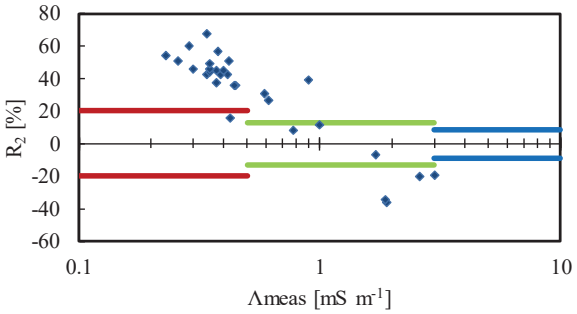



**Fig. 3.35 b) Yangon Conductivity Agreement ($R_2$)**

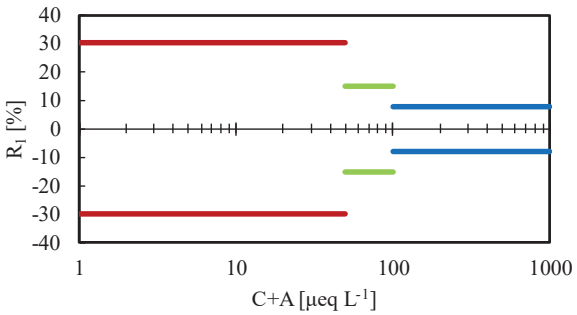



**Fig. 3.36 a) Metro Manila Ion Balance ($R_1$)**

*No data*

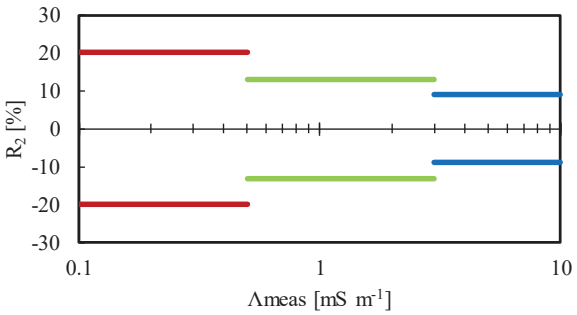



**Fig. 3.36 b) Metro Manila Conductivity Agreement ($R_2$)**

*No data*

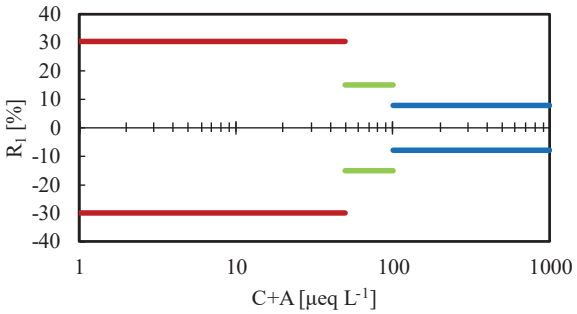



**Fig. 3.37 a) Los Baños Ion Balance ($R_1$)**

*No data*

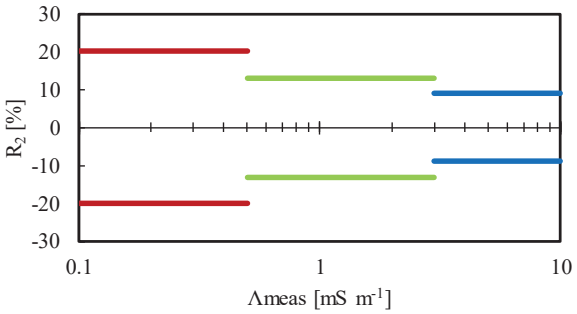



**Fig. 3.37 b) Los Baños Conductivity Agreement ($R_2$)**

*No data*

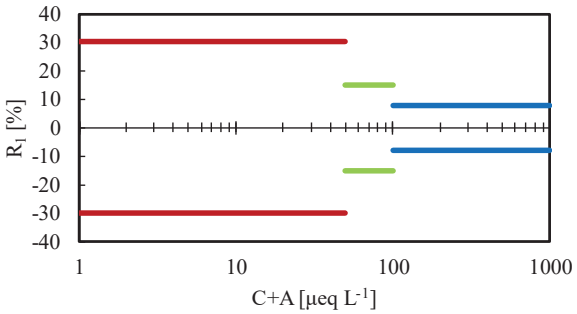



**Fig. 3.38 a) Mt. Sto. Tomas Ion Balance ($R_1$)**

*No data*

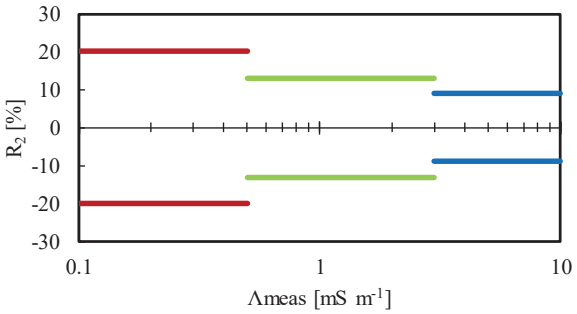



**Fig. 3.38 b) Mt. Sto. Tomas Conductivity Agreement ($R_2$)**

*No data*

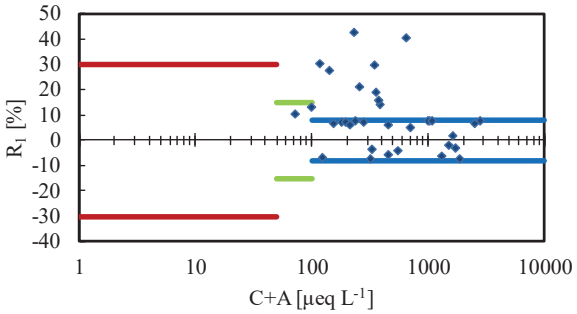



**Fig. 3.39 a) Kanghwa Ion Balance ($R_1$)**

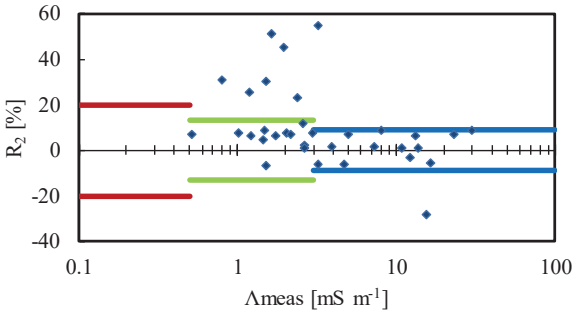



**Fig. 3.39 b) Kanghwa Conductivity Agreement ($R_2$)**

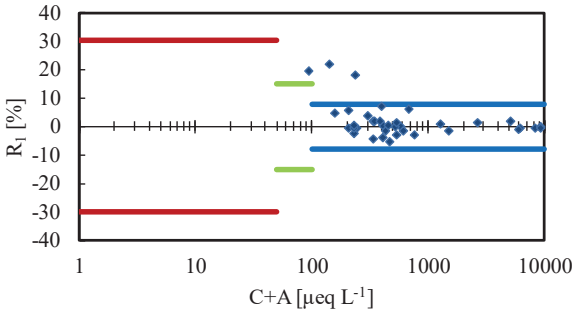



**Fig. 3.40 a) Cheju Ion Balance ($R_1$)**

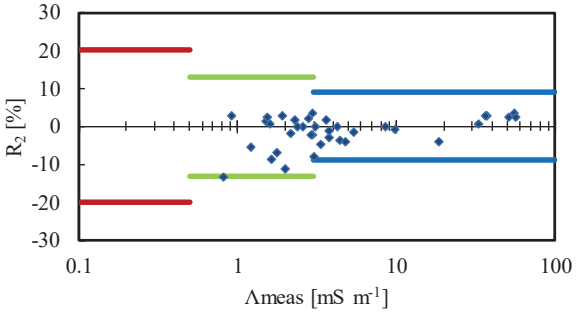



**Fig. 3.40 b) Cheju Conductivity Agreement ($R_2$)**

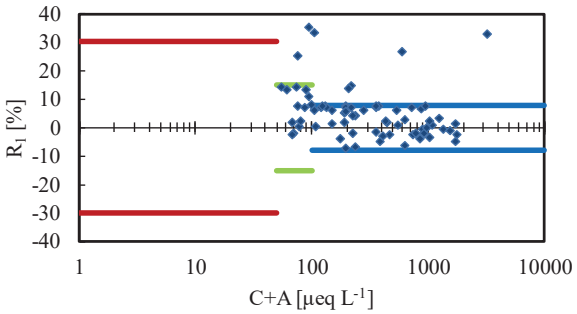



**Fig. 3.41 a) Imsil Ion Balance ($R_1$)**

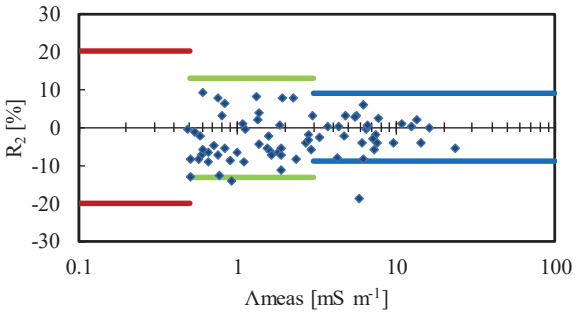



**Fig. 3.41 b) Imsil Conductivity Agreement ($R_2$)**

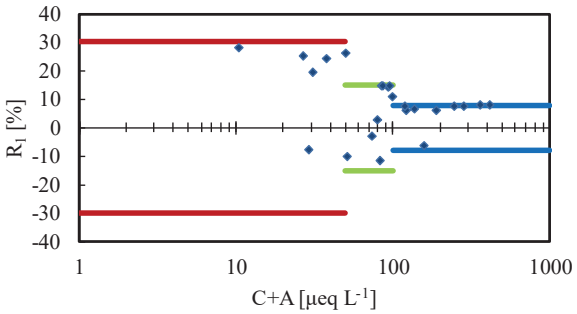



**Fig. 3.42 a) Mondy Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$, $F^-$, $Br^-$ and $NO_2^-$*

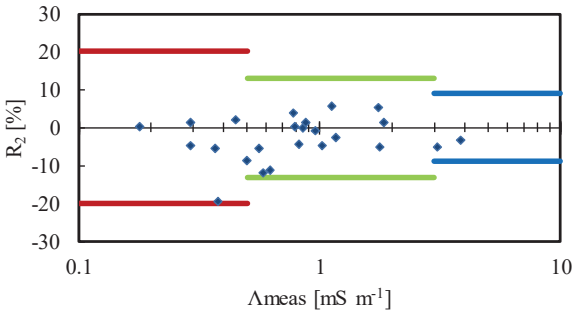



**Fig. 3.42 b) Mondy Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$, $F^-$, $Br^-$ and $NO_2^-$*

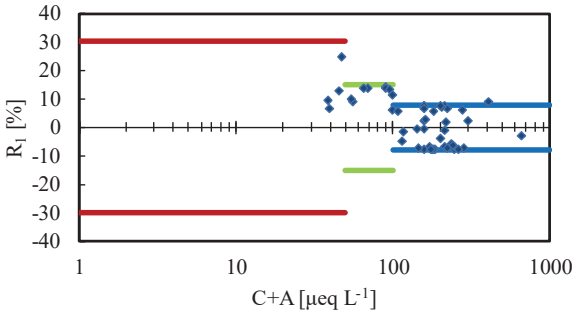



**Fig. 3.43 a) Listvyanka Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$, $F^-$, $Br^-$ and $NO_2^-$*

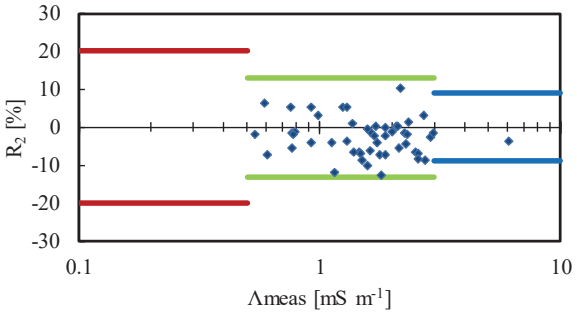



**Fig. 3.43 b) Listvyanka Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$, $F^-$, $Br^-$ and $NO_2^-$*

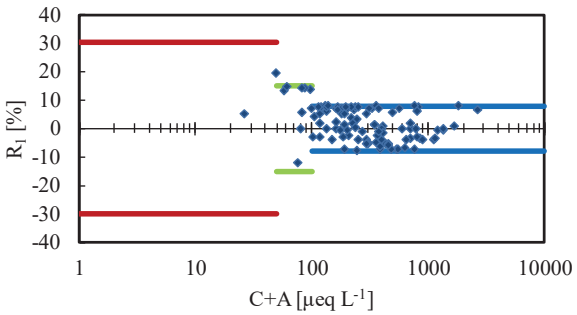



**Fig. 3.44 a) Irkutsk Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$, $F^-$, $Br^-$ and $NO_2^-$*

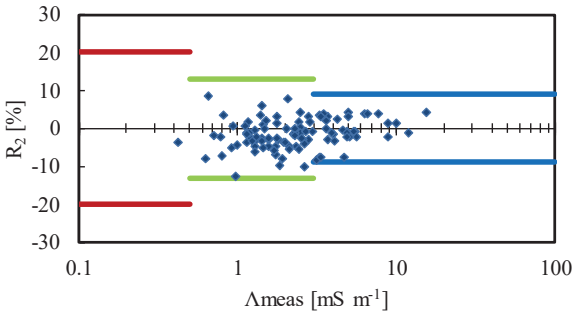



**Fig. 3.44 b) Irkutsk Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$, $F^-$, $Br^-$ and $NO_2^-$*

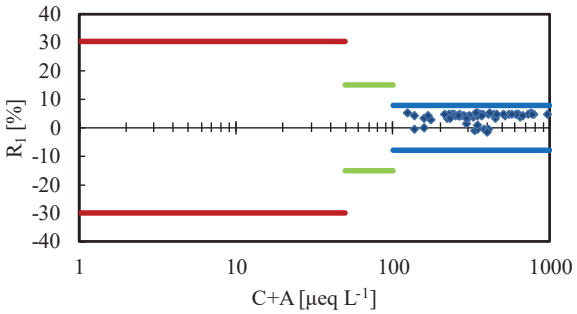



**Fig. 3.45 a) Primorskaya Ion Balance ($R_1$)**

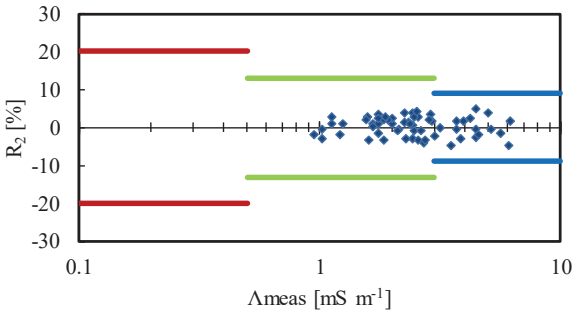



**Fig. 3.45 b) Primorskaya Conductivity Agreement ($R_2$)**

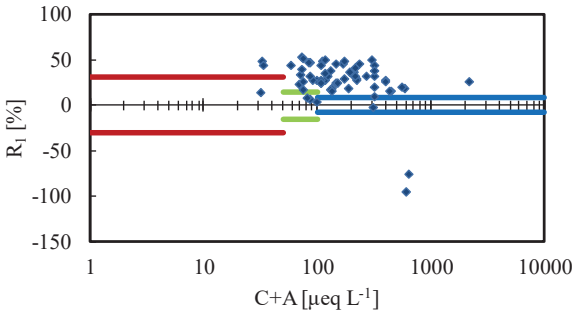



**Fig. 3.46 a) Bangkok Ion Balance ($R_1$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

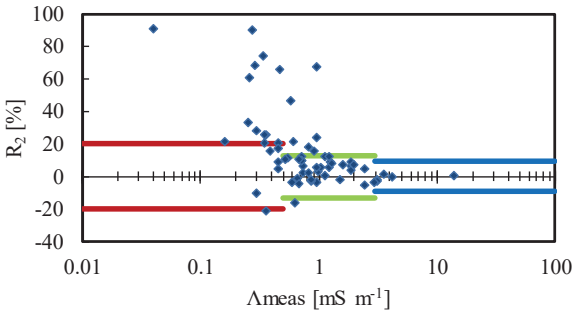



**Fig. 3.46 b) Bangkok Conductivity Agreement ($R_2$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

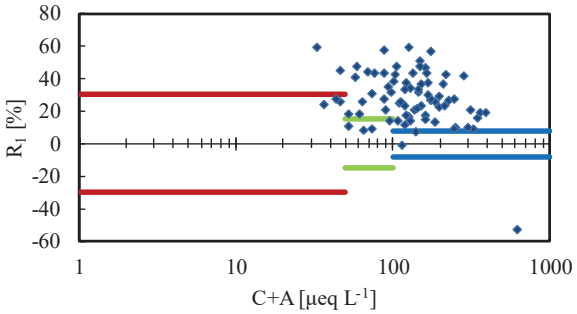



**Fig. 3.47 a) Samutprakarn Ion Balance ($R_1$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

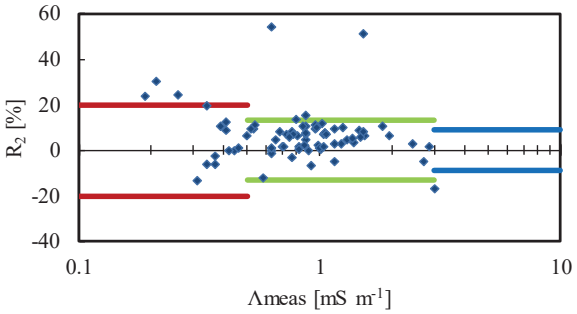



**Fig. 3.47 b) Samutprakarn Conductivity Agreement ($R_2$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

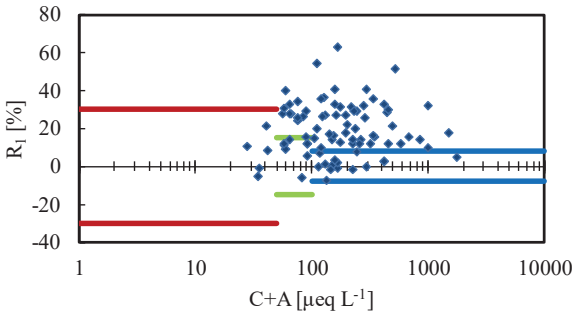



**Fig. 3.48 a) Pathumthani Ion Balance ($R_1$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

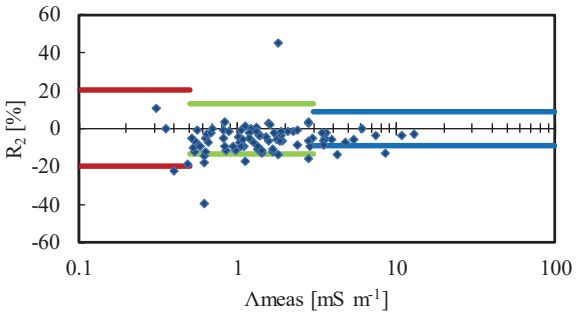



**Fig. 3.48 b) Pathumthani Conductivity Agreement ($R_2$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

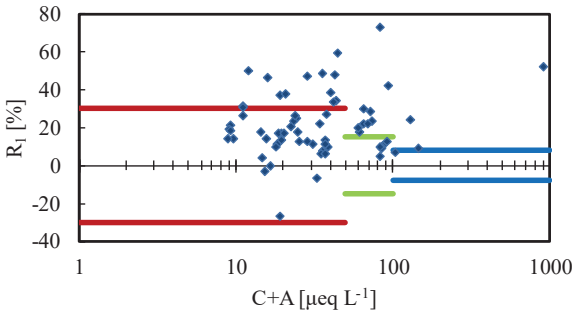



**Fig. 3.49 a) Khanchanaburi Ion Balance ($R_1$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

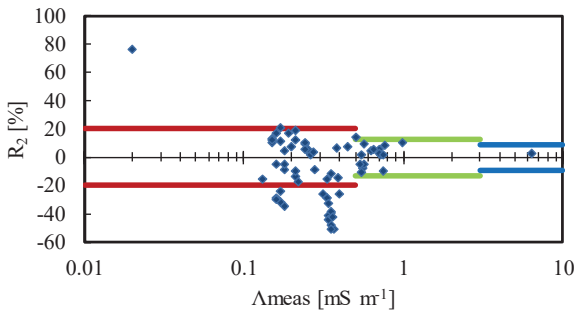



**Fig. 3.49 b) Khanchanaburi Conductivity Agreement ($R_2$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

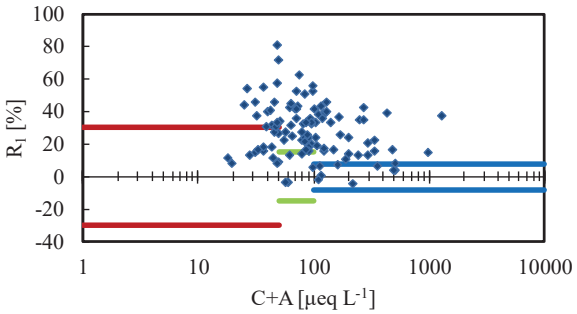



**Fig. 3.50 a) Mae Hia Ion Balance ($R_1$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

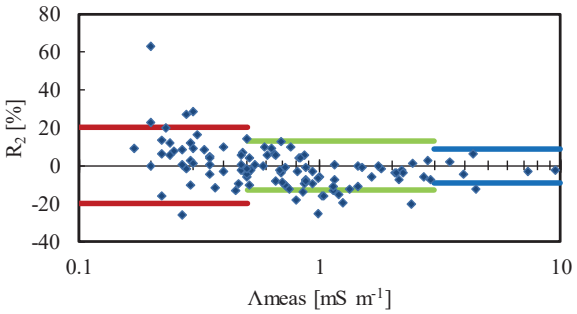



**Fig. 3.50 b) Mae Hia Conductivity Agreement ($R_2$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

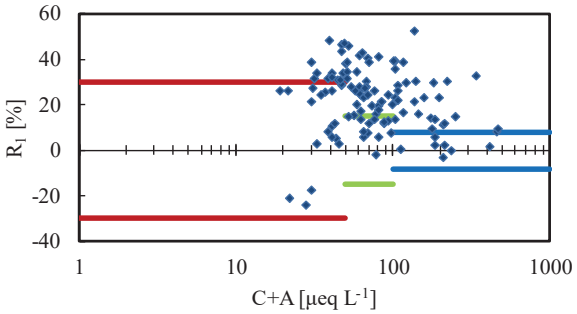



**Fig. 3.51 a) Sakaerat Ion Balance ($R_1$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

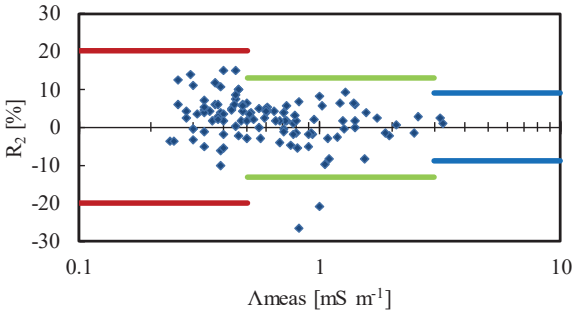



**Fig. 3.51 b) Sakaerat Conductivity Agreement ($R_2$)**

*Calculated including $PO_4^{3-}$, Formic and Acetic acid*

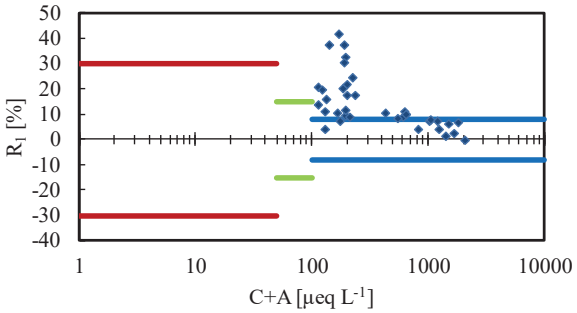



**Fig. 3.52 a) Hanoi Ion Balance ($R_1$)**

*Calculated including $F^-$*

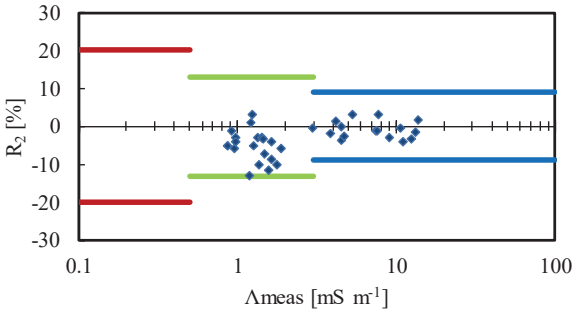



**Fig. 3.52 b) Hanoi Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

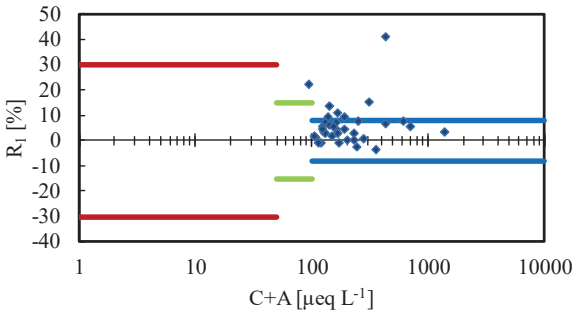



**Fig. 3.53 a) Hoa Binh Ion Balance ($R_1$)**

*Calculated including $F^-$*

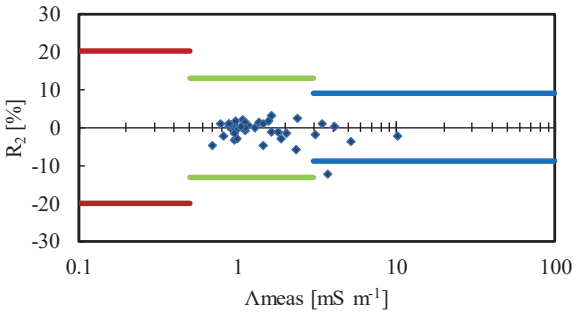



**Fig. 3.53 b) Hoa Binh Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

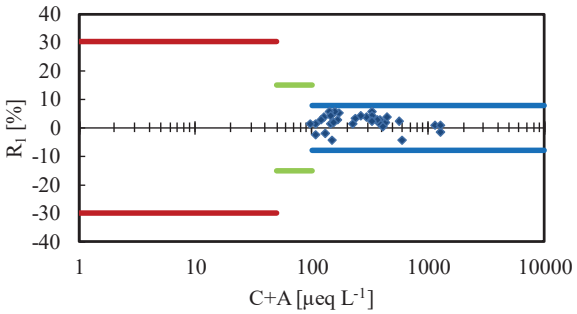



**Fig. 3.54 a) Cuc Phuong Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$ and $F^-$*

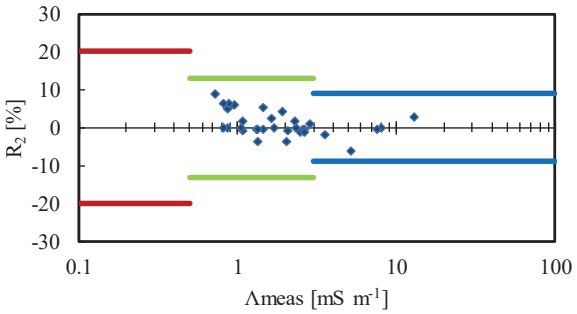



**Fig. 3.54 b) Cuc Phuong Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$ and $F^-$*

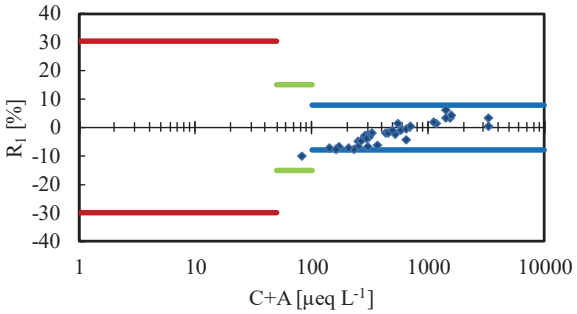



**Fig. 3.55 a) Da Nang Ion Balance ($R_1$)**

*Calculated including $HCO_3^-$ and $F^-$*

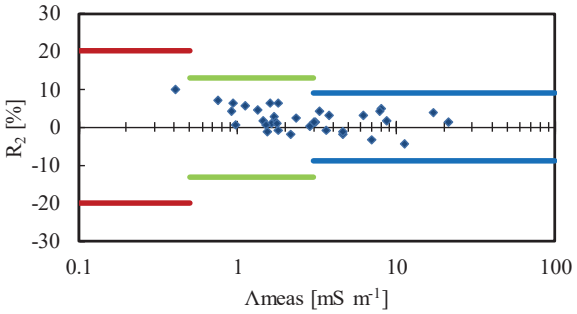



**Fig. 3.55 b) Da Nang Conductivity Agreement ($R_2$)**

*Calculated including $HCO_3^-$ and $F^-$*

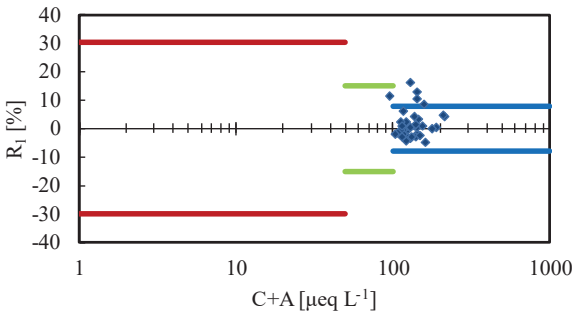



**Fig. 3.56 a) Can Tho Ion Balance ($R_1$)**

*Calculated including $F^-$*

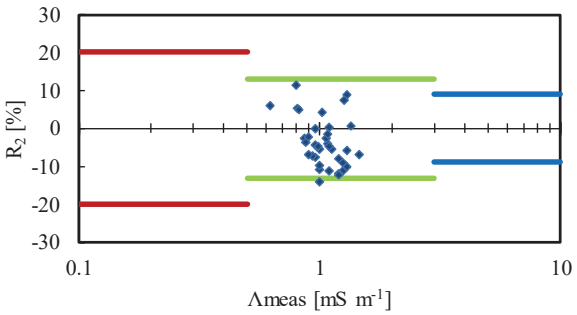



**Fig. 3.56 b) Can Tho Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

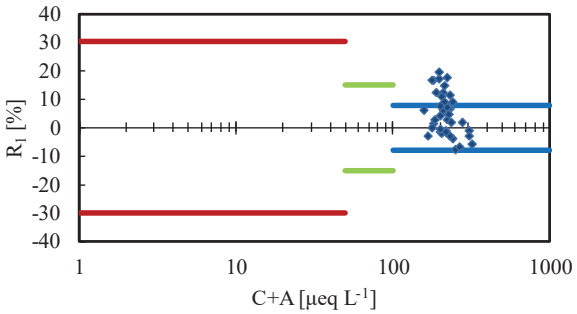



**Fig. 3.57 a) Ho Chi Minh Ion Balance ($R_1$)**

*Calculated including $F^-$*

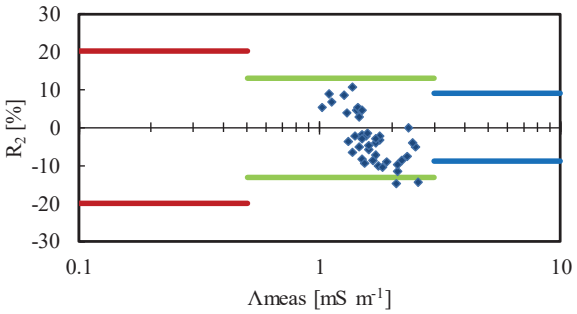



**Fig. 3.57 b) Ho Chi Minh Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

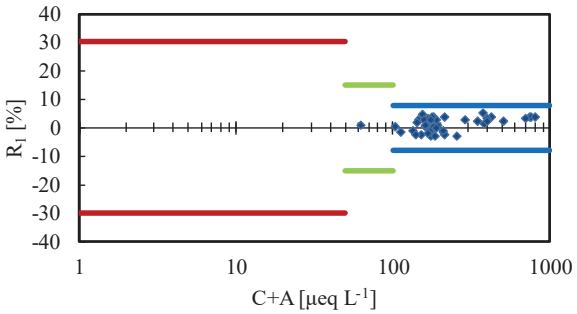



**Fig. 3.58 a) Yen Bai Ion Balance ($R_1$)**

*Calculated including $F^-$*

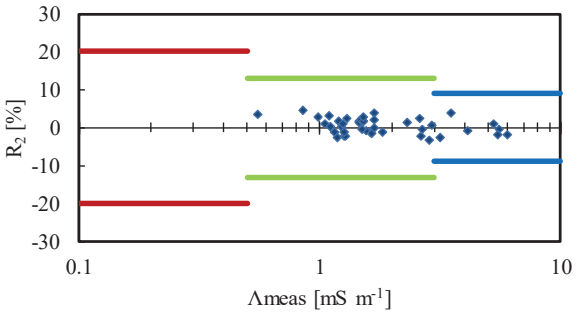



**Fig. 3.58 b) Yen Bai Conductivity Agreement ($R_2$)**

*Calculated including $F^-$*

**Table 3.94 Concentration, deposition and data completeness of $HCO_3^-$**

| **Precipitation amount-weighted average concentration/ Precipitation amount** | | | | | | | | | | | **unit : µmol $L^{-1}$** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| China | Haifu | 180 | 126 | 61.5 | 61.6 | 123 | 115 | 101 | 43.6 | 79.5 | 69.9 | 102 | 214 | 81.2 |
| | Jinyunshan | * | 76.9 | * | 85.1 | 84.0 | 82.9 | 77.0 | 69.0 | 65.0 | 144 | 109 | 61.6 | 86.5 |
| Russia | Mondy | 17.4 | 20.1 | <1 | <1 | 31.0 | 3.62 | 1.71 | <1 | <1 | 8.55 | -- | 58.7 | 4.53 |
| | Listvyanka | 2.55 | <1 | <1 | <1 | <1 | <1 | 10.9 | <1 | <1 | -- | 31.2 | <1 | 3.04 |
| | Irkutsk | 92.3 | 52.7 | 76.2 | 22.0 | <1 | 1.88 | <1 | <1 | <1 | 21.0 | 122 | 58.0 | 16.3 |
| Vietnam | Cuc Phuong | <1 | 290 | 108 | 34.5 | 36.9 | 16.3 | 10.6 | 16.0 | <1 | <1 | 50.0 | <1 | 12.6 |
| | Da Nang | 14.9 | 137 | 444 | 185 | 100 | 150 | 83.9 | 101 | 112 | 59.7 | 58.3 | 86.2 | 80.7 |
| **Wet deposition amount** | | | | | | | | | | | **unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| China | Haifu | 2.20 | 3.63 | 5.37 | 5.96 | 12.8 | 14.8 | 17.2 | 10.1 | 13.8 | 10.6 | 1.92 | 2.82 | 98.8 |
| | Jinyunshan | * | 1.12 | * | 10.2 | 14.4 | 18.9 | 5.58 | 11.1 | 13.0 | 22.1 | 2.55 | 0.850 | 110 |
| Russia | Mondy | 0.129 | 0.0483 | <0.01 | <0.01 | 0.0868 | 0.0442 | 0.0866 | <0.01 | <0.01 | 0.0958 | 0.00 | 0.376 | 0.866 |
| | Listvyanka | 0.0146 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.820 | <0.01 | <0.01 | 0.00 | 0.119 | <0.01 | 0.959 |
| | Irkutsk | 1.07 | 0.614 | 0.547 | 1.15 | <0.01 | 0.0410 | 0.0236 | <0.01 | <0.01 | 0.626 | 1.63 | 2.48 | 8.19 |
| Vietnam | Cuc Phuong | <0.01 | 3.77 | 8.86 | 1.95 | 3.40 | 1.98 | 5.29 | 2.81 | <0.01 | <0.01 | 1.90 | <0.01 | 28.2 |
| | Da Nang | 1.42 | 8.24 | 14.0 | 3.64 | 7.61 | 5.09 | 20.9 | 18.0 | 23.4 | 16.4 | 51.7 | 11.1 | 181 |
| **Data completeness** | | | | | | | | | | | **%TP** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| China | Haifu | 8.2 | 66.4 | 66.8 | 99.7 | 99.3 | 74.3 | 100 | 89.2 | 71.0 | 99.2 | 67.0 | 30.3 | 85.5 |
| | Jinyunshan | 0.0 | 34.2 | 0.0 | 39.1 | 100 | 36.1 | 100 | 100 | 75.5 | 85.5 | 32.1 | 33.3 | 65.7 |
| Russia | Mondy | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 | 100 |
| | Listvyanka | 100 | 100 | 100 | 100 | 100 | 95.1 | 100 | 100 | 100 | -- | 100 | 100 | 99.6 |
| | Irkutsk | 100 | 100 | 100 | 100 | 99.3 | 97.2 | 100 | 100 | 100 | 100 | 100 | 99.5 | 99.8 |
| Vietnam | Cuc Phuong | 96.0 | 57.7 | 99.8 | 92.7 | 100 | 99.9 | 100 | 100 | 100 | 100 | 82.4 | 82.7 | 98.7 |
| | Da Nang | 98.7 | 95.2 | 100 | 100 | 98.4 | 83.5 | 100 | 98.9 | 100 | 100 | 100 | 100 | 99.4 |

Terms and abbreviations are given in Table 3.5.

**Table 3.95 Concentration, deposition and data completeness of $F^-$**

| Precipitation amount-weighted average concentration/ Precipitation amount | | | | | | | | | | | | unit : μmol $L^{-1}$ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| China | Haifu | 6.60 | 5.71 | 3.39 | 3.47 | 3.62 | 2.19 | 2.12 | 2.06 | 2.07 | 2.86 | 9.13 | 11.0 | 2.86 |
| | Jinyunshan | 2.06 | 3.42 | 1.40 | 2.04 | 2.40 | 1.92 | 2.00 | <1 | 1.21 | 2.33 | 5.25 | 8.51 | 1.94 |
| | Hongwen | -- | 8.96 | 30.5 | 9.09 | 15.1 | 4.08 | 3.83 | -- | * | 8.50 | 10.4 | -- | 7.50 |
| | Xiaoping | -- | 5.99 | <1 | <1 | 5.36 | 4.07 | 2.64 | -- | 1.09 | 5.79 | <1 | -- | 2.94 |
| | Xiang Zhou | 9.11 | 1.89 | 1.19 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 1.99 | -- | <1 |
| | Zhuxiandong | 9.77 | -- | 2.68 | 1.25 | <1 | 1.08 | <1 | <1 | 1.00 | <1 | 4.31 | -- | 1.04 |
| Japan | Yusuhara | <1 | <1 | <1 | <1 | * | * | * | * | * | * | <1 | <1 | <1 |
| | Ogasawara | <1 | <1 | <1 | * | * | * | * | * | * | * | * | * | <1 |
| | Tokyo | <1 | <1 | <1 | * | * | * | * | * | * | * | * | * | <1 |
| Russia | Mondy | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 |
| | Listvyanka | 1.66 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 | <1 |
| | Irkutsk | 3.76 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Vietnam | Hanoi | 39.6 | 14.9 | 19.7 | 17.5 | 12.0 | 8.30 | 1.86 | 2.17 | 1.90 | 1.77 | 5.53 | 29.9 | 6.69 |
| | Hoa Binh | 6.42 | 8.26 | 11.2 | 10.6 | 7.07 | 5.81 | 1.31 | 1.09 | 1.18 | <1 | 3.32 | 2.60 | 2.66 |
| | Cuc Phuong | 2.74 | 7.37 | 3.41 | 3.98 | 5.32 | <1 | 4.12 | 2.18 | 3.31 | 8.44 | 3.53 | 3.32 | 4.69 |
| | Da Nang | 9.42 | 12.7 | 14.6 | 10.2 | 13.2 | 9.47 | 13.3 | 8.62 | 8.74 | 12.9 | 11.9 | 9.17 | 11.4 |
| | Can Tho | -- | 1.00 | 1.38 | 1.00 | 1.41 | 1.54 | 1.00 | 1.00 | 1.00 | 1.01 | 1.04 | 1.00 | 1.14 |
| | Ho Chi Minh | 1.00 | 1.00 | 1.00 | 1.00 | 1.10 | 1.00 | 1.61 | 1.56 | 1.00 | 1.00 | 1.00 | 1.00 | 1.10 |
| | Yen Bai | 2.85 | 2.84 | 14.2 | 7.53 | 6.13 | 5.19 | 1.47 | 1.25 | 1.84 | 1.95 | 1.94 | 2.18 | 3.09 |

| Wet deposition amount | | | | | | | | | | | | unit: mmol $m^2$month$^{-1}$ or mmol $m^{-2}$year$^{-1}$ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| China | Haifu | 0.0806 | 0.165 | 0.297 | 0.336 | 0.375 | 0.282 | 0.360 | 0.478 | 0.358 | 0.433 | 0.172 | 0.145 | 3.48 |
| | Jinyunshan | 0.0721 | 0.0499 | 0.107 | 0.244 | 0.411 | 0.437 | 0.145 | 0.156 | 0.241 | 0.358 | 0.123 | 0.117 | 2.46 |
| | Hongwen | 0.00 | 0.513 | 0.692 | 0.475 | 0.826 | 1.02 | 0.299 | 0.00 | * | 0.0700 | 0.158 | 0.00 | 4.04 |
| | Xiaoping | 0.00 | 0.328 | 0.0424 | 0.0226 | 0.336 | 0.819 | 0.257 | 0.00 | 0.0246 | 0.140 | 0.0166 | 0.00 | 1.99 |
| | Xiang Zhou | 0.0592 | 0.0217 | 0.0920 | 0.108 | 0.190 | 0.178 | 0.310 | 0.376 | 0.346 | 0.0795 | 0.0498 | 0.00 | 1.81 |
| | Zhuxiandong | 0.0488 | 0.00 | 0.191 | 0.166 | 0.192 | 0.197 | 0.330 | 0.156 | 0.399 | 0.0736 | 0.129 | 0.00 | 1.88 |
| Japan | Yusuhara | 0.0252 | 0.0165 | 0.0258 | 0.0563 | * | * | * | * | * | * | 0.0371 | 0.0421 | 0.772 |
| | Ogasawara | 0.0133 | <0.01 | 0.0143 | * | * | * | * | * | * | * | * | * | 0.360 |
| | Tokyo | <0.01 | <0.01 | 0.0532 | * | * | * | * | * | * | * | * | * | 0.748 |
| Russia | Mondy | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | <0.01 | <0.01 |
| | Listvyanka | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | <0.01 | <0.01 | <0.01 |
| | Irkutsk | 0.0437 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0437 |
| Vietnam | Hanoi | 3.25 | 0.0805 | 1.72 | 0.898 | 1.31 | 2.22 | 1.16 | 0.618 | 0.550 | 0.377 | 0.0260 | 1.65 | 13.9 |
| | Hoa Binh | 0.407 | 0.0421 | 0.285 | 1.07 | 0.958 | 0.592 | 0.449 | 0.429 | 0.219 | 0.457 | 0.0395 | 0.0933 | 5.04 |
| | Cuc Phuong | 0.311 | 0.0958 | 0.279 | 0.225 | 0.490 | 0.0415 | 2.06 | 0.383 | 1.37 | 4.94 | 0.134 | 0.147 | 10.5 |
| | Da Nang | 0.893 | 0.764 | 0.460 | 0.202 | 1.00 | 0.321 | 3.30 | 1.54 | 1.83 | 3.55 | 10.5 | 1.18 | 25.6 |
| | Can Tho | 0.00 | 0.124 | 0.0510 | 0.123 | 0.534 | 0.248 | 0.218 | 0.186 | 0.178 | 0.343 | 0.120 | 0.0440 | 2.17 |
| | Ho Chi Minh | 0.124 | 0.224 | 0.0689 | 0.0762 | 0.291 | 0.421 | 0.417 | 0.402 | 0.721 | 0.565 | 0.393 | 0.0724 | 3.77 |
| | Yen Bai | 0.390 | 0.0389 | 1.65 | 0.604 | 0.876 | 1.24 | 0.820 | 0.617 | 0.526 | 0.501 | 0.0318 | 0.123 | 7.42 |

| Data completeness | | | | | | | | | | | %TP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| China | Haifu | 97.5 | 100 | 99.5 | 99.7 | 99.3 | 99.5 | 100 | 99.9 | 99.9 | 100 | 100 | 97.0 | 99.8 |
| | Jinyunshan | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Hongwen | -- | 99.5 | 98.2 | 100 | 99.5 | 100 | 100 | -- | 0.0 | 100 | 100 | -- | 99.8 |
| | Xiaoping | -- | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 | 100 | 100 | -- | 100 |
| | Xiang Zhou | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 |
| | Zhuxiandong | 100 | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 |
| Japan | Yusuhara | 100 | 100 | 100 | 22.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 46.8 | 100 | 18.1 |
| | Ogasawara | 99.9 | 99.7 | 97.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.0 |
| | Tokyo | 100 | 100 | 99.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.3 |
| Russia | Mondy | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 | 100 |
| | Listvyanka | 100 | 100 | 100 | 100 | 100 | 98.9 | 100 | 100 | 100 | -- | 100 | 100 | 99.9 |
| | Irkutsk | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Vietnam | Hanoi | 100 | 100 | 100 | 100 | 99.6 | 100 | 100 | 100 | 100 | 100 | 83.0 | 100 | 99.9 |
| | Hoa Binh | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Cuc Phuong | 96.0 | 57.7 | 99.8 | 92.7 | 100 | 99.9 | 100 | 100 | 100 | 100 | 82.4 | 82.7 | 98.7 |
| | Da Nang | 98.7 | 95.2 | 100 | 100 | 98.4 | 83.5 | 100 | 98.9 | 100 | 100 | 100 | 100 | 99.4 |
| | Can Tho | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Ho Chi Minh | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Yen Bai | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Terms and abbreviations are given in Table 3.5.

**Table 3.96 Concentration, deposition and data completeness of $Br^-$**

| **Precipitation amount-weighted average concentration/ Precipitation amount** | | | | | | | | | | | **unit : µmol $L^{-1}$** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Russia | Mondy | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 |
| | Listvyanka | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 | <1 |
| | Irkutsk | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| **Wet deposition amount** | | | | | | | | | | | **unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Russia | Mondy | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | <0.01 | <0.01 |
| | Listvyanka | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | <0.01 | <0.01 | <0.01 |
| | Irkutsk | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| **Data completeness** | | | | | | | | | | | **%TP** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Russia | Mondy | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 | 100 |
| | Listvyanka | 100 | 100 | 100 | 100 | 100 | 98.9 | 100 | 100 | 100 | -- | 100 | 100 | 99.9 |
| | Irkutsk | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Terms and abbreviations are given in Table 3.5.

**Table 3.97 Concentration, deposition and data completeness of $NO_2^-$**

| **Precipitation amount-weighted average concentration/ Precipitation amount** | | | | | | | | | | | **unit : µmol $L^{-1}$** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Yusuhara | <1 | <1 | <1 | <1 | * | * | * | * | * | * | <1 | <1 | <1 |
| | Ogasawara | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | * | * | * | * | <1 |
| | Tokyo | 1.62 | 2.68 | 1.68 | 1.44 | <1 | <1 | 1.10 | <1 | <1 | <1 | 1.92 | 2.00 | <1 |
| Russia | Mondy | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 |
| | Listvyanka | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 | <1 |
| | Irkutsk | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| **Wet deposition amount** | | | | | | | | | | | **unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Yusuhara | 0.0104 | 0.0134 | 0.0270 | 0.0286 | * | * | * | * | * | * | 0.0194 | 0.0141 | 0.444 |
| | Ogasawara | <0.01 | <0.01 | <0.01 | 0.0270 | <0.01 | <0.01 | <0.01 | <0.01 | * | * | * | * | 0.0414 |
| | Tokyo | 0.0357 | 0.0348 | 0.142 | 0.152 | 0.0496 | 0.0672 | 0.0800 | 0.0713 | 0.101 | 0.221 | 0.0811 | 0.0280 | 1.07 |
| Russia | Mondy | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | <0.01 | 0.0176 |
| | Listvyanka | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0108 | <0.01 | <0.01 | 0.00 | <0.01 | <0.01 | 0.0305 |
| | Irkutsk | <0.01 | <0.01 | <0.01 | 0.0123 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0116 | 0.0783 |
| **Data completeness** | | | | | | | | | | | **%TP** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Yusuhara | 100 | 100 | 100 | 22.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 46.8 | 100 | 18.1 |
| | Ogasawara | 99.9 | 99.7 | 59.5 | 99.4 | 99.9 | 100 | 99.1 | 99.4 | 0.0 | 0.0 | 0.0 | 0.0 | 65.2 |
| | Tokyo | 100 | 100 | 99.4 | 92.9 | 99.1 | 100 | 99.3 | 100 | 98.9 | 94.6 | 99.5 | 100 | 97.1 |
| Russia | Mondy | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 | 100 |
| | Listvyanka | 100 | 100 | 100 | 100 | 100 | 98.9 | 100 | 100 | 100 | -- | 100 | 100 | 99.9 |
| | Irkutsk | 100 | 100 | 100 | 100 | 100 | 97.2 | 100 | 100 | 100 | 100 | 100 | 100 | 99.9 |

Terms and abbreviations are given in Table 3.5.

**Table 3.98 Concentration, deposition and data completeness of $PO_4^{3-}$**

| **Precipitation amount-weighted average concentration/ Precipitation amount** | | | | | | | | | | | **unit : µmol $L^{-1}$** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Yusuhara | <1 | <1 | <1 | <1 | * | * | * | * | * | * | <1 | <1 | <1 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Thailand | Bangkok | <1 | -- | <1 | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Samutprakarn | <1 | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | 2.26 | <1 |
| | Pathumthani | <1 | -- | <1 | <1 | <1 | 2.92 | -- | 1.02 | 1.60 | 1.19 | 1.70 | <1 | 1.26 |
| | Khanchanaburi | -- | -- | <1 | <1 | <1 | <1 | 1.60 | <1 | <1 | <1 | -- | -- | <1 |
| | Mae Hia | 9.82 | -- | -- | <1 | <1 | <1 | 2.42 | <1 | 4.59 | <1 | -- | -- | <1 |
| | Sakaerat | <1 | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | -- | <1 |
| **Wet deposition amount** | | | | | | | | | | | **unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Yusuhara | 0.0188 | <0.01 | 0.0138 | 0.0552 | * | * | * | * | * | * | 0.0264 | <0.01 | 0.381 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Thailand | Bangkok | <0.01 | 0.00 | <0.01 | 0.00 | 0.00 | <0.01 | <0.01 | 0.0493 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0610 |
| | Samutprakarn | <0.01 | 0.00 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | 0.0515 | 0.0536 |
| | Pathumthani | <0.01 | 0.00 | <0.01 | <0.01 | 0.170 | 0.528 | 0.00 | 0.215 | 0.396 | 0.396 | <0.01 | <0.01 | 1.72 |
| | Khanchanaburi | 0.00 | 0.00 | <0.01 | 0.0169 | 0.0142 | <0.01 | 0.396 | <0.01 | <0.01 | <0.01 | 0.00 | 0.00 | 0.433 |
| | Mae Hia | 0.264 | 0.00 | 0.00 | 0.0188 | <0.01 | <0.01 | 0.295 | <0.01 | 0.596 | 0.0391 | 0.00 | 0.00 | 1.23 |
| | Sakaerat | <0.01 | 0.00 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0352 | <0.01 | 0.00 | 0.00 | 0.0638 |
| **Data completeness** | | | | | | | | | | | **%TP** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Yusuhara | 100 | 100 | 100 | 22.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 46.8 | 100 | 18.1 |
| Philippines | Metro Manila | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Los Baños | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Thailand | Bangkok | 100 | -- | 100 | -- | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Samutprakarn | 100 | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | 100 | 100 |
| | Pathumthani | 100 | -- | 100 | 100 | 100 | 100 | -- | 100 | 100 | 100 | 100 | 83.6 | 99.8 |
| | Khanchanaburi | -- | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | -- | -- | 100 |
| | Mae Hia | 100 | -- | -- | 99.3 | 100 | 99.9 | 99.1 | 99.9 | 100 | 100 | -- | -- | 99.9 |
| | Sakaerat | 100 | -- | 100 | 100 | 91.2 | 100 | 99.8 | 100 | 100 | 99.8 | -- | -- | 98.5 |

Terms and abbreviations are given in Table 3.5.

**Table 3.99 Concentration, deposition and data completeness of Formic Acid**

| **Precipitation amount-weighted average concentration/ Precipitation amount** | | | | | | | | | | | | | | **unit : µmol $L^{-1}$** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | * | * | * | * | * | 10.8 | * | * | * | * | * | * | 10.8 |
| Malaysia | Petaling Jaya | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Tanah Rata | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Danum Valley | * | * | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Kuching | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Thailand | Bangkok | 34.4 | -- | 9.51 | -- | -- | 5.93 | 3.16 | 1.20 | <1 | 1.86 | 7.25 | 15.8 | 2.98 |
| | Samutprakarn | <1 | -- | <1 | 3.27 | 1.23 | <1 | <1 | <1 | <1 | 1.15 | -- | <1 | <1 |
| | Pathumthani | 3.30 | -- | <1 | <1 | <1 | <1 | -- | <1 | <1 | <1 | <1 | <1 | <1 |
| | Khanchanaburi | -- | -- | <1 | <1 | <1 | <1 | <1 | 1.37 | <1 | <1 | -- | -- | <1 |
| | Mae Hia | 7.50 | -- | -- | 13.4 | 6.86 | 5.26 | 1.14 | 1.89 | <1 | 4.01 | -- | -- | 4.55 |
| | Sakaerat | 13.4 | -- | 2.40 | <1 | <1 | <1 | 1.19 | 2.76 | 1.48 | <1 | -- | -- | 1.44 |
| **Wet deposition amount** | | | | | | | | | | | | | | **unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$** |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | * | * | * | * | * | 1.24 | * | * | * | * | * | * | 12.2 |
| Malaysia | Petaling Jaya | <0.01 | <0.01 | 0.0105 | <0.01 | <0.01 | 0.0100 | <0.01 | <0.01 | 0.0136 | <0.01 | <0.01 | <0.01 | 0.0465 |
| | Tanah Rata | 0.0242 | <0.01 | 0.0403 | 0.0885 | 0.177 | 0.0299 | <0.01 | <0.01 | 0.0109 | <0.01 | 0.0944 | <0.01 | 0.472 |
| | Danum Valley | * | * | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0768 | 0.123 |
| | Kuching | 0.108 | 0.0788 | <0.01 | 0.0412 | <0.01 | <0.01 | 0.0630 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.299 |
| Thailand | Bangkok | 1.02 | 0.00 | 0.242 | 0.00 | 0.00 | 0.892 | 0.760 | 0.340 | 0.169 | 0.882 | 0.246 | 0.196 | 4.75 |
| | Samutprakarn | 0.0170 | 0.00 | 0.0239 | 0.140 | 0.521 | 0.0984 | 0.144 | 0.113 | 0.140 | 0.408 | 0.00 | 0.0175 | 1.64 |
| | Pathumthani | 0.0436 | 0.00 | <0.01 | <0.01 | 0.0301 | <0.01 | 0.00 | <0.01 | 0.0436 | 0.0727 | <0.01 | <0.01 | 0.204 |
| | Khanchanaburi | 0.00 | 0.00 | 0.0162 | 0.0490 | 0.108 | 0.0231 | 0.0266 | 0.195 | 0.0124 | 0.0592 | 0.00 | 0.00 | 0.508 |
| | Mae Hia | 0.201 | 0.00 | 0.00 | 0.576 | 2.95 | 0.576 | 0.139 | 0.367 | 0.0924 | 0.716 | 0.00 | 0.00 | 5.62 |
| | Sakaerat | 0.0817 | 0.00 | 0.699 | 0.0210 | 0.236 | 0.0872 | 0.132 | 0.434 | 0.597 | 0.142 | 0.00 | 0.00 | 2.44 |
| **Data completeness** | | | | | | | | | | | | | | **%TP** |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Malaysia | Petaling Jaya | 100 | 100 | 100 | 100 | 100 | 98.2 | 71.8 | 100 | 100 | 99.9 | 67.0 | 100 | 95.7 |
| | Tanah Rata | 100 | 97.5 | 100 | 100 | 100 | 96.6 | 86.1 | 100 | 100 | 98.2 | 100 | 86.7 | 98.2 |
| | Danum Valley | 0.0 | 0.0 | 100 | 32.4 | 70.4 | 88.4 | 83.4 | 74.9 | 100 | 100 | 86.7 | 100 | 71.3 |
| | Kuching | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Thailand | Bangkok | 100 | -- | 100 | -- | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Samutprakarn | 100 | -- | 100 | 100 | 100 | 79.7 | 97.2 | 100 | 100 | 100 | -- | 100 | 97.4 |
| | Pathumthani | 97.9 | -- | 100 | 100 | 100 | 100 | -- | 99.9 | 100 | 99.8 | 100 | 83.6 | 99.8 |
| | Khanchanaburi | -- | -- | 100 | 100 | 100 | 68.6 | 94.5 | 100 | 100 | 100 | -- | -- | 94.4 |
| | Mae Hia | 99.1 | -- | -- | 98.1 | 100 | 99.9 | 97.9 | 99.9 | 99.5 | 100 | -- | -- | 99.6 |
| | Sakaerat | 100 | -- | 100 | 100 | 91.2 | 100 | 99.3 | 98.0 | 99.9 | 99.6 | -- | -- | 98.2 |

Terms and abbreviations are given in Table 3.5.

**Table 3.100 Concentration, deposition and data completeness of Acetic Acid**

| Precipitation amount-weighted average concentration/ Precipitation amount | | | | | | | | | | | unit : µmol $L^{-1}$ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | * | * | * | * | * | 5.11 | * | * | * | * | * | * | 5.11 |
| Malaysia | Petaling Jaya | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Tanah Rata | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 1.66 | <1 | <1 | <1 | <1 |
| | Danum Valley | * | * | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Kuching | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| Thailand | Bangkok | 3.42 | -- | 3.10 | -- | -- | 2.51 | 1.48 | <1 | <1 | <1 | 3.36 | 16.0 | 1.09 |
| | Samutprakarn | <1 | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | <1 | <1 |
| | Pathumthani | <1 | -- | <1 | <1 | <1 | <1 | -- | <1 | <1 | <1 | <1 | <1 | <1 |
| | Khanchanaburi | -- | -- | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | -- | -- | <1 |
| | Mae Hia | <1 | -- | -- | 3.28 | 3.11 | 2.68 | <1 | 1.05 | <1 | <1 | -- | -- | 1.73 |
| | Sakaerat | 7.41 | -- | 1.52 | <1 | <1 | <1 | 1.38 | 1.37 | <1 | <1 | -- | -- | <1 |
| **Wet deposition amount** | | | | | | | | | | | unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$ | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | * | * | * | * | * | 0.589 | * | * | * | * | * | * | 5.78 |
| Malaysia | Petaling Jaya | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.114 | <0.01 | 0.0573 | 0.0593 | <0.01 | <0.01 | <0.01 | 0.267 |
| | Tanah Rata | 0.0566 | 0.0321 | 0.0236 | 0.229 | 0.161 | 0.0128 | <0.01 | 0.0350 | 0.442 | 0.0157 | 0.0390 | <0.01 | 1.06 |
| | Danum Valley | * | * | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0301 | 0.0557 | <0.01 | 0.0127 | 0.0617 | 0.231 |
| | Kuching | 0.223 | 0.0375 | <0.01 | 0.0798 | <0.01 | 0.0110 | 0.0894 | 0.0217 | <0.01 | <0.01 | <0.01 | <0.01 | 0.464 |
| Thailand | Bangkok | 0.102 | 0.00 | 0.0790 | 0.00 | 0.00 | 0.377 | 0.357 | 0.159 | 0.122 | 0.222 | 0.114 | 0.199 | 1.73 |
| | Samutprakarn | <0.01 | 0.00 | <0.01 | 0.0284 | 0.0944 | 0.0552 | 0.0265 | 0.109 | 0.0782 | 0.0916 | 0.00 | <0.01 | 0.506 |
| | Pathumthani | <0.01 | 0.00 | <0.01 | <0.01 | <0.01 | <0.01 | 0.00 | 0.167 | 0.0462 | 0.0112 | <0.01 | <0.01 | 0.231 |
| | Khanchanaburi | 0.00 | 0.00 | <0.01 | 0.0194 | 0.0254 | <0.01 | 0.0138 | 0.0556 | <0.01 | 0.0393 | 0.00 | 0.00 | 0.170 |
| | Mae Hia | 0.0101 | 0.00 | 0.00 | 0.141 | 1.34 | 0.294 | 0.0524 | 0.203 | 0.0153 | 0.0767 | 0.00 | 0.00 | 2.14 |
| | Sakaerat | 0.0452 | 0.00 | 0.443 | <0.01 | <0.01 | 0.0186 | 0.152 | 0.216 | 0.394 | 0.0776 | 0.00 | 0.00 | 1.36 |
| **Data completeness** | | | | | | | | | | | %TP | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Malaysia | Petaling Jaya | 100 | 100 | 100 | 100 | 100 | 98.2 | 71.8 | 100 | 100 | 99.9 | 67.0 | 100 | 95.7 |
| | Tanah Rata | 100 | 97.5 | 100 | 100 | 100 | 96.6 | 86.1 | 100 | 100 | 98.2 | 100 | 86.7 | 98.2 |
| | Danum Valley | 0.0 | 0.0 | 100 | 32.4 | 70.4 | 88.4 | 83.4 | 74.9 | 100 | 100 | 86.7 | 100 | 71.3 |
| | Kuching | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Thailand | Bangkok | 100 | -- | 100 | -- | -- | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | Samutprakarn | 100 | -- | 100 | 100 | 100 | 79.7 | 97.2 | 100 | 100 | 100 | -- | 100 | 97.4 |
| | Pathumthani | 97.9 | -- | 100 | 100 | 100 | 100 | -- | 99.9 | 100 | 99.8 | 100 | 83.6 | 99.8 |
| | Khanchanaburi | -- | -- | 100 | 100 | 100 | 68.6 | 94.5 | 100 | 100 | 100 | -- | -- | 94.4 |
| | Mae Hia | 99.1 | -- | -- | 98.1 | 100 | 99.9 | 97.9 | 99.9 | 99.5 | 100 | -- | -- | 99.6 |
| | Sakaerat | 100 | -- | 100 | 100 | 91.2 | 100 | 99.3 | 98.0 | 99.9 | 99.6 | -- | -- | 98.2 |

Terms and abbreviations are given in Table 3.5.

**Table 3.101 Concentration, deposition and data completeness of Oxalic Acid**

| **Precipitation amount-weighted average concentration/ Precipitation amount** | | | | | | | | | | | **unit : µmol $L^{-1}$** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | * | * | * | * | * | <1 | * | * | * | * | * | * | **<1** |
| Malaysia | Petaling Jaya | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Tanah Rata | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Danum Valley | * | * | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| | Kuching | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| **Wet deposition amount** | | | | | | | | | | | **unit: mmol $m^{-2}month^{-1}$ or mmol $m^{-2}year^{-1}$** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | * | * | * | * | * | 0.114 | * | * | * | * | * | * | 1.12 |
| Malaysia | Petaling Jaya | <0.01 | <0.01 | 0.0441 | 0.0849 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.141 |
| | Tanah Rata | 0.0120 | 0.0305 | 0.0113 | 0.190 | 0.0190 | 0.0201 | <0.01 | 0.0208 | 0.0177 | 0.0114 | <0.01 | <0.01 | 0.347 |
| | Danum Valley | * | * | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0390 | <0.01 | <0.01 | <0.01 | 0.0460 | 0.120 |
| | Kuching | 0.0424 | 0.0328 | 0.0209 | 0.0133 | <0.01 | <0.01 | <0.01 | <0.01 | 0.0249 | <0.01 | <0.01 | 0.0313 | 0.166 |
| **Data completeness** | | | | | | | | | | | **%TP** | | | |
| Country | Name of sites | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | **Annual** |
| Japan | Tappi | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Malaysia | Petaling Jaya | 100 | 100 | 100 | 100 | 100 | 98.2 | 71.8 | 100 | 100 | 99.9 | 67.0 | 100 | 95.7 |
| | Tanah Rata | 100 | 97.5 | 100 | 100 | 100 | 96.6 | 86.1 | 100 | 100 | 98.2 | 100 | 86.7 | 98.2 |
| | Danum Valley | 0.0 | 0.0 | 100 | 32.4 | 70.4 | 88.4 | 83.4 | 74.9 | 100 | 100 | 86.7 | 100 | 71.3 |
| | Kuching | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Terms and abbreviations are given in Table 3.5.

# CHAPTER 4

## Dry Deposition Monitoring

## (Air Concentration)

# 4. Dry Deposition (Air Concentration) Monitoring

## 4.1 Method

Automatic monitoring and manual monitoring methods were used to implement dry deposition (air concentration) monitoring in 2017. The monitoring items were selected taking into account the priority chemical species defined in S*trategy Paper for Future Direction of Dry Deposition Monitoring of EANET (2016-2020 Edition, 2015).*

### 4.1.1 Automatic Monitoring Method

The priority chemical species of $SO_2$, $O_3$, NO, $NO_2$, $PM_{10}$ and $PM_{2.5}$ are monitored by automatic monitoring methods. The criteria and quality assurance/quality control (QA/QC) for automatic monitoring methods are described in the Chapter 3 of *Technical Manual for Air Concentration Monitoring in East Asia* (Technical Manual).

### 4.1.2 Manual Monitoring Method

Filter pack and passive sampler are used for manual monitoring in EANET. The filter pack method are used to determine gaseous substances ($SO_2$, $HNO_3$, HCl, $NH_3$) and particulate matter components ($SO_4^{2-}$, $NO_3^-$, $Cl^-$, $NH_4^+$, $Na^+$, $K^+$, $Mg^{2+}$, $Ca^{2+}$), which are identified as the priority chemical species in EANET. The passive sampler method is also used to determine gaseous species of $SO_2$, $O_3$, $NO_2$. The recommended monitoring method by means of the four-stage filter pack is explained in the Technical Manual. Basic specifications of the four-stage filter pack method are shown in Fig. 4.1. The QA/QC for the manual monitoring methods is described in the Chapter 4 of the Technical Manual.

### 4.1.3 Monitoring Sites

The measurement methods and parameters at each monitoring site for dry deposition (air concentration) monitoring in 2017 are shown in Table 4.1. Automatic monitors were used in Cambodia, China, Indonesia, Japan, Lao PDR, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand and Vietnam. The individual methods adopted at each site are shown in Table 4.2.

The filter pack method was used in all EANET member countries and the passive sampler method was used in Indonesia and Russia in 2017.

**Preparation of filter pack**

| Stage | Specification of filter | Collected species |
|---|---|---|
| 1st (F0) | PTFE filter (pore size: 0.8 μm, diameter: 47 mm) | Aerosols |
| 2nd (F1) | Polyamide filter (pore size: 0.45 μm, diameter: 47 mm) | $HNO_3$, $SO_2$, HCl, $NH_3$ |
| 3rd (F2) | Impregnated cellulose filter Solution: 6% $K_2CO_3$ + 2% glycerin | $SO_2$, HCl |
| 4th (F3) | Impregnated cellulose filter Solution: 5% $H_3PO_4$ + 2% glycerin | $NH_3$ |

↓

**Sampling on site**

Air flow rate: approximately 1 or 2 liter/minute
Sampling period: one week or two weeks

↓

**Pretreatment of filter pack**

| Stage | Solvent | Extracted species |
|---|---|---|
| F0 | Extracted with 20 mL of deionized water | $SO_4^{2-}$, $NO_3^-$, $Cl^-$, $NH_4^+$, $Na^+$, $K^+$, $Mg^{2+}$, $Ca^{2+}$ |
| F1 | Extracted with 20 mL of deionized water | $SO_4^{2-}$, $NO_3^-$, $Cl^-$, $NH_4^+$ |
| F2 | Extracted with 20mL of 0.05% $H_2O_2$ | $SO_4^{2-}$, $Cl^-$ |
| F3 | Extracted with 20mL of deionized water | $NH_4^+$ |

↓

**Chemical analysis**

By ion chromatography or other suitable analytical methods

**Fig. 4.1 Specification of the four-stage filter pack method**

**Table 4.1.1 Sampling methods and parameters for dry deposition (air concentration) monitoring in 2017**

| Country | Site | Method | Parameter |
|---|---|---|---|
| Cambodia | Phnom Penh[*1] | AT | $PM_{2.5}$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| China | Chongqing | | |
| | - Jinyunshan | AT | $SO_2$, NO, $NO_x$*, $PM_{10}$ |
| | Xiamen | | |
| | - Hongwen | AT | $SO_2$, $NO_2$, $PM_{10}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Zhuhai | | |
| | - Haibin-Park | AT | $SO_2$, $NO_2$, $PM_{10}$ |
| Indonesia | Jakarta | AT | $PM_{2.5}$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | | PS | $NO_2$ |
| | Serpong | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Kototabang | PS | $SO_2$, $NO_2$ |
| | Bandung | AT | $O_3$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | | PS | $NO_2$ |
| Japan | Rishiri | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Ochiichi | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Tappi | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Sado-seki | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Happo | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Ijira | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Oki | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Banryu | AT | $SO_2$, NO, $NO_2$, $NO_x$, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Yusuhara | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Hedo | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Ogasawara | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Tokyo | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| Lao PDR | Vientiane[*4] | AT | NO, $NO_2$, $NO_x$, $PM_{10}$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |

**Table 4.1.1 Sampling methods and parameters for dry deposition (air concentration) monitoring in 2017 (continued)**

| Country | Site | Method | Parameter |
|---|---|---|---|
| Malaysia | Petaling Jaya | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Tanah Rata | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Danum Valley | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| Mongolia | Ulaanbaatar | AT | $SO_2$, NO, $NO_2$, $NO_x$, $O_3$, $PM_{10}/_{2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Terelj | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| Myanmar | Yangon | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Mandalay | AT | $PM_{2.5}$ |
| Philippines | Metro Manila[*1,*4] | AT | NO, $NO_2$, $NO_x$, $O_3$, $PM_{10}/_{2.5}$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Los Baños[*4] | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Mt. Sto. Tomas[*4] | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| Republic of Korea | Kanghwa | AT | $SO_2$, $NO_2$, $O_3$, $PM_{10/2.5}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC in $PM_{2.5}$ |
| | Cheju | AT | $SO_2$, $NO_2$, $O_3$, $PM_{10/2.5}$ |
| | (Kosan) | FP | $HNO_3$, HCl, $NH_3$, PMC in $PM_{2.5}$ |
| | Imsil | AT | $SO_2$, $NO_2$, $O_3$, $PM_{10}$ |
| | | FP | $HNO_3$, HCl, $NH_3$, PMC in $PM_{2.5}$ |
| Russia | Mondy[*2] | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | | PS | $O_3$ |
| | Listvyanka | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | | PS | $O_3$ |
| | Irkutsk | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | | PS | $O_3$ |
| | Primorskaya | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| Thailand | Bangkok | AT | NO, $NO_2$, $NO_x$, $O_3$, $PM_{10/2.5}$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Samutprakarn | AT | $SO_2$, NO, $NO_2$, $NO_x$, $O_3$, $PM_{10/2.5}$ |
| | Pathumthani[*4] | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Khanchanaburi[*3] | AT | $SO_2$, NO, $NO_x$*, $O_3$, $PM_{10/2.5}$ |
| | (Vachiralongkorn Dam) | FP | $HNO_3$, HCl, $NH_3$, PMC |
| | Chiang Mai | | |
| | - Mae Hia | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | - Chang Phueak | AT | $SO_2$, NO, $NO_2$, $NO_x$, $O_3$, $PM_{10/2.5}$ |
| | - Si Phum | AT | $SO_2$, NO, $NO_2$, $NO_x$, $PM_{10/2.5}$ |
| | Nakhon Ratchasima | | |
| | - Sakaerat | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | - Nai Mueang | AT | $SO_2$, NO, $NO_2$, $NO_x$, $O_3$, $PM_{10}$ |

**Table 4.1.1 Sampling methods and parameters for dry deposition (air concentration) monitoring in 2017 (continued)**

| Country | Site | Method | Parameter |
|---|---|---|---|
| Vietnam | Hanoi | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Hoa Binh | AT | $PM_{2.5}$ |
| | | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Can Tho | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Ho Chi Minh | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |
| | Yen Bai | FP | $SO_2$, $HNO_3$, HCl, $NH_3$, PMC |

AT: Automatic monitor, PS: Passive sampler, FP: Filter pack, PMC: particulate matter components.
NOx*: NOx measured by CLD in remote or rural sites.
Note:
*1 $PM_{2.5}$ monitoring at Phnom Penh and Metro Manila started in 2017.
*2 $O_3$ monitoring at Mondy was measured by PS in 2017 because of their automatic monitor's failure.
*3 Two week intensive monitoring at Khanchanaburi was implemented 3 times per year due to monitoring availability in the remote area.
*4 FP monitoring data of Vientiane, Metro Manila, Los Baños, Mt. Sto. Tomas, and Pathumthani were not submitted.

**Table 4.1.2 Methods of automatic monitors in 2017**

| Country | Site | Parameter | | | | |
|---|---|---|---|---|---|---|
| | | $SO_2$ | $NO_x$ | $O_3$ | $PM_{10}$ | $PM_{2.5}$ |
| Cambodia | Phnom Penh | – | – | – | – | β–ray |
| China | Jinyunshan | UVF | CLD | – | β–ray | – |
| | Hongwen | DOAS | DOAS | – | TEOM | – |
| | Xianzhou | DOAS | DOAS | – | TEOM | – |
| Indonesia | Jakarta | – | – | – | – | β–ray |
| | Bandung | – | – | UVP | – | – |
| Japan | Rishiri | UVF | CLD | UVP | β–ray | β–ray |
| | Ochiishi | UVF | CLD | UVP | β–ray | β–ray |
| | Tappi | UVF | CLD | UVP | β–ray | β–ray |
| | Sado-seki | UVF | CLD | UVP | β–ray | β–ray |
| | Happo | UVF | CLD | UVP | β–ray | β–ray |
| | Ijira | UVF | CLD | UVP | β–ray | β–ray |
| | Oki | UVF | CLD | UVP | β–ray | β–ray |
| | Banryu | UVF | CLD | UVP | β–ray | β–ray |
| | Yusuhara | UVF | CLD | UVP | β–ray | β–ray |
| | Hedo | UVF | CLD | UVP | β–ray | β–ray |
| | Ogasawara | UVF | CLD | UVP | β–ray | β–ray |
| Lao PDR | Vientiane | – | CLD | – | β–ray | – |
| Mongolia | Ulaanbaatar | UVF | CLD | UVP | β–ray | β–ray |
| Myanmar | Mandalay | – | – | – | – | β–ray |

| | | | | | | |
|---|---|---|---|---|---|---|
| Philippines | Metro Manila | – | CLD | UVP | LS | β–ray |
| Republic of Korea | Kanghwa | UVF | CLD | UVP | β–ray | – |
| | Cheju (Kosan) | UVF | CLD | UVP | β–ray | – |
| | Imsil | UVF | CLD | UVP | β–ray | – |
| Russia | Mondy | – | – | UVP | – | – |
| Thailand | Bangkok | – | CLD | UVP | β–ray | β–ray |
| | Samutprakarn | UVF | CLD | UVP | β–ray | β–ray |
| | Khanchanaburi (Vachiralongkorn Dam) | UVF | CLD | UVP | β–ray | β–ray |
| | Chiang Mai | | | | | |
| | - Chang Phueak | UVF | CLD | UVP | β–ray | β–ray |
| | - Si Phum | UVF | CLD | UVP | β–ray | β–ray |
| | Nakhon Ratchasima | | | | | |
| | - Nai Mueang | UVF | CLD | UVP | β–ray | – |
| Vietnam | Hoa Binh | – | – | – | – | β–ray |

UVF: Ultraviolet fluorescent method, CLD: Chemiluminescence detection method, UVP: Ultraviolet photometric method, β–ray: β–ray absorption method, TEOM: Tapered element oscillating microbalance method, LS: Light scattering method, DOAS: Differential optical absorption spectroscopy method.

### 4.2 Results of Monitoring

Monitoring data were summarized into monthly averaged values accompanied with maximum, minimum and data completeness on a monthly basis. Summarized data in 2017 are presented in Table 4.3 through Table 4.20.

The terms and abbreviations are given in Table 4.2.

**Table 4.2. Terms and abbreviations**

| Term/Abbreviation | Definition |
|---|---|
| Mean | Monthly or annual arithmetic average values |
| Max-d | Maximum values of daily data |
| Min-d | Minimum values of daily data |
| Max-10d | Maximum values of 10-day sampling data |
| Min-10d | Minimum values of 10-day sampling data |
| Max-w | Maximum values of weekly data |
| Min-w | Minimum values of weekly data |
| Max-2w | Maximum values of biweekly data |
| Min-2w | Minimum values of biweekly data |
| Max-m | Maximum values of monthly data |
| Min-m | Minimum values of monthly data |
| % | Percentages of monthly or annual data completeness |

| | |
|---|---|
| [ - ] | No monthly data or no monitoring |
| [ <1 ] | The monthly or the annual value was lower than their reporting limits of $O_3$, $PM_{10}$ or $PM_{2.5}$. |
| [ <0.1 ] | The monthly or the annual value was lower than their reporting limits of gaseous substances ($SO_2$, $HNO_3$, HCl, $NH_3$). |
| [ <0.01 ] | The monthly or the annual value was lower than their reporting limits of particular matter components (PMC). |
| ( ) | Reference data |
| [***] | No data or no measurement |
| Data in hatched cell ( ▭ ) | Annual data completeness was not satisfied with EANET criteria. (<70%) |
| Black cell ( ■ ) | Monitoring was not carried out |

For information on long-term trends of air concentrations, annual averages of gases and particulate matter concentrations from 2000 to 2017 are summarized in Table 4.21 through Table 4.38.

Monthly and annual dry deposition amounts of gaseous and particulate substances in 2017 are summarized in Table 4.39 through Table 4.49. The Inferential Method is adopted to estimate the dry depositions of EANET priority chemical species. Dry deposition amounts of gaseous and particulate substances are estimated by the product of an atmospheric concentration and a deposition velocity expressed as, $F_{dry} = V_d \times C$, where $F_{dry}$, $V_d$, and $C$ denote the dry deposition flux, the calculated deposition velocity, and the measured atmospheric concentrations, respectively for each specie and type of surface. The $V_d$ was calculated by meteorological parameters at the site and parameterization described in the *"Technical Manual on Dry Deposition Flux Estimation in East Asia (Network Center for EANET, 2010)"*. Since $V_d$ of gases and particulate matter are different in different types of land surfaces, the $V_d$ at each site was first calculated for forest and grass surfaces, and the weighted-average of $V_d$ was then estimated according to the land-use ratio of forest and grass within 1 km square from the site. The estimation of dry deposition flux was made only for the sites in which hourly meteorological data and land use data are available.

In Table 4.3 through Table 4.38, ppb unit is used for gases and μg/m$^3$ unit for particulate matter concentrations. In Table 4.39 through Table 4.49, mmol m$^{-2}$ unit is used for monthly or annual dry deposition amounts. For comparing the other networks' data, conversion ratios from ppb to μg/m$^3$, which are based on 20 ºC, 1 atm, are provided in Table 4.50.

Reporting limits for individual species depend on specification of instrument or procedures of sampling and analysis. The NC sets up the reporting limits as shown in Table 4.51 taking into account methods adopted by each country. The data that air concentrations were less than the

reporting limit are specified in the summarized tables. Regarding the particulate matter components measured by the filter pack method, their detection limits for particulate matter components were determined as 0.01 $\mu g/m^3$ for sampled air volume of 20.16 $m^3$ considering the value of $3\sigma$, where $\sigma$ is the standard deviation of blank values obtained at Japan sites in 2003.

**Table 4.3 $SO_2$**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 1.4 | 1.7 | 1.6 | 1.0 | 1.3 | 1.4 | 1.1 | 1.5 | 1.0 | 1.3 | 1.3 | 1.2 | 1.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.5 | 2.0 | 1.6 | 1.1 | 1.5 | 1.5 | 1.1 | 1.6 | 1.1 | 1.5 | 1.3 | 1.3 | 2.0 |
| | | Min-2w | 1.3 | 1.4 | 1.5 | 0.9 | 1.3 | 1.3 | 1.0 | 1.3 | 0.9 | 1.0 | 1.2 | 1.2 | 0.9 |
| China | Jinyunshan | Mean | 4.6 | 4.2 | 4.7 | 4.3 | 2.9 | 2.9 | 3.9 | 4.4 | 2.7 | 2.0 | 2.8 | 3.2 | 3.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 100 | 100 | 100 | 100 | 99 |
| | | Max-d | 9.4 | 11.6 | 12.8 | 7.5 | 6.0 | 5.3 | 7.1 | 7.1 | 4.5 | 4.9 | 5.6 | 6.8 | 12.8 |
| | | Min-d | 1.9 | 1.5 | 0.8 | 1.5 | 1.1 | 1.5 | 2.3 | 1.9 | 1.1 | 1.1 | 0.4 | 1.1 | 0.4 |
| | Hongwen | Mean | 3.9 | 3.6 | 4.9 | 4.2 | 3.6 | 2.7 | 2.6 | 2.9 | 3.6 | 3.1 | 3.7 | 3.9 | 3.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-d | 7.1 | 6.0 | 7.5 | 7.1 | 6.4 | 3.8 | 3.8 | 4.9 | 5.6 | 5.6 | 8.3 | 7.1 | 8.3 |
| | | Min-d | 2.3 | 2.3 | 2.3 | 2.6 | 1.9 | 1.9 | 1.1 | 1.5 | 1.9 | 1.9 | 1.1 | 1.5 | 1.1 |
| | Haibin-Park | Mean | 2.8 | 2.8 | 3.0 | 2.7 | 3.0 | 1.1 | 2.6 | 1.8 | 2.8 | 3.3 | 3.9 | 4.6 | 2.9 |
| | | % | 94 | 100 | 100 | 90 | 100 | 100 | 100 | 81 | 97 | 100 | 100 | 100 | 97 |
| | | Max-d | 5.3 | 5.3 | 5.6 | 5.6 | 6.4 | 3.0 | 4.9 | 6.8 | 6.4 | 6.0 | 6.0 | 7.1 | 7.1 |
| | | Min-d | 1.1 | 1.5 | 1.5 | 1.1 | 0.8 | 0.8 | 0.8 | 0.8 | 1.1 | 1.5 | 1.9 | 2.3 | 0.8 |
| Indonesia | Jakarta | Mean | 2.8 | 1.6 | 1.7 | 2.0 | 3.3 | 1.8 | 2.6 | 0.8 | 1.0 | 1.0 | 0.3 | 0.3 | 1.7 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 3.2 | 1.7 | 2.7 | 2.0 | 4.9 | 2.8 | 4.8 | 0.8 | 1.5 | 1.0 | 0.4 | 0.3 | 4.9 |
| | | Min-2w | 2.4 | 1.6 | 0.8 | 2.0 | 1.6 | 0.8 | 0.5 | 0.8 | 0.6 | 1.0 | 0.2 | 0.3 | 0.2 |
| | Serpong | Mean | 0.5 | 0.8 | 1.1 | 0.4 | 0.4 | 0.3 | 1.4 | 1.0 | 1.1 | 0.7 | 0.6 | 0.6 | 0.8 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.5 | 0.8 | 1.6 | 0.5 | 0.6 | 0.3 | 1.7 | 1.5 | 1.2 | 0.9 | 0.7 | 0.8 | 1.7 |
| | | Min-2w | 0.5 | 0.8 | 0.7 | 0.3 | 0.3 | 0.3 | 1.1 | 0.5 | 1.0 | 0.6 | 0.4 | 0.3 | 0.3 |
| | Kototabang | Mean | 1.1 | 1.4 | 1.0 | 1.8 | 0.7 | 0.9 | 0.8 | 1.1 | 2.1 | 1.9 | 1.9 | 0.8 | 1.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 1.1 | 1.4 | 1.0 | 1.8 | 0.7 | 0.9 | 0.8 | 1.1 | 2.1 | 1.9 | 1.9 | 0.8 | 2.1 |
| | | Min-m | 1.1 | 1.4 | 1.0 | 1.8 | 0.7 | 0.9 | 0.8 | 1.1 | 2.1 | 1.9 | 1.9 | 0.8 | 0.7 |
| | Bandung | Mean | 0.9 | 1.5 | 2.2 | 2.4 | 2.2 | 1.3 | 1.7 | 1.7 | 1.6 | 1.2 | 1.6 | 1.8 | 1.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.3 | 1.5 | 2.4 | 2.5 | 2.3 | 2.1 | 2.1 | 1.8 | 1.7 | 1.5 | 2.1 | 2.3 | 2.5 |
| | | Min-2w | 0.5 | 1.5 | 1.9 | 2.2 | 2.2 | 0.6 | 1.4 | 1.7 | 1.5 | 0.9 | 1.0 | 1.2 | 0.5 |
| Japan | Rishiri | Mean | 0.3 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 | <0.1 |
| | | % | 98 | 99 | 91 | 98 | 98 | 98 | 95 | 98 | 85 | 98 | 96 | 97 | 96 |
| | | Max-d | 1.2 | 0.7 | 0.3 | 0.3 | 0.2 | 0.1 | <0.1 | 0.3 | 0.1 | 0.2 | 0.4 | 1.4 | 1.4 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ochiishi | Mean | 0.2 | 0.2 | <0.1 | 0.1 | 0.2 | <0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.3 | 0.2 |
| | | % | 95 | 96 | 96 | 96 | 89 | 96 | 96 | 96 | 96 | 96 | 89 | 96 | 95 |
| | | Max-d | 0.7 | 0.7 | 0.3 | 0.4 | 0.6 | 0.3 | 1.4 | 0.3 | 0.8 | 0.4 | 0.5 | 0.6 | 1.4 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tappi | Mean | 0.4 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | 0.3 | 0.1 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 |
| | | % | 99 | 99 | 99 | 99 | 99 | 99 | 98 | 99 | 99 | 99 | 99 | 99 | 99 |
| | | Max-d | 1.2 | 0.8 | 0.7 | 0.7 | 1.2 | 0.8 | 1.0 | 0.5 | 0.7 | 0.6 | 0.5 | 1.0 | 1.2 |
| | | Min-d | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Sado-seki | Mean | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.1 | 0.2 |
| | | % | 98 | 98 | 98 | 98 | 99 | 98 | 97 | 43 | 98 | 98 | 98 | 86 | 92 |
| | | Max-d | 1.4 | 0.9 | 1.0 | 1.0 | 1.4 | 0.5 | 0.4 | 0.2 | 0.3 | 0.6 | 0.9 | 0.6 | 1.4 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Happo | Mean | 0.2 | 0.1 | 0.2 | 0.3 | 0.4 | 0.2 | 0.1 | <0.1 | <0.1 | 0.1 | <0.1 | 0.1 | 0.2 |
| | | % | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 55 | 95 | 92 | 98 | 94 |
| | | Max-d | 0.8 | 1.4 | 1.6 | 1.0 | 1.5 | 1.0 | 1.0 | 0.2 | 0.3 | 0.7 | 0.5 | 0.3 | 1.6 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ijira | Mean | <0.1 | <0.1 | 0.2 | 0.2 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 |
| | | % | 98 | 98 | 99 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 85 | 98 | 97 |
| | | Max-d | 0.3 | 0.3 | 1.1 | 0.9 | 0.8 | 1.2 | 0.4 | 0.4 | 0.3 | 0.2 | 0.4 | 0.4 | 1.2 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Oki | Mean | 0.5 | 0.4 | 0.5 | 0.5 | 0.7 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.5 | 0.5 | 0.4 |
| | | % | 98 | 86 | 97 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 93 | 69 | 94 |
| | | Max-d | 2.0 | 0.8 | 1.7 | 1.9 | 2.1 | 1.9 | 0.9 | 0.4 | 0.6 | 0.6 | 1.1 | 1.6 | 2.1 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Banryu | Mean | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.2 | <0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 |
| | | % | 88 | 98 | 98 | 98 | 99 | 98 | 98 | 97 | 98 | 97 | 99 | 98 | 97 |
| | | Max-d | 0.9 | 0.8 | 1.0 | 1.4 | 1.5 | 0.5 | 0.3 | 0.6 | 0.8 | 1.5 | 1.2 | 0.7 | 1.5 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Yusuhara | Mean | 0.8 | 0.7 | 0.8 | 0.9 | 0.7 | 0.4 | 0.6 | 0.7 | 0.3 | 0.4 | 0.7 | 0.7 | 0.6 |
| | | % | 98 | 98 | 98 | 95 | 98 | 98 | 98 | 98 | 85 | 98 | 98 | 98 | 97 |
| | | Max-d | 1.8 | 2.0 | 4.2 | 6.0 | 3.4 | 2.1 | 4.0 | 4.7 | 2.3 | 3.9 | 4.3 | 2.5 | 6.0 |
| | | Min-d | <0.1 | 0.3 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 |

**Table 4.3 $SO_2$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Japan | Hedo | Mean | 0.1 | 0.3 | 0.3 | 0.2 | 0.3 | <0.1 | <0.1 | 0.1 | <0.1 | 0.2 | 0.1 | 0.2 | 0.2 |
| | | % | 98 | 81 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 98 | 97 |
| | | Max-d | 0.4 | 0.9 | 1.2 | 0.7 | 3.3 | 0.2 | 0.2 | 0.2 | 0.9 | 0.5 | 0.3 | 0.4 | 3.3 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ogasawara | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 98 | 89 | 98 | 97 | 98 | 98 | 98 | 97 | 98 | 98 | 98 | 98 | 97 |
| | | Max-d | 0.3 | 0.2 | 0.4 | 0.2 | 0.1 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.3 | 0.1 | 0.4 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tokyo | Mean | 1.1 | 1.3 | 1.1 | 1.5 | 2.0 | 1.7 | 2.1 | 1.2 | 1.5 | 0.6 | - | 1.1 | 1.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 1.4 | 1.4 | 1.1 | 1.8 | 2.2 | 1.8 | 2.6 | 1.5 | 1.9 | 0.9 | - | 1.2 | 2.6 |
| | | Min-2w | 0.7 | 1.2 | 1.0 | 1.1 | 1.7 | 1.6 | 1.2 | 0.8 | 1.2 | 0.4 | - | 0.9 | 0.4 |
| Malaysia | Petaling Jaya | Mean | 1.0 | - | 1.1 | 1.0 | - | 2.5 | 1.5 | 1.3 | 0.8 | 1.0 | 1.0 | 0.9 | 1.1 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 1.8 | - | 1.2 | 1.0 | - | 2.5 | 1.8 | 1.8 | 1.3 | 1.1 | 1.1 | 1.4 | 2.5 |
| | | Min-w | 0.2 | - | 1.0 | 1.0 | - | 2.5 | 1.3 | 0.7 | 0.6 | 0.8 | 1.0 | 0.5 | 0.2 |
| | Tanah Rata | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.3 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | 0.2 | 0.1 | 0.8 | <0.1 | 0.8 |
| | | Min-w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Danum Valley | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | Mean | 32.7 | 26.8 | 15.6 | 10.0 | 3.8 | 1.4 | 1.3 | 1.2 | 1.8 | 5.4 | 15.1 | 22.3 | 11.5 |
| | | % | 99 | 100 | 100 | 97 | 100 | 98 | 98 | 99 | 99 | 77 | 86 | 99 | 96 |
| | | Max-d | 56.1 | 46.9 | 28.0 | 21.6 | 10.5 | 5.9 | 8.2 | 4.5 | 4.9 | 12.5 | 36.9 | 33.7 | 56.1 |
| | | Min-d | 8.9 | 8.8 | 4.8 | 2.7 | 0.5 | <0.1 | <0.1 | <0.1 | 0.4 | 1.5 | 2.6 | 10.1 | <0.1 |
| | Terelj | Mean | - | - | - | - | - | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.1 | 0.2 | 0.3 | 0.2 | 0.3 | 0.7 | 0.3 | 0.7 |
| | | Min-2w | - | - | - | - | - | <0.1 | 0.1 | <0.1 | 0.2 | 0.1 | 0.3 | <0.1 | <0.1 |
| Myanmar | Yangon | Mean | 0.6 | 0.5 | 1.0 | 0.6 | 0.6 | 0.2 | 0.5 | 0.4 | 0.1 | 0.4 | 0.6 | 0.4 | 0.5 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.6 | 0.6 | 1.5 | 0.9 | 1.6 | 0.2 | 0.8 | 0.6 | 0.2 | 1.2 | 0.6 | 0.4 | 1.6 |
| | | Min-2w | 0.6 | 0.5 | 0.5 | 0.3 | <0.1 | 0.1 | 0.3 | 0.2 | <0.1 | <0.1 | 0.6 | 0.4 | <0.1 |
| Republic of Korea | Kanghwa | Mean | 2.1 | 2.0 | 2.1 | 1.6 | 1.9 | 1.6 | 2.1 | 2.1 | 1.8 | 1.4 | 1.9 | 2.7 | 1.9 |
| | | % | 98 | 97 | 98 | 98 | 97 | 92 | 94 | 96 | 98 | 97 | 98 | 97 | 97 |
| | | Max-d | 4.4 | 5.6 | 4.3 | 3.2 | 3.2 | 3.3 | 3.9 | 3.3 | 3.1 | 2.4 | 3.9 | 3.7 | 5.6 |
| | | Min-d | 0.9 | 1.3 | 1.3 | 0.8 | 0.7 | 0.5 | 0.8 | 1.1 | 1.2 | 1.0 | 1.0 | 1.8 | 0.5 |
| | Cheju (Kosan) | Mean | 0.4 | 0.3 | 0.4 | 0.8 | 0.8 | 0.4 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | - | 0.5 |
| | | % | 96 | 95 | 92 | 95 | 94 | 87 | 90 | 93 | 88 | 94 | 95 | 0 | 85 |
| | | Max-d | 1.0 | 1.1 | 1.1 | 1.7 | 2.2 | 0.9 | 0.8 | 0.9 | 0.9 | 1.2 | 1.3 | - | 2.2 |
| | | Min-d | <0.1 | <0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | - | <0.1 |
| | Imsil | Mean | 2.1 | 2.6 | 3.2 | 3.2 | 2.4 | 2.6 | 1.7 | 2.2 | 1.7 | 1.2 | 1.9 | 3.2 | 2.3 |
| | | % | 98 | 97 | 98 | 70 | 98 | 96 | 97 | 94 | 90 | 97 | 96 | 95 | 94 |
| | | Max-d | 3.7 | 3.9 | 4.4 | 4.6 | 3.3 | 3.8 | 2.6 | 2.9 | 2.6 | 2.3 | 3.9 | 4.3 | 4.6 |
| | | Min-d | 1.3 | 1.4 | 2.4 | 2.0 | 1.7 | 1.9 | 1.1 | 1.6 | 0.6 | 0.6 | 0.5 | 2.0 | 0.5 |
| Russia | Mondy | Mean | 0.3 | 0.4 | 0.3 | <0.1 | <0.1 | 0.4 | <0.1 | <0.1 | 0.2 | 0.1 | 0.3 | <0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.5 | 0.4 | 0.4 | <0.1 | <0.1 | 0.7 | <0.1 | <0.1 | 0.4 | 0.1 | 0.3 | <0.1 | 0.7 |
| | | Min-m | 0.2 | 0.4 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 | <0.1 | <0.1 |
| | Listvyanka | Mean | 4.5 | 6.6 | 3.2 | 1.8 | 1.0 | 0.7 | 1.2 | 2.1 | 1.4 | 2.1 | 5.1 | 5.7 | 2.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 79 | 100 | 100 | 100 | 98 |
| | | Max-w | 6.8 | 11.0 | 3.9 | 2.7 | 1.9 | 1.8 | 1.8 | 5.0 | 2.4 | 2.4 | 8.2 | 7.1 | 11.0 |
| | | Min-w | 3.1 | 2.7 | 2.3 | 1.0 | 0.5 | 0.2 | 0.6 | 0.7 | 0.8 | 1.9 | 2.7 | 4.8 | 0.2 |
| | Irkutsk | Mean | 6.5 | 11.7 | 8.0 | 3.7 | 2.5 | 0.9 | 1.9 | 3.0 | 3.0 | 4.4 | 4.3 | 6.5 | 4.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 8.6 | 13.4 | 10.2 | 6.4 | 5.5 | 1.7 | 2.8 | 6.1 | 4.6 | 6.8 | 6.9 | 8.0 | 13.4 |
| | | Min-w | 2.7 | 8.2 | 5.7 | 2.4 | 0.6 | 0.3 | 0.8 | 1.1 | 0.9 | 2.1 | 2.7 | 4.3 | 0.3 |
| | Primorskaya | Mean | 0.3 | 1.1 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | <0.1 | 0.4 | 0.4 | 0.4 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.4 | 1.5 | 0.8 | 0.6 | 0.4 | 0.3 | 0.4 | 0.4 | 0.1 | 0.6 | 0.5 | 0.5 | 1.5 |
| | | Min-2w | 0.3 | 0.7 | 0.1 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.2 | 0.3 | 0.3 | <0.1 |

**Table 4.3 $SO_2$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Thailand | Bangkok | Mean | 0.6 | 0.6 | 3.6 | 0.8 | <0.1 | 0.3 | 0.2 | 0.3 | 0.4 | 0.1 | 0.9 | 1.2 | 0.8 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.8 | 0.7 | 9.9 | 1.8 | <0.1 | 0.4 | 0.3 | 0.3 | 0.5 | 0.1 | 1.0 | 1.4 | 9.9 |
| | | Min-10d | 0.5 | 0.4 | 0.3 | 0.3 | <0.1 | 0.2 | 0.1 | 0.3 | 0.2 | <0.1 | 0.8 | 1.0 | <0.1 |
| | Samutprakarn | Mean | 1.9 | 2.4 | 1.3 | 1.2 | 0.8 | 1.4 | 1.9 | 1.5 | 1.3 | 1.5 | 1.4 | 1.7 | 1.5 |
| | | % | 95 | 95 | 95 | 93 | 83 | 94 | 92 | 94 | 95 | 91 | 94 | 95 | 93 |
| | | Max-d | 3.3 | 6.6 | 2.6 | 2.3 | 4.6 | 3.3 | 4.1 | 2.7 | 2.0 | 2.7 | 3.3 | 3.8 | 6.6 |
| | | Min-d | 0.9 | 0.9 | 0.6 | 0.6 | 0.1 | 0.4 | 1.0 | 0.2 | 0.6 | 0.7 | 0.4 | 0.1 | 0.1 |
| | Khanchanaburi | Mean | - | - | - | 1.5 | - | - | 1.6 | 1.6 | - | - | 0.8 | 1.0 | 1.4 |
| | (Vachiralongkorn Dam) | % | 0 | 0 | 0 | 51 | 0 | 0 | 39 | 18 | 0 | 0 | 25 | 18 | 13 |
| | | Max-d | - | - | - | 2.1 | - | - | 3.0 | 2.6 | - | - | 1.1 | 1.0 | 3.0 |
| | | Min-d | - | - | - | <0.1 | - | - | 0.5 | 0.5 | - | - | 0.4 | 1.0 | <0.1 |
| | Mae Hia | Mean | <0.1 | 0.2 | 0.3 | 0.6 | 0.1 | <0.1 | 0.2 | 0.1 | <0.1 | <0.1 | - | - | 0.2 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | <0.1 | 0.2 | 0.7 | 1.0 | 0.3 | 0.1 | 0.2 | 0.2 | <0.1 | 0.1 | - | - | 1.0 |
| | | Min-10d | <0.1 | 0.1 | 0.1 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - | <0.1 |
| | Chang Phueak | Mean | 0.5 | 0.6 | 0.5 | 0.4 | 1.0 | 1.6 | 1.5 | 0.9 | 0.7 | 0.4 | 0.7 | 0.5 | 0.8 |
| | | % | 95 | 94 | 94 | 95 | 93 | 95 | 95 | 95 | 93 | 94 | 95 | 95 | 95 |
| | | Max-d | 0.8 | 1.0 | 1.0 | 0.9 | 3.0 | 2.0 | 2.3 | 2.4 | 2.5 | 0.7 | 1.0 | 1.0 | 3.0 |
| | | Min-d | 0.3 | 0.3 | 0.1 | <0.1 | 0.2 | 0.9 | 1.3 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 | <0.1 |
| | Si Phum | Mean | 1.1 | 1.1 | 1.4 | 1.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 |
| | | % | 96 | 94 | 94 | 95 | 94 | 96 | 95 | 94 | 95 | 92 | 88 | 91 | 94 |
| | | Max-d | 1.4 | 1.5 | 2.1 | 1.6 | 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 | 2.1 |
| | | Min-d | 1.0 | 0.6 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 1.0 | 0.6 |
| | Sakaerat | Mean | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | - | - | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.2 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | <0.1 | - | - | 0.4 |
| | | Min-10d | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | 0.2 | <0.1 | <0.1 | - | - | <0.1 |
| | Nai Mueang | Mean | 1.1 | <0.1 | 0.5 | 0.4 | - | - | - | - | - | 0.8 | 0.8 | 1.0 | 0.7 |
| | | % | 91 | 91 | 91 | 29 | 0 | 0 | 0 | 0 | 0 | 94 | 93 | 92 | 48 |
| | | Max-d | 2.3 | 0.6 | 1.8 | 0.8 | - | - | - | - | - | 1.5 | 1.3 | 1.7 | 2.3 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | - | - | - | - | - | <0.1 | 0.3 | <0.1 | <0.1 |
| Vietnam | Hanoi | Mean | 1.0 | 1.1 | 1.0 | 1.0 | 0.8 | 0.9 | 0.8 | 0.8 | 0.9 | 0.8 | 1.0 | 1.3 | 1.0 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.0 | 2.0 | 1.2 | 1.4 | 0.8 | 1.2 | 1.1 | 0.9 | 1.0 | 1.0 | 1.6 | 1.9 | 2.0 |
| | | Min-w | 0.9 | 0.8 | 0.8 | 0.9 | 0.6 | 0.8 | 0.7 | 0.7 | 0.8 | 0.7 | 0.3 | 0.6 | 0.3 |
| | Hoa Binh | Mean | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.4 | 0.5 | 0.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.8 | 0.7 | 0.8 | 0.6 | 0.7 | 1.0 | 0.8 | 0.7 | 0.7 | 0.7 | 0.4 | 0.7 | 1.0 |
| | | Min-w | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.2 | 0.2 |
| | Can Tho | Mean | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| | | Min-w | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 |
| | Ho Chi Minh | Mean | 0.4 | 0.3 | 0.6 | 0.7 | 0.4 | 0.5 | 0.3 | 0.4 | 0.2 | 0.4 | 0.3 | 0.7 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.6 | 0.3 | 1.0 | 0.9 | 0.8 | 0.8 | 0.4 | 0.5 | 0.2 | 0.5 | 0.5 | 0.8 | 1.0 |
| | | Min-w | 0.3 | 0.3 | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.6 | 0.2 |
| | Yen Bai | Mean | 0.8 | 1.1 | 0.6 | 0.2 | 0.3 | 1.1 | 1.0 | 0.9 | 1.2 | 0.8 | 0.8 | 0.8 | 0.8 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.9 | 1.4 | 1.0 | 0.3 | 0.4 | 2.9 | 1.4 | 1.2 | 1.7 | 1.0 | 0.9 | 0.9 | 2.9 |
| | | Min-w | 0.6 | 0.8 | 0.2 | 0.2 | 0.3 | 0.2 | 0.8 | 0.8 | 0.9 | 0.8 | 0.6 | 0.7 | 0.2 |

Terms and abbreviations are given in Table 4.2.

**Table 4.4 $HNO_3$**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 0.5 | 0.8 | 0.8 | 0.3 | 0.5 | 0.2 | 0.2 | 0.4 | 0.5 | 0.5 | 0.7 | 0.4 | 0.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.5 | 0.9 | 0.8 | 0.4 | 0.6 | 0.3 | 0.3 | 0.5 | 0.5 | 0.8 | 0.7 | 0.4 | 0.9 |
| | | Min-2w | 0.4 | 0.6 | 0.7 | 0.3 | 0.5 | 0.1 | <0.1 | 0.3 | 0.5 | 0.4 | 0.7 | 0.3 | <0.1 |
| China | Hongwen | Mean | 0.4 | 0.8 | 0.4 | 1.0 | 3.0 | 2.1 | 1.1 | 1.9 | 0.9 | 1.4 | 0.6 | 0.6 | 1.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.6 | 0.8 | 0.5 | 1.0 | 3.0 | 2.1 | 1.1 | 1.9 | 0.9 | 1.8 | 0.6 | 0.6 | 3.0 |
| | | Min-m | 0.2 | 0.8 | 0.3 | 1.0 | 3.0 | 2.1 | 1.1 | 1.9 | 0.9 | 0.9 | 0.6 | 0.6 | 0.2 |
| Indonesia | Jakarta | Mean | 0.2 | 0.2 | 0.7 | 1.2 | 1.7 | 0.9 | 1.6 | 1.1 | 2.0 | 0.9 | 1.0 | 0.1 | 1.0 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.3 | 0.2 | 1.0 | 1.2 | 3.2 | 1.2 | 2.2 | 1.1 | 2.8 | 0.9 | 1.8 | 0.1 | 3.2 |
| | | Min-2w | 0.1 | <0.1 | 0.4 | 1.2 | 0.2 | 0.6 | 0.9 | 1.1 | 1.2 | 0.9 | 0.2 | 0.1 | <0.1 |
| | Serpong | Mean | 0.3 | 0.2 | 0.6 | 0.5 | 0.8 | 0.5 | 1.2 | 1.7 | 1.8 | 0.8 | 0.5 | 0.1 | 0.8 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.3 | 0.2 | 0.7 | 0.7 | 1.1 | 0.5 | 1.4 | 1.9 | 1.8 | 1.0 | 0.8 | 0.2 | 1.9 |
| | | Min-2w | 0.3 | 0.2 | 0.4 | 0.3 | 0.4 | 0.5 | 0.9 | 1.6 | 1.7 | 0.4 | 0.2 | <0.1 | <0.1 |
| | Bandung | Mean | 0.2 | 0.2 | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.3 | 0.2 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.2 | 0.3 | 0.5 | 0.6 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.3 | 0.6 |
| | | Min-2w | 0.2 | 0.2 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 0.3 | 0.2 | 0.2 | 0.2 |
| Japan | Rishiri | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ochiishi | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tappi | Mean | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.3 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | <0.1 | 0.3 | 0.3 | 0.4 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | 0.4 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Sado-seki | Mean | <0.1 | <0.1 | <0.1 | 0.2 | 0.3 | 0.3 | 0.4 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | 0.2 | 0.5 | 0.4 | 0.7 | 0.2 | 0.2 | <0.1 | 0.1 | <0.1 | 0.7 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Happo | Mean | <0.1 | 0.1 | 0.3 | 0.3 | 0.5 | 0.6 | 0.4 | 0.2 | 0.2 | <0.1 | <0.1 | 0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.1 | 0.2 | 0.3 | 0.3 | 0.5 | 0.6 | 0.5 | 0.3 | 0.2 | 0.1 | <0.1 | 0.1 | 0.6 |
| | | Min-2w | <0.1 | 0.1 | 0.2 | 0.2 | 0.5 | 0.6 | 0.3 | 0.1 | 0.2 | <0.1 | <0.1 | 0.1 | <0.1 |
| | Ijira | Mean | <0.1 | <0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.1 | <0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.3 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.5 |
| | | Min-2w | <0.1 | <0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.3 | 0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.2 | 0.1 | 0.2 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | <0.1 | <0.1 | <0.1 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.1 | 0.1 | 0.1 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.2 | 0.1 | 0.2 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.1 | <0.1 | <0.1 |
| | Yusuhara | Mean | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.2 | 0.4 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.2 | 0.2 | 0.3 | 0.4 | 0.4 | 0.5 | 0.3 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.5 |
| | | Min-2w | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.1 | 0.3 | 0.2 | <0.1 | <0.1 | 0.1 | <0.1 |
| | Hedo | Mean | <0.1 | 0.1 | 0.2 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| | | Min-2w | <0.1 | 0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ogasawara | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tokyo | Mean | 0.2 | 0.2 | 0.4 | 0.6 | 1.1 | 1.0 | 1.3 | 0.9 | 0.9 | 0.4 | - | 0.2 | 0.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.3 | 0.3 | 0.4 | 0.6 | 1.6 | 1.1 | 2.4 | 1.3 | 1.0 | 0.5 | - | 0.2 | 2.4 |
| | | Min-2w | 0.2 | 0.2 | 0.3 | 0.5 | 0.5 | 0.8 | 0.6 | 0.4 | 0.8 | 0.3 | - | 0.2 | 0.2 |

**Table 4.4 $HNO_3$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.3 | - | 0.6 | 0.2 | - | 1.2 | 0.3 | 0.3 | 0.4 | 0.6 | 0.7 | 0.5 | 0.5 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.4 | - | 1.2 | 0.2 | - | 1.2 | 0.4 | 0.6 | 0.6 | 1.0 | 0.9 | 0.8 | 1.2 |
| | | Min-w | <0.1 | - | <0.1 | 0.2 | - | 1.2 | 0.1 | 0.1 | 0.2 | 0.4 | 0.5 | 0.1 | <0.1 |
| | Tanah Rata | Mean | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.2 | 0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | <0.1 | <0.1 | 0.1 | <0.1 | 0.1 | 0.2 | 0.4 | 0.1 | <0.1 | 0.1 | 0.3 | 0.2 | 0.4 |
| | | Min-w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Danum Valley | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| | | Min-2w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 |
| | | Min-w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Terelj | Mean | - | - | - | - | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | Min-2w | - | - | - | - | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Myammar | Yangon | Mean | 0.2 | 0.8 | 0.3 | 0.1 | 0.3 | <0.1 | <0.1 | 0.5 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.2 | 1.0 | 0.3 | 0.2 | 0.4 | <0.1 | 0.1 | 0.9 | 0.1 | <0.1 | <0.1 | 0.1 | 1.0 |
| | | Min-2w | 0.2 | 0.6 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 |
| Republic of Korea | Kanghwa | Mean | 0.1 | <0.1 | 0.1 | 0.2 | <0.1 | 0.2 | 0.2 | <0.1 | 0.4 | 0.2 | 0.2 | <0.1 | 0.1 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.2 | 0.1 | 0.2 | 0.5 | <0.1 | 0.3 | 0.5 | 0.1 | 0.6 | 0.3 | 0.4 | <0.1 | 0.6 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Cheju (Kosan) | Mean | 0.6 | 0.3 | 0.3 | 0.2 | 1.1 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 0.8 | 0.7 | 0.5 | 0.3 | 1.3 | 0.5 | 0.4 | 0.3 | 0.4 | 0.2 | 0.5 | 0.4 | 1.3 |
| | | Min-d | 0.4 | 0.1 | 0.3 | 0.2 | 0.9 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 |
| | Imsil | Mean | 0.3 | 0.5 | 0.7 | 1.2 | 1.1 | 1.4 | 0.8 | 0.9 | 0.3 | 0.2 | 0.3 | 0.1 | 0.6 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 0.5 | 0.8 | 0.8 | 1.8 | 1.6 | 2.5 | 0.9 | 0.9 | 0.6 | 0.2 | 0.6 | 0.2 | 2.5 |
| | | Min-d | 0.1 | 0.3 | 0.5 | 0.4 | 0.6 | 0.7 | 0.5 | 0.9 | 0.1 | <0.1 | 0.2 | <0.1 | <0.1 |
| Russia | Mondy | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | Min-m | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Listvyanka | Mean | <0.1 | 0.1 | 0.1 | 0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | 0.2 | 0.3 | <0.1 | 0.2 | <0.1 | <0.1 | 0.2 | 0.3 |
| | | Min-w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Irkutsk | Mean | 0.1 | <0.1 | 0.1 | <0.1 | 0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.1 | 0.1 | 0.2 | <0.1 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 |
| | | Min-w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Primorskaya | Mean | 0.6 | 0.6 | 0.5 | 0.2 | 0.3 | <0.1 | 0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.7 | 0.6 | 0.7 | 0.3 | 0.3 | <0.1 | 0.2 | 0.2 | 0.1 | 0.1 | <0.1 | <0.1 | 0.7 |
| | | Min-2w | 0.5 | 0.5 | 0.3 | 0.1 | 0.3 | <0.1 | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Thailand | Bangkok | Mean | 0.3 | 0.4 | 0.3 | 0.3 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | 0.6 | 0.9 | 0.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.3 | 0.6 | 0.5 | 0.5 | <0.1 | 0.3 | 0.1 | <0.1 | <0.1 | <0.1 | 0.9 | 1.1 | 1.1 |
| | | Min-10d | 0.2 | <0.1 | 0.2 | 0.2 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.5 | 0.8 | <0.1 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.1 | - | - | 0.2 | - | - | - | 0.2 | - | 0.2 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.1 | - | - | 0.2 | - | - | - | 0.2 | - | 0.2 |
| | | Min-2w | - | - | - | 0.1 | - | - | 0.2 | - | - | - | 0.2 | - | 0.1 |
| | Mae Hia | Mean | <0.1 | 0.3 | 0.2 | 0.6 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - | 0.2 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.1 | 0.4 | 0.3 | 0.6 | 0.2 | <0.1 | 0.1 | 0.2 | <0.1 | <0.1 | - | - | 0.6 |
| | | Min-10d | <0.1 | 0.2 | 0.1 | 0.5 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - | <0.1 |
| | Sakaerat | Mean | 0.2 | 0.4 | 0.4 | 0.3 | 0.1 | 0.1 | <0.1 | 0.1 | 0.1 | 0.1 | - | - | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.3 | 0.5 | 0.6 | 0.4 | 0.2 | 0.1 | <0.1 | 0.1 | 0.1 | 0.2 | - | - | 0.6 |
| | | Min-10d | 0.2 | 0.3 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | - | - | <0.1 |

**Table 4.4 $HNO_3$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 1.8 | 2.7 | 1.6 | 2.6 | 1.9 | 2.1 | 0.9 | 1.0 | 0.9 | 0.8 | 0.9 | 1.8 | 1.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.1 | 5.5 | 2.0 | 2.8 | 2.4 | 2.6 | 1.7 | 1.2 | 1.0 | 1.2 | 1.3 | 3.2 | 5.5 |
| | | Min-w | 1.6 | 1.5 | 1.0 | 2.1 | 1.3 | 2.0 | 0.6 | 0.6 | 0.7 | 0.6 | 0.2 | 0.7 | 0.2 |
| | Hoa Binh | Mean | 0.8 | 0.7 | 1.0 | 1.1 | 1.5 | 2.1 | 0.8 | 0.5 | 0.6 | 0.4 | 0.4 | 0.4 | 0.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.2 | 0.8 | 1.3 | 1.4 | 2.0 | 3.3 | 1.6 | 0.7 | 0.7 | 0.6 | 0.7 | 0.5 | 3.3 |
| | | Min-w | 0.5 | 0.6 | 0.7 | 0.7 | 1.3 | 0.8 | 0.4 | 0.2 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 |
| | Can Tho | Mean | 0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | <0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | <0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 |
| | | Min-w | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ho Chi Minh | Mean | 0.4 | 0.5 | 0.5 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.6 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.6 | 0.7 | 0.8 | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.2 | 0.4 | 0.4 | 0.7 | 0.8 |
| | | Min-w | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.1 |
| | Yen Bai | Mean | 1.1 | 1.7 | 1.5 | 2.2 | 2.9 | 1.5 | 1.0 | 0.8 | 1.0 | 0.5 | 0.6 | 0.7 | 1.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.5 | 2.3 | 1.8 | 2.6 | 4.2 | 2.2 | 1.1 | 0.9 | 1.1 | 0.6 | 0.8 | 0.8 | 4.2 |
| | | Min-w | 0.9 | 1.1 | 1.3 | 2.0 | 1.6 | 1.0 | 0.8 | 0.7 | 0.7 | 0.4 | 0.4 | 0.6 | 0.4 |

Terms and abbreviations are given in Table 4.2.

**Table 4.5 HCl**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 1.3 | 2.0 | 2.3 | 1.4 | 1.5 | 1.4 | 1.5 | 1.4 | 1.4 | 1.5 | 1.7 | 1.5 | 1.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.5 | 2.0 | 2.4 | 1.7 | 1.7 | 1.6 | 1.5 | 1.6 | 1.5 | 1.7 | 1.8 | 1.5 | 2.4 |
| | | Min-2w | 1.1 | 2.0 | 2.1 | 1.1 | 1.2 | 1.3 | 1.5 | 1.2 | 1.3 | 1.3 | 1.6 | 1.5 | 1.1 |
| China | Hongwen | Mean | 1.6 | 1.8 | 1.5 | 1.8 | 1.4 | 1.2 | 1.2 | 1.3 | 0.8 | 1.7 | 1.7 | 1.7 | 1.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 1.7 | 1.8 | 1.5 | 1.8 | 1.4 | 1.2 | 1.2 | 1.3 | 0.8 | 1.7 | 1.7 | 1.7 | 1.8 |
| | | Min-m | 1.5 | 1.8 | 1.4 | 1.8 | 1.4 | 1.2 | 1.2 | 1.3 | 0.8 | 1.6 | 1.7 | 1.7 | 0.8 |
| Indonesia | Jakarta | Mean | 0.6 | 0.4 | 0.6 | 1.0 | 1.6 | 1.0 | 1.1 | 2.8 | 1.5 | 0.4 | 0.8 | 0.8 | 1.1 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.7 | 0.7 | 0.9 | 1.0 | 2.5 | 1.5 | 1.3 | 4.5 | 1.8 | 0.4 | 1.0 | 0.8 | 4.5 |
| | | Min-2w | 0.5 | 0.2 | 0.3 | 1.0 | 0.7 | 0.6 | 0.9 | 1.0 | 1.1 | 0.4 | 0.5 | 0.8 | 0.2 |
| | Serpong | Mean | 0.4 | 0.4 | 0.6 | 0.5 | 0.6 | 0.5 | 2.1 | 1.5 | 1.5 | 0.8 | 0.6 | 0.5 | 0.9 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.4 | 0.4 | 0.9 | 0.5 | 1.1 | 0.5 | 3.2 | 1.5 | 1.9 | 1.0 | 0.7 | 0.8 | 3.2 |
| | | Min-2w | 0.4 | 0.4 | 0.4 | 0.5 | 0.3 | 0.5 | 0.9 | 1.5 | 1.1 | 0.7 | 0.5 | 0.3 | 0.3 |
| | Bandung | Mean | 0.3 | 0.6 | 0.7 | 0.8 | 1.0 | 1.3 | 1.0 | 1.4 | 1.4 | 0.8 | 0.7 | 1.0 | 0.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.4 | 0.7 | 0.8 | 1.0 | 1.1 | 1.3 | 1.1 | 1.5 | 1.5 | 1.1 | 0.8 | 1.0 | 1.5 |
| | | Min-2w | 0.2 | 0.4 | 0.6 | 0.7 | 0.9 | 1.3 | 1.0 | 1.3 | 1.3 | 0.6 | 0.6 | 1.0 | 0.2 |
| Japan | Rishiri | Mean | 0.4 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.6 | 0.3 | 0.3 | 0.3 | 0.5 | 0.3 | 0.4 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.4 | 0.3 | 0.3 | 0.5 | 0.6 | 0.6 | 1.0 | 0.3 | 0.4 | 0.4 | 0.7 | 0.3 | 1.0 |
| | | Min-2w | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.5 | 0.4 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 |
| | Ochiishi | Mean | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.5 | 0.4 | 0.3 | <0.1 | <0.1 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.3 | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 0.5 | 0.4 | 0.3 | <0.1 | <0.1 | 0.9 |
| | | Min-2w | 0.1 | 0.1 | 0.2 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.3 | <0.1 | <0.1 | <0.1 |
| | Tappi | Mean | 0.4 | 0.3 | 0.4 | 0.5 | 0.6 | 0.8 | 0.7 | 0.4 | 0.6 | 0.4 | 0.3 | 0.4 | 0.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 100 | 96 |
| | | Max-2w | 0.5 | 0.4 | 0.5 | 0.6 | 0.8 | 0.8 | 0.8 | 0.5 | 0.6 | 0.5 | 0.3 | 0.4 | 0.8 |
| | | Min-2w | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.7 | 0.5 | 0.2 | 0.5 | 0.4 | 0.3 | 0.4 | 0.2 |
| | Sado-seki | Mean | 0.4 | 0.4 | 0.7 | 0.8 | 1.0 | 1.1 | 0.8 | 0.7 | 0.9 | 1.7 | 0.7 | 0.4 | 0.8 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 0.6 | 0.4 | 0.7 | 0.8 | 1.3 | 1.2 | 1.0 | 0.8 | 1.3 | 2.9 | 1.0 | 0.4 | 2.9 |
| | | Min-2w | 0.3 | 0.4 | 0.7 | 0.7 | 0.8 | 0.9 | 0.5 | 0.6 | 0.5 | 0.4 | 0.5 | 0.4 | 0.3 |
| | Happo | Mean | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.2 | 0.2 | 0.3 | 0.2 | 0.3 | 0.4 | 0.2 | 0.2 | 0.3 | 0.1 | 0.3 | 0.2 | 0.4 |
| | | Min-2w | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.1 | <0.1 | 0.1 | 0.1 | 0.3 | 0.1 | <0.1 |
| | Ijira | Mean | <0.1 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | <0.1 | 0.1 | <0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | 0.1 | 0.1 | 0.3 |
| | | Min-2w | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.9 | 0.7 | 0.8 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 1.1 | 0.7 | 1.1 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.6 | 0.6 | 0.6 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.8 | 0.6 | 0.7 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.9 | 0.6 | 0.9 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.7 | 0.5 | 0.5 |
| | Yusuhara | Mean | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.3 | 0.3 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.4 | 0.3 | 0.4 |
| | | Min-2w | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.3 | 0.1 |
| | Hedo | Mean | 1.0 | 1.4 | 1.5 | 1.0 | 1.2 | 0.8 | 0.6 | 1.0 | 0.7 | 0.5 | 0.9 | 0.7 | 0.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.1 | 1.4 | 1.7 | 1.0 | 1.4 | 1.3 | 1.3 | 1.2 | 0.8 | 0.6 | 0.9 | 1.0 | 1.7 |
| | | Min-2w | 0.8 | 1.4 | 1.4 | 1.0 | 1.0 | 0.3 | 0.2 | 0.8 | 0.7 | 0.4 | 0.9 | 0.4 | 0.2 |
| | Ogasawara | Mean | 0.4 | 0.4 | 0.7 | 0.4 | 0.6 | 0.4 | 0.2 | 0.6 | 0.2 | 0.2 | 0.3 | 0.3 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.5 | 0.5 | 0.7 | 0.4 | 1.0 | 0.5 | 0.2 | 0.9 | 0.2 | 0.3 | 0.4 | 0.3 | 1.0 |
| | | Min-2w | 0.3 | 0.4 | 0.6 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 |
| | Tokyo | Mean | 0.3 | 0.4 | 0.5 | 1.0 | 1.0 | 0.9 | 0.9 | 1.0 | 1.0 | 0.8 | - | 0.4 | 0.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.4 | 0.5 | 0.5 | 1.1 | 1.0 | 1.0 | 1.0 | 1.1 | 1.0 | 1.0 | - | 0.5 | 1.1 |
| | | Min-2w | 0.2 | 0.4 | 0.5 | 0.9 | 1.0 | 0.8 | 0.8 | 0.9 | 1.0 | 0.5 | - | 0.3 | 0.2 |

**Table 4.5 HCl (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 1.8 | - | 0.1 | <0.1 | - | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.4 | 0.3 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 3.4 | - | 0.4 | <0.1 | - | <0.1 | <0.1 | 0.3 | <0.1 | 0.3 | <0.1 | 0.6 | 3.4 |
| | | Min-w | 0.4 | - | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tanah Rata | Mean | 1.2 | 0.9 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.6 | 1.8 | 0.9 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 1.1 | <0.1 | <0.1 | 0.2 | 1.8 |
| | | Min-w | 0.9 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Danum Valley | Mean | 0.4 | 0.7 | 0.4 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.6 | 0.7 | 0.5 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.7 |
| | | Min-2w | 0.2 | 0.7 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | Mean | 1.0 | 3.4 | 4.6 | 3.5 | 2.8 | 0.8 | 0.8 | 0.5 | 0.8 | 0.8 | 0.6 | 0.7 | 1.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 1.1 | 8.9 | 18.4 | 4.9 | 6.7 | 1.4 | 1.8 | 0.6 | 1.6 | 1.9 | 1.0 | 1.0 | 18.4 |
| | | Min-w | 0.9 | 0.8 | 0.4 | 1.2 | 1.1 | 0.3 | 0.3 | 0.5 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 |
| | Terelj | Mean | - | - | - | - | - | 0.3 | 0.5 | 0.3 | 0.9 | 0.6 | 0.5 | 0.3 | 0.5 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.3 | 0.7 | 0.4 | 1.5 | 0.8 | 0.5 | 0.3 | 1.5 |
| | | Min-2w | - | - | - | - | - | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.5 | 0.3 | 0.2 |
| Myanmar | Yangon | Mean | 0.7 | 1.1 | 0.8 | 0.4 | 0.3 | <0.1 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.6 | 0.4 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.7 | 1.4 | 1.1 | 0.5 | 0.5 | 0.1 | 0.7 | 0.4 | 0.3 | 0.3 | 0.2 | 0.6 | 1.4 |
| | | Min-2w | 0.7 | 0.9 | 0.5 | 0.2 | <0.1 | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | 0.2 | 0.6 | <0.1 |
| Republic of Korea | Kanghwa | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | <0.1 | 0.1 | <0.1 | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Cheju (Kosan) | Mean | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.5 | 0.2 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 0.3 | 0.4 | 0.6 | 0.4 | 0.2 | 0.2 | 0.2 | 0.5 | 0.2 | 0.2 | 0.3 | 1.0 | 1.0 |
| | | Min-d | 0.3 | 0.1 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | 0.1 | 0.3 | <0.1 |
| | Imsil | Mean | 0.2 | 0.3 | 0.4 | 0.2 | 0.1 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.2 | 0.1 | 0.2 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 0.3 | 0.3 | 0.8 | 0.2 | 0.2 | 0.3 | 0.3 | <0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 0.8 |
| | | Min-d | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Russia | Mondy | Mean | 2.4 | 1.6 | 1.9 | 3.5 | 2.1 | 4.4 | 2.1 | 1.4 | 2.9 | 1.6 | 3.3 | 3.7 | 2.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 3.3 | 1.6 | 1.9 | 3.5 | 2.7 | 5.8 | 2.1 | 1.4 | 3.0 | 1.6 | 6.4 | 4.9 | 6.4 |
| | | Min-m | 1.4 | 1.6 | 1.9 | 3.5 | 1.5 | 3.0 | 2.1 | 1.4 | 2.7 | 1.6 | 0.2 | 2.5 | 0.2 |
| | Listvyanka | Mean | 5.2 | 5.3 | 4.4 | 5.9 | 4.1 | 3.1 | 7.5 | 8.2 | 8.0 | 5.4 | 6.1 | 8.6 | 6.0 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 79 | 100 | 100 | 100 | 98 |
| | | Max-w | 9.6 | 7.8 | 5.4 | 8.7 | 5.4 | 5.9 | 9.3 | 9.5 | 9.0 | 7.5 | 9.4 | 10.6 | 10.6 |
| | | Min-w | 3.1 | 3.5 | 3.5 | 3.8 | 3.1 | 0.7 | 6.5 | 6.7 | 7.3 | 1.5 | 3.2 | 7.5 | 0.7 |
| | Irkutsk | Mean | 3.6 | 2.6 | 3.5 | 3.2 | 4.5 | 4.9 | 5.4 | 3.6 | 5.4 | 5.2 | 4.9 | 9.1 | 4.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 5.1 | 3.2 | 4.7 | 4.9 | 5.6 | 5.7 | 7.1 | 9.7 | 10.5 | 6.6 | 6.1 | 10.8 | 10.8 |
| | | Min-w | 2.8 | 1.8 | 1.7 | 2.1 | 1.6 | 2.6 | 2.1 | 0.4 | 1.7 | 3.9 | 1.9 | 7.9 | 0.4 |
| | Primorskaya | Mean | 1.9 | 1.2 | 1.3 | 0.3 | 0.3 | 0.2 | 0.7 | 0.2 | 0.2 | 0.4 | 0.2 | 0.2 | 0.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 2.4 | 1.5 | 2.0 | 0.4 | 0.3 | 0.2 | 1.2 | 0.2 | 0.2 | 0.7 | 0.2 | 0.2 | 2.4 |
| | | Min-2w | 1.4 | 1.0 | 0.5 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 |
| Thailand | Bangkok | Mean | 0.4 | 0.6 | 0.4 | 0.5 | <0.1 | 0.9 | 0.4 | 1.0 | 0.2 | 0.3 | 2.1 | 1.4 | 0.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.6 | 1.0 | 0.6 | 0.7 | <0.1 | 1.2 | 0.4 | 1.0 | 0.2 | 0.4 | 2.8 | 1.5 | 2.8 |
| | | Min-10d | 0.3 | 0.2 | 0.2 | 0.4 | <0.1 | 0.7 | 0.4 | 1.0 | 0.1 | 0.1 | 1.7 | 1.3 | <0.1 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | <0.1 | - | - | 0.7 | - | - | - | 0.2 | - | 0.3 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | <0.1 | - | - | 0.7 | - | - | - | 0.2 | - | 0.7 |
| | | Min-2w | - | - | - | <0.1 | - | - | 0.7 | - | - | - | 0.2 | - | <0.1 |
| | Mae Hia | Mean | 0.1 | 0.6 | 0.2 | 0.4 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | 0.3 | - | - | 0.2 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.2 | 0.9 | 0.4 | 0.5 | 0.3 | 0.4 | 0.2 | <0.1 | 0.1 | 0.5 | - | - | 0.9 |
| | | Min-10d | <0.1 | 0.4 | <0.1 | 0.4 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - | <0.1 |
| | Sakaerat | Mean | 0.3 | 0.4 | 0.2 | 0.3 | 0.3 | 0.5 | <0.1 | 0.1 | 0.2 | 0.1 | - | - | 0.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.3 | 0.5 | 0.3 | 0.4 | 0.5 | 0.7 | 0.1 | 0.2 | 0.2 | 0.1 | - | - | 0.7 |
| | | Min-10d | 0.2 | 0.2 | <0.1 | 0.2 | 0.1 | 0.3 | <0.1 | 0.1 | <0.1 | <0.1 | - | - | <0.1 |

**Table 4.5 HCl (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 2.2 | 3.3 | 1.5 | 1.8 | 1.6 | 2.9 | 1.3 | 1.6 | 2.4 | 2.0 | 1.7 | 1.6 | 2.0 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 3.1 | 7.8 | 1.7 | 2.2 | 1.9 | 4.2 | 1.6 | 2.4 | 2.9 | 2.7 | 2.5 | 2.3 | 7.8 |
| | | Min-w | 1.5 | 1.4 | 1.2 | 1.0 | 1.4 | 2.0 | 1.0 | 1.1 | 1.9 | 1.5 | 0.9 | 1.1 | 0.9 |
| | Hoa Binh | Mean | 1.8 | 1.8 | 1.6 | 1.6 | 1.9 | 3.5 | 0.9 | 0.9 | 1.4 | 1.4 | 1.3 | 0.7 | 1.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.0 | 2.1 | 2.0 | 1.8 | 2.7 | 7.5 | 1.0 | 1.1 | 1.5 | 1.8 | 2.4 | 0.8 | 7.5 |
| | | Min-w | 1.3 | 1.6 | 1.3 | 1.3 | 1.5 | 0.9 | 0.8 | 0.8 | 1.3 | 0.8 | 1.0 | 0.6 | 0.6 |
| | Can Tho | Mean | 1.0 | 1.4 | 1.2 | 1.1 | 1.1 | 0.6 | 0.9 | 0.7 | 0.7 | 1.4 | 0.7 | 0.6 | 0.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.5 | 2.0 | 1.7 | 1.5 | 1.5 | 0.9 | 1.4 | 1.4 | 1.1 | 1.5 | 1.1 | 0.8 | 2.0 |
| | | Min-w | 0.6 | 0.7 | 0.7 | 0.9 | 0.6 | 0.4 | 0.6 | 0.4 | 0.5 | 1.2 | 0.5 | 0.4 | 0.4 |
| | Ho Chi Minh | Mean | 1.1 | 1.0 | 2.0 | 1.5 | 1.7 | 1.4 | 0.9 | 0.9 | 1.0 | 0.9 | 1.0 | 1.7 | 1.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.6 | 1.2 | 2.7 | 2.6 | 3.0 | 1.6 | 1.0 | 0.9 | 1.1 | 1.2 | 1.4 | 2.1 | 3.0 |
| | | Min-w | 0.9 | 0.9 | 1.2 | 1.0 | 1.1 | 1.2 | 0.9 | 0.8 | 1.0 | 0.3 | 0.8 | 1.2 | 0.3 |
| | Yen Bai | Mean | 2.5 | 3.5 | 3.0 | 3.1 | 2.1 | 2.0 | 1.9 | 2.1 | 2.2 | 2.0 | 2.0 | 1.7 | 2.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 3.2 | 3.9 | 5.1 | 5.1 | 2.5 | 3.3 | 2.1 | 2.6 | 2.4 | 2.3 | 2.5 | 2.9 | 5.1 |
| | | Min-w | 1.8 | 3.1 | 2.0 | 2.1 | 1.9 | 1.5 | 1.7 | 1.7 | 2.0 | 1.7 | 1.5 | 1.3 | 1.3 |

Terms and abbreviations are given in Table 4.2.

**Table 4.6 $NH_3$**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 6.9 | 9.5 | 8.3 | 7.9 | 7.3 | 7.4 | 4.6 | 6.9 | 9.2 | 6.9 | 8.6 | 6.4 | 7.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 7.5 | 10.5 | 8.8 | 10.8 | 7.6 | 7.4 | 4.7 | 8.1 | 9.9 | 9.0 | 10.0 | 7.1 | 10.8 |
| | | Min-2w | 6.3 | 8.5 | 7.7 | 5.1 | 6.8 | 7.4 | 4.6 | 5.6 | 8.6 | 5.7 | 7.3 | 5.7 | 4.6 |
| China | Hongwen | Mean | 7.1 | 7.4 | 8.7 | 9.0 | 13.1 | 11.9 | 6.7 | 11.4 | 10.2 | 9.7 | 8.6 | 10.2 | 9.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 8.1 | 7.4 | 9.4 | 9.0 | 13.1 | 11.9 | 6.7 | 11.4 | 10.2 | 10.0 | 8.6 | 10.2 | 13.1 |
| | | Min-m | 6.2 | 7.4 | 8.0 | 9.0 | 13.1 | 11.9 | 6.7 | 11.4 | 10.2 | 9.4 | 8.6 | 10.2 | 6.2 |
| Indonesia | Jakarta | Mean | 4.9 | 4.2 | 3.6 | 10.2 | 2.7 | 12.2 | 1.9 | 2.1 | 2.2 | 1.3 | 2.6 | 1.4 | 4.1 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 5.0 | 4.5 | 4.7 | 10.2 | 4.2 | 14.0 | 2.6 | 2.1 | 3.1 | 1.3 | 3.7 | 1.4 | 14.0 |
| | | Min-2w | 4.9 | 3.8 | 2.4 | 10.2 | 1.1 | 10.4 | 1.2 | 2.0 | 1.4 | 1.3 | 1.4 | 1.4 | 1.1 |
| | Serpong | Mean | 5.7 | 3.9 | 5.4 | 2.9 | 9.1 | 6.0 | 5.7 | 8.7 | 9.4 | 7.1 | 1.8 | 1.1 | 5.8 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 5.7 | 3.9 | 6.0 | 4.6 | 17.1 | 6.0 | 9.5 | 8.8 | 9.4 | 7.6 | 2.5 | 1.2 | 17.1 |
| | | Min-2w | 5.7 | 3.9 | 4.8 | 1.2 | 1.0 | 6.0 | 1.8 | 8.7 | 9.4 | 6.7 | 1.2 | 1.0 | 1.0 |
| | Bandung | Mean | 4.4 | 7.1 | 9.2 | 9.3 | 8.9 | 10.6 | 9.1 | 9.8 | 11.0 | 7.2 | 8.5 | 8.7 | 8.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 4.6 | 7.5 | 9.3 | 10.1 | 8.9 | 10.9 | 9.5 | 10.3 | 11.1 | 9.2 | 9.5 | 10.1 | 11.1 |
| | | Min-2w | 4.3 | 6.7 | 9.0 | 8.5 | 8.9 | 10.2 | 8.7 | 9.2 | 10.9 | 5.1 | 7.6 | 7.3 | 4.3 |
| Japan | Rishiri | Mean | <0.1 | 0.1 | 0.1 | 0.5 | 0.7 | 0.6 | 0.8 | 0.5 | 0.6 | 0.4 | 0.6 | 0.2 | 0.5 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.1 | 0.1 | 0.2 | 0.6 | 0.8 | 0.6 | 1.3 | 0.6 | 0.6 | 0.5 | 1.1 | 0.2 | 1.3 |
| | | Min-2w | <0.1 | 0.1 | 0.1 | 0.3 | 0.7 | 0.6 | 0.6 | 0.3 | 0.5 | 0.4 | 0.2 | 0.2 | <0.1 |
| | Ochiishi | Mean | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.2 | 0.4 | 0.5 | 0.4 | 0.7 | 0.4 | 0.2 | 0.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.5 | 0.7 | 0.4 | 0.7 | 0.4 | 0.2 | 0.7 |
| | | Min-2w | <0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.4 | 0.7 | 0.4 | 0.2 | <0.1 |
| | Tappi | Mean | 0.1 | 0.1 | 0.2 | 0.5 | 0.4 | 0.5 | 0.7 | 0.5 | 0.7 | 0.5 | 0.4 | 0.2 | 0.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.1 | 0.2 | 0.2 | 0.5 | 0.4 | 0.7 | 1.1 | 0.6 | 0.7 | 0.6 | 0.7 | 0.2 | 1.1 |
| | | Min-2w | <0.1 | 0.1 | 0.2 | 0.4 | 0.4 | 0.3 | 0.5 | 0.5 | 0.7 | 0.5 | 0.2 | 0.2 | <0.1 |
| | Sado-seki | Mean | 0.2 | <0.1 | 0.4 | 0.9 | 1.4 | 1.4 | 1.0 | 0.6 | 1.0 | 0.5 | 0.4 | 0.2 | 0.7 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 0.3 | <0.1 | 0.4 | 1.0 | 1.5 | 2.0 | 1.5 | 0.6 | 1.2 | 0.5 | 0.6 | 0.2 | 2.0 |
| | | Min-2w | 0.1 | <0.1 | 0.4 | 0.9 | 1.2 | 0.8 | 0.6 | 0.5 | 0.7 | 0.4 | 0.2 | 0.2 | <0.1 |
| | Happo | Mean | 0.1 | 0.2 | 0.4 | 0.8 | 1.1 | 1.0 | 0.7 | 0.5 | 0.5 | 0.3 | 0.2 | 0.1 | 0.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.2 | 0.2 | 0.4 | 0.9 | 1.1 | 1.4 | 0.8 | 0.6 | 0.6 | 0.3 | 0.2 | 0.1 | 1.4 |
| | | Min-2w | 0.1 | 0.2 | 0.4 | 0.8 | 1.1 | 0.6 | 0.6 | 0.4 | 0.4 | 0.2 | 0.2 | <0.1 | <0.1 |
| | Ijira | Mean | 0.2 | 0.3 | 0.5 | 1.0 | 1.5 | 1.4 | 1.5 | 1.1 | 1.2 | 1.0 | 0.6 | 0.6 | 0.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.2 | 0.3 | 0.6 | 1.0 | 1.6 | 1.4 | 1.8 | 1.1 | 1.6 | 1.2 | 0.7 | 0.8 | 1.8 |
| | | Min-2w | 0.1 | 0.2 | 0.5 | 0.9 | 1.5 | 1.4 | 1.3 | 1.1 | 0.9 | 0.8 | 0.4 | 0.4 | 0.1 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.8 | 0.4 | 0.6 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 1.0 | 0.5 | 1.0 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.6 | 0.4 | 0.4 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.9 | 0.5 | 0.7 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 1.0 | 0.6 | 1.0 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.8 | 0.5 | 0.5 |
| | Yusuhara | Mean | 0.2 | 0.3 | 0.4 | 0.8 | 1.1 | 1.2 | 0.6 | 0.8 | 0.7 | 0.4 | 0.3 | 0.2 | 0.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.2 | 0.3 | 0.4 | 0.9 | 1.5 | 1.3 | 0.7 | 1.0 | 0.8 | 0.5 | 0.3 | 0.2 | 1.5 |
| | | Min-2w | 0.2 | 0.2 | 0.4 | 0.7 | 0.8 | 1.0 | 0.6 | 0.6 | 0.5 | 0.3 | 0.2 | 0.1 | 0.1 |
| | Hedo | Mean | 0.6 | 1.2 | 2.1 | 1.8 | 1.9 | 1.3 | 1.4 | 1.6 | 1.4 | 1.0 | 1.2 | 0.6 | 1.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.7 | 1.5 | 2.3 | 2.2 | 1.9 | 1.8 | 1.8 | 1.6 | 1.4 | 1.1 | 1.3 | 0.6 | 2.3 |
| | | Min-2w | 0.4 | 1.0 | 1.8 | 1.5 | 1.9 | 0.9 | 1.1 | 1.5 | 1.4 | 1.0 | 1.1 | 0.5 | 0.4 |
| | Ogasawara | Mean | 0.3 | 0.4 | 0.6 | 0.6 | 0.8 | 0.6 | 0.6 | 1.0 | 0.6 | 0.4 | 0.4 | 0.3 | 0.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.3 | 0.4 | 0.6 | 0.7 | 1.1 | 0.6 | 0.6 | 1.2 | 0.7 | 0.4 | 0.5 | 0.4 | 1.2 |
| | | Min-2w | 0.2 | 0.3 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.9 | 0.6 | 0.4 | 0.4 | 0.3 | 0.2 |
| | Tokyo | Mean | 3.1 | 2.3 | 2.5 | 3.7 | 5.1 | 4.7 | 6.4 | 5.7 | 5.0 | 3.1 | - | 4.4 | 4.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 3.3 | 2.4 | 2.6 | 4.2 | 5.4 | 4.7 | 6.9 | 6.3 | 5.3 | 3.7 | - | 4.4 | 6.9 |
| | | Min-2w | 2.9 | 2.3 | 2.3 | 3.1 | 4.8 | 4.6 | 5.5 | 5.1 | 4.8 | 2.5 | - | 4.3 | 2.3 |

**Table 4.6 $NH_3$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 8.5 | - | 8.3 | 8.9 | - | 6.3 | 7.4 | 6.9 | 7.2 | 7.9 | 7.7 | 7.3 | 7.6 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 10.2 | - | 9.2 | 8.9 | - | 6.3 | 8.0 | 9.0 | 8.2 | 8.8 | 8.8 | 8.8 | 10.2 |
| | | Min-w | 7.2 | - | 7.0 | 8.9 | - | 6.3 | 6.9 | 3.8 | 6.2 | 7.2 | 6.7 | 6.4 | 3.8 |
| | Tanah Rata | Mean | 2.0 | 1.2 | 1.9 | 1.7 | 1.7 | 1.8 | 1.5 | 1.6 | 1.8 | 1.4 | 2.7 | 1.6 | 1.8 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.8 | 1.9 | 2.5 | 2.5 | 2.0 | 2.3 | 2.0 | 2.0 | 2.9 | 1.8 | 5.8 | 2.2 | 5.8 |
| | | Min-w | 1.2 | 0.1 | 1.2 | 1.1 | 1.4 | 1.5 | 1.1 | 1.1 | 1.0 | 1.1 | 1.1 | 1.3 | 0.1 |
| | Danum Valley | Mean | 1.1 | 1.0 | 1.2 | 1.3 | 1.1 | 1.1 | 1.4 | 0.9 | 1.2 | 1.1 | 1.3 | 1.2 | 1.1 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.4 | 1.0 | 1.2 | 1.5 | 1.4 | 1.2 | 1.7 | 1.0 | 1.4 | 1.2 | 1.3 | 1.6 | 1.7 |
| | | Min-2w | 0.7 | 0.9 | 1.2 | 1.1 | 0.7 | 0.9 | 1.2 | 0.9 | 1.0 | 0.8 | 1.3 | 0.9 | 0.7 |
| Mongolia | Ulaanbaatar | Mean | 9.4 | 8.1 | 9.6 | 10.8 | 9.2 | 11.8 | 12.4 | 10.2 | 9.1 | 10.0 | 8.8 | 6.7 | 9.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 12.6 | 9.3 | 14.2 | 12.2 | 11.8 | 15.5 | 16.4 | 12.1 | 10.9 | 12.7 | 12.2 | 8.3 | 16.4 |
| | | Min-w | 7.0 | 6.3 | 7.0 | 9.1 | 7.2 | 10.2 | 10.1 | 8.6 | 8.4 | 7.3 | 6.9 | 4.7 | 4.7 |
| | Terelj | Mean | - | - | - | - | - | 2.9 | 1.1 | 2.4 | 2.6 | 1.5 | 1.0 | 0.8 | 1.7 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 2.9 | 2.1 | 3.2 | 2.8 | 1.6 | 1.0 | 0.8 | 3.2 |
| | | Min-2w | - | - | - | - | - | 2.8 | <0.1 | 1.6 | 2.4 | 1.3 | 0.9 | 0.8 | <0.1 |
| Myanmar | Yangon | Mean | 12.2 | 10.5 | 4.4 | 4.5 | 7.7 | 5.5 | 3.0 | 3.2 | <0.1 | 6.2 | 7.2 | 10.9 | 5.8 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 12.2 | 13.4 | 4.7 | 4.5 | 16.5 | 6.1 | 5.9 | 6.3 | <0.1 | 7.7 | 7.2 | 10.9 | 16.5 |
| | | Min-2w | 12.2 | 7.5 | 4.1 | 4.5 | 3.2 | 4.8 | 0.1 | <0.1 | <0.1 | 4.1 | 7.2 | 10.9 | <0.1 |
| Republic of Korea | Kanghwa | Mean | 0.3 | 1.2 | 0.3 | 0.3 | 0.3 | 0.4 | 0.6 | 0.4 | 0.5 | 0.4 | 0.2 | 0.2 | 0.4 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.4 | 1.4 | 0.6 | 0.6 | 0.4 | 0.5 | 1.2 | 1.0 | 0.5 | 0.5 | 0.4 | 0.4 | 1.4 |
| | | Min-d | 0.1 | 1.1 | 0.2 | 0.2 | 0.1 | 0.3 | <0.1 | <0.1 | 0.4 | 0.2 | <0.1 | 0.1 | <0.1 |
| | Cheju (Kosan) | Mean | 3.6 | 5.2 | 5.3 | 8.8 | 5.2 | 7.7 | 10.5 | 7.8 | 9.8 | 6.2 | 5.1 | 5.7 | 7.0 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 4.7 | 6.3 | 6.0 | 9.5 | 6.6 | 10.1 | 15.2 | 9.3 | 11.7 | 7.6 | 9.1 | 7.2 | 15.2 |
| | | Min-d | 2.5 | 3.5 | 4.4 | 8.2 | 4.0 | 6.2 | 6.3 | 5.8 | 7.5 | 5.1 | 3.0 | 4.8 | 2.5 |
| | Imsil | Mean | 5.1 | 5.5 | 8.9 | 9.9 | 9.6 | 21.5 | 13.9 | 9.7 | 5.9 | 5.2 | 5.5 | 5.6 | 8.4 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 5.9 | 7.3 | 11.2 | 12.2 | 12.8 | 33.1 | 18.3 | 9.7 | 8.3 | 8.5 | 8.5 | 6.1 | 33.1 |
| | | Min-d | 4.4 | 4.2 | 7.6 | 7.4 | 7.2 | 14.7 | 8.9 | 9.7 | 3.4 | 3.6 | 3.8 | 5.0 | 3.4 |
| Russia | Mondy | Mean | 2.7 | 0.1 | 0.4 | 0.2 | 0.5 | 1.9 | 1.2 | 1.2 | 1.5 | 0.5 | 0.5 | 0.2 | 1.0 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 3.8 | 0.1 | 0.8 | 0.2 | 0.5 | 2.7 | 1.2 | 1.2 | 2.2 | 0.5 | 0.8 | 0.2 | 3.8 |
| | | Min-m | 1.7 | 0.1 | <0.1 | 0.2 | 0.5 | 1.0 | 1.2 | 1.2 | 0.8 | 0.5 | 0.3 | 0.1 | <0.1 |
| | Listvyanka | Mean | 2.4 | 2.5 | 1.1 | 1.3 | 1.3 | 3.9 | 7.1 | 4.4 | 3.5 | 0.4 | 5.2 | 0.3 | 2.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 3.3 | 7.7 | 2.0 | 2.3 | 2.2 | 9.1 | 11.2 | 7.4 | 6.9 | 0.8 | 12.7 | 0.6 | 12.7 |
| | | Min-w | 0.7 | 0.5 | 0.3 | 0.3 | 0.1 | 0.1 | 4.9 | 3.1 | 0.6 | 0.2 | 0.8 | <0.1 | <0.1 |
| | Irkutsk | Mean | 5.6 | 0.7 | 1.2 | 0.6 | 1.1 | 1.3 | 5.1 | 4.6 | 3.1 | 1.2 | 1.4 | 0.8 | 2.3 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 16.4 | 1.2 | 2.3 | 1.0 | 1.7 | 3.2 | 8.2 | 6.5 | 6.5 | 1.8 | 2.3 | 1.1 | 16.4 |
| | | Min-w | 0.6 | 0.3 | <0.1 | 0.4 | 0.6 | 0.1 | 2.3 | 3.4 | 1.2 | 0.8 | 0.7 | 0.6 | <0.1 |
| | Primorskaya | Mean | 0.8 | 0.5 | 0.6 | 0.7 | 1.0 | 1.0 | 1.9 | 1.3 | 0.7 | 0.8 | 0.4 | 0.3 | 0.8 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.2 | 0.7 | 0.6 | 1.0 | 1.1 | 1.3 | 2.4 | 1.4 | 0.9 | 0.9 | 0.6 | 0.3 | 2.4 |
| | | Min-2w | 0.3 | 0.2 | 0.6 | 0.4 | 0.9 | 0.7 | 1.3 | 1.2 | 0.6 | 0.6 | 0.3 | 0.2 | 0.2 |
| Thailand | Bangkok | Mean | 7.6 | 11.8 | 11.0 | 7.8 | <0.1 | 4.3 | 4.6 | 3.8 | 1.8 | 1.7 | 11.0 | 10.7 | 6.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 10.2 | 14.7 | 14.2 | 8.9 | <0.1 | 5.0 | 4.9 | 4.3 | 4.6 | 2.4 | 12.0 | 11.9 | 14.7 |
| | | Min-10d | 6.0 | 7.4 | 7.1 | 5.8 | <0.1 | 3.8 | 4.4 | 3.2 | <0.1 | 1.4 | 10.0 | 9.6 | <0.1 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 5.4 | - | - | 3.9 | - | - | - | 3.2 | - | 4.2 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 5.4 | - | - | 3.9 | - | - | - | 3.2 | - | 5.4 |
| | | Min-2w | - | - | - | 5.4 | - | - | 3.9 | - | - | - | 3.2 | - | 3.2 |
| | Mae Hia | Mean | 5.5 | 4.9 | 5.9 | 7.7 | 5.3 | 2.9 | 3.0 | 3.8 | 3.6 | 3.0 | - | - | 4.6 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 7.2 | 5.3 | 8.3 | 9.3 | 7.3 | 3.5 | 3.2 | 4.0 | 4.1 | 3.7 | - | - | 9.3 |
| | | Min-10d | 4.2 | 4.3 | 3.8 | 6.5 | 4.1 | 1.8 | 2.7 | 3.7 | 3.2 | 2.7 | - | - | 1.8 |
| | Sakaerat | Mean | 4.3 | 4.3 | 4.7 | 3.6 | 2.8 | 3.3 | 2.2 | 3.7 | 2.9 | 3.1 | - | - | 3.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 4.7 | 4.7 | 5.4 | 4.0 | 3.1 | 3.6 | 2.6 | 4.1 | 3.3 | 3.7 | - | - | 5.4 |
| | | Min-10d | 3.8 | 4.0 | 3.9 | 3.4 | 2.4 | 3.0 | 2.0 | 3.0 | 2.5 | 2.7 | - | - | 2.0 |

**Table 4.6 $NH_3$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 4.0 | 5.5 | 4.3 | 3.6 | 3.4 | 3.4 | 3.4 | 3.7 | 3.6 | 3.9 | 4.2 | 4.1 | 3.9 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 4.2 | 11.3 | 5.4 | 4.0 | 3.9 | 3.6 | 3.7 | 4.2 | 3.8 | 4.4 | 5.5 | 4.5 | 11.3 |
| | | Min-w | 3.7 | 3.5 | 3.4 | 3.3 | 3.1 | 3.1 | 3.0 | 3.2 | 3.4 | 3.6 | 3.6 | 3.9 | 3.0 |
| | Hoa Binh | Mean | 1.7 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.9 | 2.0 | 1.8 | 1.8 | 1.8 | 1.8 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.8 | 1.9 | 2.2 | 2.0 | 1.8 | 2.0 | 2.2 |
| | | Min-w | 1.7 | 1.7 | 1.7 | 1.8 | 1.7 | 1.5 | 1.7 | 1.8 | 1.9 | 1.7 | 1.7 | 1.8 | 1.5 |
| | Can Tho | Mean | 3.2 | 3.8 | 4.6 | 5.2 | 4.7 | 2.8 | 2.4 | 2.3 | 2.9 | 2.8 | 3.1 | 3.7 | 3.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 5.2 | 4.7 | 5.7 | 6.3 | 5.7 | 4.2 | 2.7 | 2.7 | 3.2 | 3.4 | 4.7 | 4.0 | 6.3 |
| | | Min-w | 1.8 | 2.9 | 3.7 | 3.9 | 3.4 | 1.7 | 1.9 | 1.9 | 2.4 | 2.5 | 2.2 | 3.3 | 1.7 |
| | Ho Chi Minh | Mean | 6.1 | 5.7 | 8.4 | 5.3 | 5.4 | 6.1 | 5.6 | 3.8 | 4.2 | 4.8 | 4.9 | 7.0 | 5.6 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 8.2 | 7.5 | 10.3 | 6.2 | 6.3 | 7.3 | 5.7 | 5.7 | 5.0 | 5.4 | 5.7 | 8.0 | 10.3 |
| | | Min-w | 4.2 | 4.3 | 5.7 | 4.1 | 4.8 | 4.9 | 5.5 | 3.2 | 3.1 | 4.0 | 4.2 | 5.7 | 3.1 |
| | Yen Bai | Mean | 3.3 | 3.2 | 3.4 | 3.3 | 3.2 | 3.2 | 3.4 | 3.7 | 3.6 | 3.8 | 3.8 | 3.9 | 3.5 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 3.5 | 3.3 | 3.4 | 3.4 | 3.4 | 3.4 | 3.6 | 4.0 | 3.7 | 3.9 | 3.9 | 4.0 | 4.0 |
| | | Min-w | 3.0 | 3.1 | 3.3 | 3.2 | 3.1 | 3.0 | 3.1 | 3.4 | 3.4 | 3.7 | 3.6 | 3.8 | 3.0 |

Terms and abbreviations are given in Table 4.2.

**Table 4.7 NO**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| China | Jinyunshan | Mean | 12.1 | 10.2 | 10.3 | 8.8 | 9.0 | 8.6 | 7.2 | 6.6 | 4.8 | 5.8 | 9.0 | 11.9 | 8.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 100 | 100 | 100 | 100 | 99 |
| | | Max-d | 18.2 | 17.0 | 17.2 | 12.1 | 37.7 | 9.8 | 9.8 | 9.6 | 7.7 | 10.0 | 23.4 | 30.1 | 37.7 |
| | | Min-d | 6.4 | 6.8 | 7.4 | 6.3 | 6.3 | 3.8 | 5.2 | 4.1 | 3.0 | 3.3 | 4.4 | 6.1 | 3.0 |
| Japan | Rishiri | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 97 | 98 | 91 | 98 | 98 | 98 | 95 | 98 | 84 | 98 | 95 | 96 | 95 |
| | | Max-d | <0.1 | 0.2 | 0.2 | <0.1 | 0.1 | 0.4 | 0.3 | 0.5 | 0.2 | 0.1 | 0.2 | 0.2 | 0.5 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ochiishi | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 96 | 96 | 96 | 96 | 89 | 96 | 96 | 96 | 96 | 96 | 89 | 96 | 95 |
| | | Max-d | 0.1 | 0.1 | 0.1 | 0.3 | 0.2 | 0.3 | 0.6 | 0.3 | 0.2 | 0.1 | <0.1 | <0.1 | 0.6 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tappi | Mean | <0.1 | <0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.3 | - | - | - | 0.1 | <0.1 | 0.1 |
| | | % | 99 | 98 | 98 | 98 | 99 | 98 | 68 | 0 | 0 | 0 | 54 | 98 | 67 |
| | | Max-d | 0.1 | 0.1 | 0.3 | 0.4 | 0.9 | 0.7 | 1.1 | - | - | - | 0.1 | 0.1 | 1.1 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - | - | <0.1 | <0.1 | <0.1 |
| | Sado-seki | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | - | - | - | - | <0.1 |
| | | % | 97 | 97 | 97 | 97 | 98 | 97 | 97 | 8 | 0 | 0 | 0 | 0 | 57 |
| | | Max-d | 0.1 | <0.1 | <0.1 | 0.1 | <0.1 | 0.1 | 0.1 | 0.2 | - | - | - | - | 0.2 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | - | - | - | - | <0.1 |
| | Happo | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 98 | 98 | 97 | 98 | 98 | 98 | 98 | 97 | 97 | 95 | 91 | 98 | 97 |
| | | Max-d | 0.1 | 0.1 | <0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.3 | <0.1 | <0.1 | 0.3 | 0.1 | 0.3 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ijira | Mean | <0.1 | 0.1 | <0.1 | 0.2 | 0.2 | <0.1 | 0.3 | 0.2 | <0.1 | <0.1 | 0.2 | 0.1 | 0.1 |
| | | % | 98 | 98 | 99 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 85 | 98 | 97 |
| | | Max-d | 0.3 | 0.8 | 0.4 | 0.8 | 1.5 | 0.5 | 1.0 | 1.0 | 0.4 | 0.5 | 0.5 | 0.5 | 1.5 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Oki | Mean | 0.1 | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 98 | 86 | 97 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 93 | 69 | 94 |
| | | Max-d | 0.2 | 0.4 | 0.5 | 0.2 | 0.4 | 0.3 | 0.5 | 0.1 | 0.3 | 0.3 | 0.2 | 0.3 | 0.5 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Banryu | Mean | 0.2 | 0.2 | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 |
| | | % | 88 | 98 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 97 | 98 | 98 | 97 |
| | | Max-d | 0.3 | 0.4 | 0.2 | 0.4 | 0.3 | 0.4 | 0.6 | 0.6 | 0.3 | 0.4 | 0.4 | 0.3 | 0.6 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Yusuhara | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 |
| | | % | 97 | 98 | 97 | 94 | 97 | 97 | 53 | 0 | 73 | 100 | 100 | 100 | 84 |
| | | Max-d | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | - | 0.1 | 0.5 | 0.3 | 0.2 | 0.5 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Hedo | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 97 | 81 | 97 | 98 | 97 | 95 | 97 | 98 | 95 | 97 | 98 | 98 | 96 |
| | | Max-d | 0.1 | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.6 | 0.3 | 0.6 | 0.3 | 0.1 | 0.1 | 0.6 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ogasawara | Mean | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | | % | 98 | 89 | 98 | 98 | 98 | 98 | 35 | 0 | 45 | 98 | 98 | 98 | 79 |
| | | Max-d | 0.2 | 0.3 | 0.1 | 0.1 | 0.2 | 0.2 | <0.1 | - | 0.5 | <0.1 | 0.7 | 0.2 | 0.7 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | Mean | 41.2 | 26.0 | 11.8 | 7.9 | 3.6 | 1.7 | 3.0 | 12.0 | 19.8 | 28.1 | 41.4 | 48.1 | 19.4 |
| | | % | 59 | 100 | 100 | 98 | 100 | 99 | 100 | 100 | 100 | 100 | 86 | 99 | 95 |
| | | Max-d | 105.9 | 50.3 | 26.6 | 21.4 | 14.9 | 4.8 | 12.8 | 23.1 | 38.6 | 75.4 | 112.0 | 142.7 | 142.7 |
| | | Min-d | 5.7 | 5.2 | 0.8 | 0.7 | 0.7 | 0.2 | 0.1 | 5.5 | 10.0 | 10.5 | 10.8 | 11.9 | 0.1 |
| Thailand | Bangkok | Mean | 6.1 | 5.4 | 2.6 | 2.6 | 5.5 | 6.4 | 7.9 | 9.5 | 10.2 | 13.0 | - | 2.3 | 6.6 |
| | | % | 95 | 96 | 95 | 96 | 96 | 96 | 96 | 82 | 96 | 85 | 0 | 57 | 82 |
| | | Max-d | 17.6 | 36.5 | 9.8 | 12.2 | 16.2 | 16.8 | 22.1 | 25.2 | 33.9 | 48.5 | - | 12.9 | 48.5 |
| | | Min-d | 0.3 | 1.3 | 1.1 | 0.5 | 0.2 | 1.9 | 1.9 | 3.7 | 2.2 | 2.9 | - | <0.1 | <0.1 |
| | Samutprakarn | Mean | 6.2 | 7.8 | 2.6 | 4.1 | 5.7 | 8.6 | 8.9 | 10.0 | 9.9 | 13.3 | 6.8 | 3.3 | 7.3 |
| | | % | 85 | 95 | 95 | 94 | 84 | 94 | 94 | 95 | 95 | 94 | 94 | 95 | 93 |
| | | Max-d | 22.2 | 63.0 | 6.6 | 27.4 | 15.6 | 20.3 | 18.8 | 21.8 | 20.9 | 39.0 | 21.0 | 10.2 | 63.0 |
| | | Min-d | <0.1 | 0.3 | 0.8 | 1.9 | 1.9 | 3.9 | 2.5 | 2.9 | 1.7 | 0.9 | 1.0 | 0.2 | <0.1 |
| | Khanchanaburi | Mean | - | - | - | <0.1 | - | - | <0.1 | 0.2 | - | - | 1.7 | 1.3 | 0.5 |
| | (Vachiralongkorn Dam) | % | 0 | 0 | 0 | 43 | 0 | 0 | 38 | 19 | 0 | 0 | 25 | 18 | 12 |
| | | Max-d | - | - | - | 0.2 | - | - | 0.2 | 0.3 | - | - | 3.3 | 1.8 | 3.3 |
| | | Min-d | - | - | - | <0.1 | - | - | <0.1 | <0.1 | - | - | 0.3 | 0.7 | <0.1 |
| | Chang Phueak | Mean | 4.9 | 2.9 | 1.4 | 1.4 | 0.8 | 1.6 | 1.9 | 2.6 | 2.9 | 2.3 | 3.0 | 3.6 | 2.4 |
| | | % | 95 | 94 | 95 | 95 | 94 | 95 | 95 | 95 | 94 | 94 | 95 | 95 | 95 |
| | | Max-d | 14.6 | 7.8 | 3.7 | 3.2 | 2.2 | 3.6 | 4.3 | 7.6 | 5.1 | 5.2 | 6.3 | 8.6 | 14.6 |
| | | Min-d | 1.0 | 0.7 | 0.2 | 0.4 | <0.1 | 0.1 | 0.6 | 0.9 | 0.4 | 0.8 | <0.1 | 0.7 | <0.1 |

**Table 4.7 NO (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Thailand | Si Phum | Mean | 15.3 | 6.5 | 9.6 | 8.8 | 5.9 | 8.0 | 8.2 | 9.3 | 8.8 | 8.6 | 9.5 | 9.8 | 9.1 |
| | | % | 95 | 82 | 92 | 91 | 94 | 96 | 95 | 94 | 95 | 92 | 88 | 91 | 92 |
| | | Max-d | 27.0 | 21.2 | 16.4 | 61.7 | 11.2 | 14.3 | 13.0 | 13.7 | 15.2 | 19.9 | 16.0 | 22.0 | 61.7 |
| | | Min-d | 4.3 | <0.1 | 2.0 | 2.5 | 2.5 | 4.2 | 4.8 | 5.9 | 4.5 | 3.9 | 3.7 | 2.2 | <0.1 |
| | Nai Mueang | Mean | 15.8 | 14.5 | 9.1 | 8.5 | - | - | - | - | - | 11.7 | 15.6 | 13.1 | 13.0 |
| | | % | 96 | 96 | 96 | 31 | 0 | 0 | 0 | 0 | 0 | 95 | 93 | 94 | 50 |
| | | Max-d | 25.1 | 29.9 | 28.9 | 16.5 | - | - | - | - | - | 23.2 | 29.1 | 29.6 | 29.9 |
| | | Min-d | 8.2 | 7.2 | 3.0 | 3.2 | - | - | - | - | - | 4.6 | 7.2 | 4.1 | 3.0 |

Terms and abbreviations are given in Table 4.2.

**Table 4.8 $NO_2$**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| China | Hongwen | Mean | 18.2 | 17.9 | 25.4 | 18.6 | 11.9 | 9.4 | 8.9 | 11.0 | 10.6 | 10.3 | 17.2 | 17.4 | 14.7 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-d | 33.8 | 40.0 | 39.5 | 55.6 | 23.4 | 19.2 | 14.6 | 18.7 | 16.6 | 18.7 | 31.2 | 36.9 | 55.6 |
| | | Min-d | 6.8 | 6.2 | 13.0 | 4.7 | 7.3 | 4.7 | 5.7 | 5.7 | 5.7 | 6.2 | 8.8 | 11.4 | 4.7 |
| | Haibin-Park | Mean | 20.6 | 16.3 | 24.3 | 18.1 | 13.5 | 7.0 | 11.7 | 8.9 | 12.6 | 11.7 | 22.0 | 23.1 | 15.9 |
| | | % | 94 | 100 | 100 | 90 | 100 | 100 | 100 | 81 | 97 | 100 | 100 | 100 | 97 |
| | | Max-d | 41.6 | 26.0 | 35.9 | 34.8 | 23.9 | 15.1 | 20.3 | 20.8 | 24.4 | 25.5 | 38.5 | 54.1 | 54.1 |
| | | Min-d | 7.3 | 7.3 | 13.5 | 3.6 | 4.2 | 2.6 | 5.7 | 4.7 | 2.1 | 3.6 | 13.0 | 10.4 | 2.1 |
| Indonesia | Jakarta | Mean | 24.3 | 25.8 | 22.0 | 31.1 | 37.1 | 27.2 | 29.0 | 29.6 | 27.7 | 28.4 | 36.6 | 22.5 | 28.4 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 24.3 | 25.8 | 22.0 | 31.1 | 37.1 | 27.2 | 29.0 | 29.6 | 27.7 | 28.4 | 36.6 | 22.5 | 37.1 |
| | | Min-m | 24.3 | 25.8 | 22.0 | 31.1 | 37.1 | 27.2 | 29.0 | 29.6 | 27.7 | 28.4 | 36.6 | 22.5 | 22.0 |
| | Kototabang | Mean | 0.2 | 1.5 | 1.2 | 1.0 | 2.1 | 1.4 | 0.9 | 1.4 | 1.2 | 1.2 | 1.1 | 1.0 | 1.2 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.2 | 1.5 | 1.2 | 1.0 | 2.1 | 1.4 | 0.9 | 1.4 | 1.2 | 1.2 | 1.1 | 1.0 | 2.1 |
| | | Min-m | 0.2 | 1.5 | 1.2 | 1.0 | 2.1 | 1.4 | 0.9 | 1.4 | 1.2 | 1.2 | 1.1 | 1.0 | 0.2 |
| | Bandung | Mean | 29.8 | 39.8 | 33.8 | 36.5 | 33.2 | 34.5 | 35.2 | 36.2 | 34.6 | 41.0 | 40.2 | 36.8 | 36.0 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 29.8 | 39.8 | 33.8 | 36.5 | 33.2 | 34.5 | 35.2 | 36.2 | 34.6 | 41.0 | 40.2 | 36.8 | 41.0 |
| | | Min-m | 29.8 | 39.8 | 33.8 | 36.5 | 33.2 | 34.5 | 35.2 | 36.2 | 34.6 | 41.0 | 40.2 | 36.8 | 29.8 |
| Japan | Banryu | Mean | 2.1 | 2.3 | 2.5 | 1.9 | 1.9 | 1.6 | 1.7 | 1.5 | 1.4 | 1.7 | 2.3 | 2.5 | 2.0 |
| | | % | 88 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 98 | 97 |
| | | Max-d | 3.8 | 3.5 | 4.0 | 3.3 | 3.5 | 2.7 | 3.1 | 2.6 | 2.7 | 3.5 | 3.9 | 3.7 | 4.0 |
| | | Min-d | 0.6 | 1.4 | 1.3 | 0.8 | 0.6 | 0.6 | 0.7 | 0.5 | 0.3 | 0.7 | 1.3 | 1.1 | 0.3 |
| Mongolia | Ulaanbaatar | Mean | 69.1 | 64.1 | 53.7 | 45.5 | 34.1 | 28.4 | 23.8 | 29.7 | 34.2 | 42.1 | 50.2 | 53.4 | 42.9 |
| | | % | 59 | 100 | 100 | 98 | 100 | 99 | 100 | 100 | 100 | 100 | 86 | 99 | 95 |
| | | Max-d | 110.3 | 92.0 | 62.1 | 55.6 | 42.7 | 40.3 | 35.5 | 36.4 | 43.3 | 51.8 | 74.5 | 85.0 | 110.3 |
| | | Min-d | 41.4 | 39.9 | 43.5 | 37.9 | 28.6 | 14.8 | 16.1 | 22.7 | 20.9 | 35.1 | 36.0 | 12.1 | 12.1 |
| Republic of Korea | Kanghwa | Mean | 6.0 | 5.6 | 6.7 | 6.6 | 4.9 | 3.6 | 3.5 | 3.6 | 5.2 | 5.4 | 7.5 | 9.2 | 5.7 |
| | | % | 98 | 97 | 98 | 98 | 97 | 94 | 97 | 94 | 98 | 97 | 98 | 97 | 97 |
| | | Max-d | 25.8 | 17.6 | 15.1 | 19.1 | 8.8 | 11.0 | 8.6 | 8.0 | 11.7 | 16.2 | 25.4 | 22.5 | 25.8 |
| | | Min-d | 1.0 | 1.8 | 2.9 | 2.4 | 2.7 | 1.6 | 1.6 | 1.1 | 2.9 | 2.3 | 1.7 | 2.2 | 1.0 |
| | Cheju (Kosan) | Mean | 2.9 | 1.9 | 3.2 | 4.6 | 2.5 | 2.5 | 1.6 | 2.4 | 3.0 | 3.1 | 2.8 | 2.6 | 2.7 |
| | | % | 85 | 86 | 92 | 50 | 89 | 77 | 88 | 92 | 95 | 94 | 95 | 96 | 87 |
| | | Max-d | 8.7 | 5.2 | 5.4 | 6.2 | 4.4 | 4.7 | 3.8 | 4.3 | 5.2 | 6.0 | 5.2 | 7.8 | 8.7 |
| | | Min-d | 0.5 | 0.4 | 0.9 | 3.3 | 0.7 | 1.0 | 0.5 | 0.5 | 1.0 | 1.3 | 1.2 | 1.0 | 0.4 |
| | Imsil | Mean | 5.6 | 5.2 | 5.7 | 3.5 | 3.0 | 2.7 | 2.1 | 2.6 | 2.4 | 3.8 | 5.4 | 6.3 | 4.0 |
| | | % | 98 | 97 | 98 | 91 | 98 | 96 | 97 | 96 | 90 | 93 | 96 | 95 | 95 |
| | | Max-d | 12.5 | 9.8 | 9.0 | 7.9 | 5.0 | 3.9 | 4.1 | 9.2 | 4.0 | 9.8 | 12.0 | 16.0 | 16.0 |
| | | Min-d | 2.2 | 1.9 | 2.6 | 1.5 | 2.2 | 1.8 | 0.8 | 0.4 | 1.1 | 1.4 | 2.6 | 2.5 | 0.4 |
| Thailand | Bangkok | Mean | 23.0 | 24.6 | 15.1 | 14.2 | 18.0 | 13.2 | 12.3 | 12.1 | 16.7 | 23.8 | - | 23.2 | 17.6 |
| | | % | 95 | 96 | 95 | 96 | 96 | 96 | 96 | 82 | 96 | 85 | 0 | 57 | 82 |
| | | Max-d | 36.3 | 43.7 | 34.5 | 38.0 | 34.3 | 17.5 | 16.8 | 17.5 | 30.2 | 38.2 | - | 40.0 | 43.7 |
| | | Min-d | 12.4 | 10.5 | 7.9 | 6.7 | 8.1 | 8.2 | 8.8 | 7.8 | 7.6 | 13.6 | - | 9.9 | 6.7 |
| | Samutprakarn | Mean | 19.2 | 17.2 | 10.7 | 11.1 | 13.8 | 10.5 | 10.9 | 11.4 | 15.3 | 21.2 | 24.1 | 21.8 | 15.6 |
| | | % | 85 | 95 | 95 | 94 | 84 | 94 | 94 | 95 | 95 | 94 | 94 | 95 | 93 |
| | | Max-d | 33.4 | 38.4 | 24.8 | 32.0 | 29.7 | 20.0 | 17.9 | 16.5 | 28.8 | 37.1 | 32.7 | 33.7 | 38.4 |
| | | Min-d | 0.6 | 2.0 | 5.1 | 3.2 | 6.0 | 6.7 | 3.0 | 7.7 | 5.4 | 12.4 | 13.9 | 10.6 | 0.6 |
| | Chang Phueak | Mean | 7.4 | 14.0 | 14.7 | 9.2 | 6.8 | 6.0 | 6.1 | 6.6 | 6.4 | 6.0 | 8.0 | 9.7 | 8.4 |
| | | % | 95 | 94 | 95 | 95 | 94 | 95 | 95 | 95 | 94 | 94 | 95 | 95 | 95 |
| | | Max-d | 16.6 | 20.3 | 22.4 | 16.0 | 10.6 | 9.4 | 8.9 | 10.7 | 8.5 | 9.2 | 10.4 | 17.3 | 22.4 |
| | | Min-d | <0.1 | 9.2 | 6.1 | 3.6 | 3.9 | 3.9 | 4.0 | 4.2 | 4.0 | 3.9 | 4.6 | 4.8 | <0.1 |
| | Si Phum | Mean | 13.6 | 30.9 | 19.4 | 16.7 | 13.1 | 10.4 | 10.1 | 10.7 | 10.4 | 10.9 | 13.9 | 17.2 | 14.5 |
| | | % | 95 | 82 | 92 | 91 | 94 | 96 | 95 | 94 | 95 | 92 | 88 | 91 | 92 |
| | | Max-d | 20.7 | 56.5 | 30.7 | 30.6 | 19.6 | 15.1 | 12.7 | 13.2 | 12.5 | 14.4 | 17.4 | 30.4 | 56.5 |
| | | Min-d | 4.7 | 8.1 | 8.4 | 9.8 | 7.9 | 7.2 | 7.3 | 8.2 | 8.7 | 8.0 | 9.3 | 11.0 | 4.7 |
| | Nai Mueang | Mean | 21.1 | 26.1 | 24.5 | 18.6 | - | - | - | - | - | 16.6 | 25.5 | 24.3 | 22.7 |
| | | % | 96 | 96 | 96 | 31 | 0 | 0 | 0 | 0 | 0 | 95 | 93 | 94 | 50 |
| | | Max-d | 28.3 | 44.9 | 53.7 | 49.3 | - | - | - | - | - | 24.9 | 34.3 | 39.8 | 53.7 |
| | | Min-d | 13.8 | 12.7 | 15.9 | 8.9 | - | - | - | - | - | 8.1 | 16.6 | 10.7 | 8.1 |

Terms and abbreviations are given in Table 4.2.

**Table 4.9 NOx**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| China | Jinyunshan | Mean | 25.9 | 21.3 | 21.7 | 18.0 | 18.7 | 14.9 | 13.5 | 12.6 | 11.6 | 13.8 | 20.7 | 28.2 | 18.5 |
| | (NOx*) | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 100 | 100 | 100 | 100 | 99 |
| | | Max-d | 40.0 | 36.0 | 34.4 | 25.6 | 28.0 | 51.2 | 19.2 | 18.4 | 16.8 | 24.0 | 45.6 | 50.4 | 51.2 |
| | | Min-d | 15.2 | 13.6 | 14.4 | 12.0 | 12.0 | 6.4 | 8.8 | 7.2 | 7.2 | 8.0 | 11.2 | 14.4 | 6.4 |
| Japan | Rishiri | Mean | 0.5 | 0.6 | 0.6 | 0.8 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.8 | 1.2 | 0.6 | 0.6 |
| | (NOx*) | % | 97 | 98 | 91 | 98 | 98 | 98 | 95 | 98 | 84 | 98 | 95 | 96 | 95 |
| | | Max-d | 2.0 | 2.1 | 1.5 | 1.6 | 1.3 | 1.8 | 1.1 | 1.3 | 0.9 | 1.5 | 4.3 | 2.0 | 4.3 |
| | | Min-d | 0.2 | <0.1 | 0.3 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.3 | 0.3 | 0.1 | <0.1 |
| | Ochiishi | Mean | 0.7 | 0.7 | 0.7 | 1.1 | 1.3 | 1.1 | 1.4 | 0.8 | 0.9 | 0.8 | 0.8 | 0.7 | 0.9 |
| | (NOx*) | % | 96 | 96 | 96 | 96 | 89 | 96 | 96 | 96 | 96 | 96 | 89 | 96 | 95 |
| | | Max-d | 1.4 | 1.7 | 1.6 | 2.3 | 2.8 | 2.6 | 3.4 | 1.6 | 1.9 | 1.6 | 1.8 | 1.3 | 3.4 |
| | | Min-d | 0.3 | 0.2 | 0.3 | 0.3 | 0.4 | 0.2 | 0.7 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 |
| | Tappi | Mean | 0.9 | 0.8 | 1.2 | 1.5 | 1.7 | 1.9 | 1.7 | - | - | - | 0.7 | 0.8 | 1.3 |
| | (NOx*) | % | 99 | 98 | 98 | 98 | 99 | 98 | 68 | 0 | 0 | 0 | 54 | 98 | 67 |
| | | Max-d | 2.0 | 1.6 | 2.7 | 4.1 | 7.9 | 4.4 | 5.9 | - | - | - | 1.2 | 2.6 | 7.9 |
| | | Min-d | 0.3 | 0.3 | 0.6 | 0.4 | 0.5 | <0.1 | 0.6 | - | - | - | 0.4 | <0.1 | <0.1 |
| | Sado-seki | Mean | 0.7 | 0.7 | 1.0 | 1.0 | 0.7 | 0.4 | 0.5 | 0.1 | - | - | - | - | 0.7 |
| | (NOx*) | % | 97 | 97 | 97 | 97 | 98 | 97 | 97 | 8 | 0 | 0 | 0 | 0 | 57 |
| | | Max-d | 1.9 | 1.8 | 3.9 | 2.0 | 1.5 | 1.3 | 1.4 | 0.7 | - | - | - | - | 3.9 |
| | | Min-d | 0.2 | 0.3 | <0.1 | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | - | - | - | - | <0.1 |
| | Happo | Mean | 0.6 | 0.7 | 1.0 | 1.0 | 1.0 | 0.8 | 0.7 | 0.4 | 0.5 | 0.4 | 0.8 | 0.7 | 0.7 |
| | (NOx*) | % | 98 | 98 | 97 | 98 | 98 | 98 | 97 | 97 | 97 | 95 | 91 | 98 | 97 |
| | | Max-d | 1.3 | 1.2 | 4.0 | 2.2 | 2.4 | 1.6 | 1.6 | 0.9 | 0.9 | 1.1 | 1.1 | 1.2 | 4.0 |
| | | Min-d | <0.1 | 0.2 | <0.1 | <0.1 | 0.3 | 0.3 | 0.2 | <0.1 | <0.1 | <0.1 | 0.4 | 0.2 | <0.1 |
| | Ijira | Mean | 0.8 | 1.1 | 1.5 | 2.0 | 2.4 | 1.9 | 1.8 | 1.2 | 1.0 | 0.8 | 1.1 | 1.1 | 1.4 |
| | (NOx*) | % | 98 | 98 | 99 | 98 | 98 | 98 | 98 | 98 | 98 | 98 | 85 | 98 | 97 |
| | | Max-d | 3.6 | 4.7 | 4.4 | 5.1 | 5.8 | 5.2 | 4.9 | 3.3 | 3.0 | 3.1 | 3.9 | 2.6 | 5.8 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Oki | Mean | 1.1 | 1.1 | 1.6 | 1.4 | 1.1 | 0.8 | 0.8 | 0.5 | 0.7 | 0.7 | 1.3 | 1.2 | 1.0 |
| | (NOx*) | % | 98 | 86 | 97 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 93 | 69 | 94 |
| | | Max-d | 2.4 | 2.3 | 3.8 | 2.4 | 1.7 | 2.0 | 2.0 | 1.3 | 1.6 | 2.8 | 2.1 | 2.6 | 3.8 |
| | | Min-d | 0.2 | 0.5 | 0.5 | 0.7 | 0.5 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | <0.1 |
| | Banryu | Mean | 2.3 | 2.5 | 2.6 | 2.1 | 2.1 | 1.8 | 1.9 | 1.7 | 1.5 | 1.8 | 2.4 | 2.6 | 2.1 |
| | | % | 88 | 98 | 98 | 98 | 98 | 98 | 98 | 97 | 98 | 97 | 98 | 98 | 97 |
| | | Max-d | 4.2 | 3.7 | 4.1 | 3.6 | 3.7 | 3.1 | 3.4 | 3.0 | 3.0 | 3.6 | 4.2 | 4.0 | 4.2 |
| | | Min-d | 0.6 | 1.6 | 1.3 | 0.9 | 0.7 | 0.7 | 0.8 | 0.5 | 0.5 | 0.9 | 1.3 | 1.2 | 0.5 |
| | Yusuhara | Mean | 2.0 | 2.2 | 2.1 | 1.5 | 1.5 | 1.2 | 0.7 | - | 0.8 | 0.6 | 1.2 | 1.8 | 1.5 |
| | (NOx*) | % | 97 | 98 | 97 | 94 | 97 | 97 | 53 | 0 | 73 | 100 | 100 | 100 | 84 |
| | | Max-d | 3.2 | 4.1 | 3.8 | 3.1 | 3.2 | 2.4 | 1.3 | - | 1.7 | 1.5 | 2.5 | 3.6 | 4.1 |
| | | Min-d | 0.7 | 1.2 | 0.8 | 0.4 | 0.4 | 0.3 | 0.2 | - | 0.3 | <0.1 | 0.4 | 0.5 | <0.1 |
| | Hedo | Mean | 0.7 | 1.0 | 1.1 | 0.8 | 0.4 | 0.5 | 0.6 | 0.5 | 0.6 | 0.4 | 0.7 | 1.0 | 0.7 |
| | (NOx*) | % | 97 | 81 | 97 | 98 | 97 | 95 | 97 | 98 | 95 | 97 | 98 | 98 | 96 |
| | | Max-d | 1.4 | 1.5 | 2.9 | 2.9 | 1.0 | 1.1 | 1.6 | 2.6 | 1.5 | 1.5 | 1.3 | 1.9 | 2.9 |
| | | Min-d | 0.2 | 0.6 | 0.2 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 0.3 | 0.2 | 0.3 | 0.5 | <0.1 |
| | Ogasawara | Mean | 0.7 | 0.7 | 0.9 | 0.3 | 0.1 | 0.2 | 0.1 | - | 0.2 | <0.1 | 0.3 | 0.4 | 0.4 |
| | (NOx*) | % | 98 | 89 | 98 | 98 | 98 | 98 | 35 | 0 | 45 | 98 | 98 | 98 | 79 |
| | | Max-d | 2.1 | 1.8 | 2.3 | 1.0 | 0.6 | 1.2 | 0.7 | - | 1.0 | 0.6 | 2.6 | 1.4 | 2.6 |
| | | Min-d | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | Mean | 110.3 | 90.1 | 65.5 | 53.4 | 37.8 | 30.0 | 26.9 | 41.6 | 54.0 | 70.2 | 91.6 | 101.5 | 62.3 |
| | | % | 59 | 100 | 100 | 98 | 100 | 99 | 100 | 100 | 100 | 100 | 86 | 99 | 95 |
| | | Max-d | 191.1 | 142.3 | 85.1 | 76.9 | 57.7 | 45.2 | 47.5 | 53.1 | 81.9 | 127.2 | 166.5 | 194.1 | 194.1 |
| | | Min-d | 47.1 | 45.7 | 44.3 | 39.3 | 29.8 | 15.0 | 16.3 | 31.0 | 35.8 | 48.0 | 47.3 | 41.4 | 15.0 |
| Thailand | Bangkok | Mean | 29.0 | 30.1 | 17.7 | 16.8 | 23.6 | 19.6 | 20.1 | 21.6 | 26.9 | 36.8 | - | 25.5 | 24.2 |
| | | % | 95 | 96 | 95 | 96 | 96 | 96 | 96 | 82 | 96 | 85 | 0 | 57 | 82 |
| | | Max-d | 53.7 | 80.2 | 41.7 | 50.0 | 42.4 | 32.8 | 35.2 | 40.0 | 59.1 | 74.6 | - | 51.8 | 80.2 |
| | | Min-d | 14.1 | 12.2 | 9.6 | 7.3 | 8.9 | 11.1 | 11.0 | 12.0 | 12.0 | 17.8 | - | 9.9 | 7.3 |
| | Samutprakarn | Mean | 25.3 | 24.9 | 13.4 | 15.3 | 19.5 | 19.1 | 19.8 | 21.4 | 25.1 | 34.5 | 30.8 | 25.1 | 22.8 |
| | | % | 85 | 95 | 95 | 94 | 84 | 94 | 94 | 95 | 95 | 94 | 94 | 95 | 93 |
| | | Max-d | 45.0 | 101.3 | 28.5 | 59.3 | 45.3 | 30.8 | 32.7 | 33.5 | 46.4 | 64.4 | 53.9 | 39.1 | 101.3 |
| | | Min-d | 0.7 | 2.0 | 6.5 | 5.2 | 8.5 | 10.8 | 5.9 | 10.8 | 7.6 | 14.0 | 14.8 | 10.9 | 0.7 |
| | Khanchanaburi(NOx*) | Mean | - | - | - | 0.8 | - | - | 0.4 | 0.5 | - | - | 3.4 | 2.9 | 1.4 |
| | (Vachiralongkorn Dam) | % | 0 | 0 | 0 | 43 | 0 | 0 | 38 | 19 | 0 | 0 | 25 | 18 | 12 |
| | | Max-d | - | - | - | 1.4 | - | - | 0.9 | 0.7 | - | - | 5.0 | 3.6 | 5.0 |
| | | Min-d | - | - | - | 0.3 | - | - | 0.2 | 0.3 | - | - | 1.8 | 2.2 | 0.2 |
| | Chang Phueak | Mean | 11.6 | 16.9 | 15.9 | 10.5 | 7.3 | 7.6 | 8.1 | 9.3 | 9.3 | 8.3 | 11.0 | 13.2 | 10.7 |
| | | % | 95 | 94 | 95 | 95 | 94 | 95 | 95 | 95 | 94 | 94 | 95 | 95 | 95 |
| | | Max-d | 20.7 | 25.7 | 24.8 | 18.5 | 12.5 | 13.0 | 13.1 | 17.0 | 12.7 | 13.3 | 15.9 | 23.9 | 25.7 |
| | | Min-d | 0.3 | 9.7 | 6.3 | 4.3 | 3.5 | 4.1 | 4.6 | 6.3 | 5.7 | 5.7 | 5.0 | 5.5 | 0.3 |

**Table 4.9 NOx (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Thailand | Si Phum | Mean | 28.8 | 37.3 | 29.0 | 25.5 | 19.0 | 18.2 | 18.2 | 19.9 | 19.1 | 19.5 | 23.3 | 27.0 | 23.5 |
| | | % | 95 | 82 | 92 | 91 | 94 | 96 | 95 | 94 | 95 | 92 | 88 | 91 | 92 |
| | | Max-d | 39.4 | 58.4 | 42.0 | 73.8 | 30.9 | 29.3 | 25.7 | 25.0 | 25.3 | 32.8 | 32.8 | 38.6 | 73.8 |
| | | Min-d | 9.0 | 8.6 | 10.6 | 12.4 | 10.8 | 11.8 | 13.0 | 15.1 | 14.0 | 12.0 | 15.0 | 15.5 | 8.6 |
| | Nai Mueang | Mean | 36.9 | 40.6 | 33.6 | 27.1 | - | - | - | - | - | 28.3 | 41.0 | 37.4 | 35.7 |
| | | % | 96 | 96 | 96 | 31 | 0 | 0 | 0 | 0 | 0 | 95 | 93 | 94 | 50 |
| | | Max-d | 50.5 | 74.9 | 82.6 | 56.3 | - | - | - | - | - | 40.8 | 62.8 | 69.5 | 82.6 |
| | | Min-d | 23.0 | 22.7 | 18.9 | 12.7 | - | - | - | - | - | 12.5 | 25.5 | 15.6 | 12.5 |

NOx* : NOx measured by CLD in remote or rural sites
Terms and abbreviations are given in Table 4.2.

**Table 4.10 $O_3$**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Indonesia | Bandung | Mean | 4 | 11 | 12 | 12 | 14 | 11 | 11 | 12 | 14 | 16 | 12 | 6 | 11 |
| | | % | 86 | 89 | 96 | 91 | 96 | 88 | 100 | 100 | 83 | 55 | 100 | 48 | 86 |
| | | Max-d | 8 | 19 | 23 | 23 | 21 | 19 | 16 | 17 | 24 | 32 | 34 | 23 | 34 |
| | | Min-d | 2 | 2 | 4 | 4 | 5 | 3 | 5 | 7 | 3 | 4 | 3 | 2 | 2 |
| Japan | Rishiri | Mean | 39 | 43 | 45 | 48 | 43 | 33 | 28 | 24 | 30 | 35 | 37 | 35 | 37 |
| | | % | 99 | 100 | 92 | 99 | 99 | 99 | 96 | 99 | 86 | 99 | 96 | 98 | 97 |
| | | Max-d | 45 | 56 | 51 | 72 | 61 | 46 | 48 | 36 | 39 | 50 | 47 | 40 | 72 |
| | | Min-d | 30 | 38 | 39 | 35 | 27 | 21 | 16 | 13 | 19 | 23 | 29 | 27 | 13 |
| | Ochiishi | Mean | 41 | 44 | 48 | 52 | 50 | 40 | 39 | 31 | 40 | 40 | 39 | 38 | 42 |
| | | % | 100 | 100 | 100 | 100 | 93 | 100 | 100 | 100 | 99 | 100 | 93 | 100 | 99 |
| | | Max-d | 48 | 58 | 51 | 74 | 64 | 59 | 65 | 49 | 53 | 56 | 58 | 46 | 74 |
| | | Min-d | 36 | 39 | 45 | 42 | 39 | 27 | 24 | 20 | 31 | 29 | 31 | 32 | 20 |
| | Tappi | Mean | 42 | 46 | 51 | 56 | 52 | 40 | 39 | 28 | 43 | 43 | 43 | 40 | 45 |
| | | % | 99 | 99 | 99 | 99 | 98 | 99 | 98 | 33 | 99 | 99 | 98 | 99 | 93 |
| | | Max-d | 48 | 56 | 66 | 72 | 80 | 61 | 59 | 37 | 61 | 57 | 58 | 47 | 80 |
| | | Min-d | 37 | 41 | 45 | 43 | 33 | 25 | 23 | 20 | 30 | 34 | 34 | 33 | 20 |
| | Sado-seki | Mean | 42 | 46 | 51 | 57 | 61 | 45 | 40 | 31 | 41 | 38 | 38 | 38 | 45 |
| | | % | 99 | 98 | 99 | 98 | 99 | 99 | 99 | 56 | 99 | 99 | 99 | 87 | 94 |
| | | Max-d | 49 | 55 | 65 | 72 | 95 | 73 | 58 | 41 | 61 | 54 | 49 | 48 | 95 |
| | | Min-d | 35 | 42 | 45 | 47 | 45 | 29 | 30 | 24 | 32 | 31 | 32 | 31 | 24 |
| | Happo | Mean | 45 | 49 | 55 | 60 | 63 | 55 | 35 | 33 | 41 | 37 | 40 | 37 | 47 |
| | | % | 79 | 93 | 94 | 94 | 67 | 98 | 63 | 72 | 44 | 81 | 69 | 93 | 79 |
| | | Max-d | 56 | 58 | 65 | 82 | 97 | 84 | 53 | 55 | 50 | 51 | 49 | 45 | 97 |
| | | Min-d | 37 | 42 | 43 | 46 | 36 | 39 | 19 | 18 | 27 | 26 | 34 | 33 | 18 |
| | Ijira | Mean | 26 | 31 | 38 | 37 | 40 | 35 | 12 | 12 | 24 | 16 | - | - | 28 |
| | | % | 99 | 84 | 99 | 99 | 99 | 99 | 99 | 65 | 88 | 70 | 0 | 0 | 75 |
| | | Max-d | 36 | 39 | 57 | 50 | 55 | 50 | 33 | 22 | 37 | 30 | - | - | 57 |
| | | Min-d | 17 | 21 | 21 | 13 | 17 | 14 | 2 | 5 | 7 | 5 | - | - | 2 |
| | Oki | Mean | 42 | 47 | 54 | 61 | 63 | 50 | 38 | 32 | 45 | 43 | 45 | 41 | 47 |
| | | % | 82 | 89 | 99 | 100 | 99 | 99 | 100 | 100 | 78 | 88 | 94 | 74 | 92 |
| | | Max-d | 47 | 54 | 71 | 97 | 88 | 78 | 58 | 54 | 69 | 48 | 67 | 52 | 97 |
| | | Min-d | 36 | 43 | 46 | 48 | 46 | 32 | 19 | 18 | 34 | 31 | 34 | 31 | 18 |
| | Banryu | Mean | 35 | 39 | 45 | 49 | 50 | 40 | 23 | 24 | 30 | 27 | 30 | 31 | 35 |
| | | % | 89 | 99 | 100 | 100 | 95 | 100 | 99 | 99 | 100 | 99 | 99 | 99 | 98 |
| | | Max-d | 44 | 49 | 54 | 83 | 76 | 66 | 37 | 42 | 55 | 44 | 40 | 40 | 83 |
| | | Min-d | 19 | 31 | 35 | 24 | 27 | 16 | 9 | 11 | 12 | 16 | 21 | 20 | 9 |
| | Yusuhara | Mean | 42 | 46 | 54 | 54 | 56 | 50 | 22 | 29 | 39 | 34 | 35 | 29 | 41 |
| | | % | 99 | 99 | 99 | 96 | 99 | 99 | 99 | 99 | 86 | 89 | 99 | 99 | 97 |
| | | Max-d | 51 | 53 | 68 | 74 | 86 | 81 | 36 | 50 | 60 | 45 | 45 | 34 | 86 |
| | | Min-d | 34 | 39 | 44 | 33 | 25 | 13 | 10 | 8 | 24 | 23 | 29 | 26 | 8 |
| | Hedo | Mean | 47 | 52 | 51 | 49 | 41 | 28 | 13 | 19 | 29 | 34 | 38 | 38 | 36 |
| | | % | 99 | 82 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 98 |
| | | Max-d | 51 | 59 | 65 | 73 | 63 | 60 | 19 | 41 | 54 | 54 | 47 | 46 | 73 |
| | | Min-d | 41 | 46 | 34 | 16 | 14 | 11 | 8 | 8 | 13 | 19 | 29 | 29 | 8 |
| | Ogasawara | Mean | 43 | 47 | 52 | 44 | 32 | 30 | 20 | 25 | 22 | 31 | 42 | 41 | 36 |
| | | % | 99 | 90 | 99 | 98 | 99 | 98 | 99 | 98 | 99 | 99 | 98 | 99 | 98 |
| | | Max-d | 47 | 53 | 62 | 64 | 56 | 62 | 32 | 39 | 42 | 47 | 48 | 48 | 64 |
| | | Min-d | 33 | 42 | 44 | 16 | 16 | 13 | 13 | 17 | 13 | 22 | 28 | 30 | 13 |
| Mongolia | Ulaanbaatar | Mean | 7 | 7 | 10 | 10 | 12 | 12 | 14 | 14 | 9 | 8 | 6 | 3 | 9 |
| | | % | 100 | 100 | 100 | 85 | 100 | 99 | 85 | 100 | 100 | 100 | 87 | 100 | 96 |
| | | Max-d | 20 | 16 | 17 | 17 | 16 | 17 | 21 | 28 | 15 | 15 | 12 | 10 | 28 |
| | | Min-d | <1 | 2 | 4 | 6 | 9 | 5 | 9 | 7 | 4 | 2 | <1 | <1 | <1 |

**Table 4.10 $O_3$ (continued)**

| Unit : ppb | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Republic of Korea | Kanghwa | Mean | 35 | 35 | 31 | 43 | 53 | 50 | 47 | 43 | 54 | 47 | 40 | 33 | 43 |
| | | % | 98 | 97 | 98 | 98 | 97 | 94 | 97 | 96 | 98 | 97 | 98 | 97 | 97 |
| | | Max-d | 43 | 47 | 35 | 75 | 69 | 69 | 76 | 75 | 81 | 64 | 62 | 41 | 81 |
| | | Min-d | 19 | 21 | 24 | 26 | 35 | 40 | 29 | 19 | 34 | 33 | 23 | 22 | 19 |
| | Cheju (Kosan) | Mean | 41 | 51 | 57 | 65 | 56 | 48 | 31 | 40 | 49 | 44 | 42 | 37 | 47 |
| | | % | 96 | 95 | 92 | 94 | 94 | 87 | 90 | 99 | 100 | 96 | 98 | 99 | 95 |
| | | Max-d | 50 | 66 | 67 | 110 | 77 | 67 | 70 | 61 | 76 | 61 | 53 | 45 | 110 |
| | | Min-d | 28 | 42 | 46 | 36 | 31 | 34 | 15 | 12 | 33 | 24 | 36 | 31 | 12 |
| | Imsil | Mean | 32 | 38 | 43 | 40 | 33 | 41 | 21 | 21 | 24 | 18 | 21 | 20 | 29 |
| | | % | 98 | 94 | 98 | 91 | 98 | 95 | 97 | 90 | 89 | 97 | 97 | 95 | 95 |
| | | Max-d | 47 | 67 | 57 | 53 | 52 | 58 | 38 | 37 | 39 | 27 | 33 | 28 | 67 |
| | | Min-d | 19 | 21 | 33 | 22 | 21 | 25 | 10 | 7 | 11 | 10 | 14 | 12 | 7 |
| Russia | Mondy[1)] | Mean | 29 | 30 | 37 | 43 | 32 | 25 | 22 | 20 | 19 | | 8 | | 27 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | | 91 |
| | | Max | 30 | 30 | 41 | 43 | 34 | 27 | 22 | 20 | 20 | | 8 | | 43 |
| | | Min | 28 | 30 | 33 | 43 | 30 | 24 | 22 | 20 | 17 | | 8 | | 8 |
| | Listvyanka | Mean | 21 | 26 | 36 | 29 | 27 | 20 | 19 | 17 | 15 | 19 | 33 | - | 25 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 88 |
| | | Max-2w | 21 | 26 | 41 | 29 | 29 | 20 | 19 | 17 | 15 | 19 | 33 | - | 41 |
| | | Min-2w | 21 | 26 | 31 | 29 | 25 | 20 | 19 | 17 | 15 | 19 | 33 | - | 15 |
| | Irkutsk | Mean | 7 | 10 | 18 | 24 | 20 | 14 | 14 | 11 | 8 | 9 | 15 | 14 | 14 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 10 | 11 | 21 | 24 | 21 | 14 | 14 | 11 | 8 | 9 | 15 | 14 | 24 |
| | | Min-2w | 4 | 9 | 16 | 23 | 18 | 14 | 14 | 11 | 8 | 9 | 15 | 14 | 4 |
| Thailand | Bangkok | Mean | 21 | 30 | 27 | 31 | 22 | 17 | 14 | 13 | 16 | 17 | 31 | 33 | 22 |
| | | % | 95 | 96 | 94 | 96 | 96 | 96 | 96 | 82 | 96 | 96 | 48 | 96 | 90 |
| | | Max-d | 37 | 44 | 49 | 55 | 47 | 28 | 21 | 21 | 38 | 50 | 43 | 52 | 55 |
| | | Min-d | 4 | 13 | 12 | 13 | 8 | 9 | 8 | 5 | 7 | 3 | 20 | 15 | 3 |
| | Samutprakarn | Mean | 21 | 27 | 22 | 24 | 18 | 11 | 9 | 9 | 12 | 14 | 18 | 23 | 17 |
| | | % | 95 | 95 | 95 | 94 | 71 | 75 | 94 | 95 | 95 | 94 | 94 | 95 | 91 |
| | | Max-d | 42 | 43 | 46 | 42 | 34 | 19 | 15 | 19 | 25 | 39 | 33 | 41 | 46 |
| | | Min-d | 3 | 12 | 11 | 10 | 8 | 2 | 5 | 3 | 5 | 2 | 5 | 7 | 2 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 28 | - | - | 9 | 7 | - | - | 17 | 21 | 18 |
| | | % | 0 | 0 | 0 | 51 | 0 | 0 | 40 | 18 | 0 | 0 | 25 | 18 | 13 |
| | | Max-d | - | - | - | 46 | - | - | 15 | 8 | - | - | 18 | 25 | 46 |
| | | Min-d | - | - | - | 13 | - | - | 6 | 6 | - | - | 14 | 16 | 6 |
| | Chang Phueak | Mean | 21 | 35 | 36 | 34 | 30 | 15 | 13 | 12 | 13 | 14 | 18 | 20 | 22 |
| | | % | 95 | 94 | 95 | 95 | 94 | 95 | 95 | 95 | 94 | 95 | 95 | 95 | 95 |
| | | Max-d | 34 | 49 | 53 | 48 | 46 | 26 | 21 | 18 | 24 | 25 | 39 | 36 | 53 |
| | | Min-d | 5 | 27 | 21 | 15 | 14 | 8 | 6 | 3 | 8 | 7 | 9 | 7 | 3 |
| | Nai Mueang | Mean | 22 | 30 | 29 | 25 | - | - | - | - | - | 21 | 23 | 29 | 26 |
| | | % | 96 | 96 | 95 | 31 | 0 | 0 | 0 | 0 | 0 | 95 | 94 | 94 | 50 |
| | | Max-d | 35 | 42 | 51 | 46 | - | - | - | - | - | 49 | 49 | 41 | 51 |
| | | Min-d | 9 | 14 | 12 | 10 | - | - | - | - | - | 11 | 10 | 16 | 9 |

Terms and abbreviations are given in Table 4.2.
1) $O_3$ monitoring at Mondy was measured by PS in 2017. The sampling period in November was from Oct. 10 to Dec. 14.

**Table 4.11 $PM_{10}$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| China | Jinyunshan | Mean | 79 | 57 | 44 | 38 | 37 | 35 | 44 | 41 | 31 | 30 | 65 | 98 | 50 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 90 | 100 | 100 | 100 | 100 | 99 |
| | | Max-d | 142 | 107 | 100 | 72 | 68 | 76 | 67 | 67 | 101 | 91 | 128 | 195 | 195 |
| | | Min-d | 10 | 15 | 10 | 9 | 10 | 7 | 14 | 12 | 8 | 7 | 22 | 36 | 7 |
| | Hongwen | Mean | 48 | 49 | 69 | 58 | 43 | 23 | 22 | 31 | 33 | 42 | 42 | 54 | 43 |
| | | % | 97 | 100 | 100 | 100 | 94 | 100 | 97 | 97 | 100 | 100 | 100 | 94 | 98 |
| | | Max-d | 94 | 91 | 124 | 112 | 140 | 44 | 42 | 55 | 59 | 83 | 92 | 88 | 140 |
| | | Min-d | 15 | 23 | 16 | 20 | 15 | 8 | 13 | 7 | 13 | 20 | 8 | 26 | 7 |
| | Haibin-Park | Mean | 59 | 46 | 49 | 36 | 35 | 18 | 21 | 26 | 32 | 48 | 56 | 72 | 42 |
| | | % | 94 | 100 | 97 | 100 | 100 | 100 | 100 | 81 | 100 | 100 | 100 | 100 | 98 |
| | | Max-d | 89 | 82 | 75 | 52 | 81 | 35 | 79 | 79 | 90 | 92 | 123 | 126 | 126 |
| | | Min-d | 29 | 21 | 28 | 16 | 10 | 7 | 3 | 11 | 12 | 17 | 22 | 39 | 3 |
| Japan | Rishiri | Mean | 11 | 12 | 11 | 27 | 27 | 15 | 14 | 13 | 16 | 20 | 28 | 13 | 17 |
| | | % | 99 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 93 | 100 | 100 | 100 | 99 |
| | | Max-d | 35 | 53 | 40 | 92 | 125 | 48 | 54 | 42 | 38 | 47 | 88 | 26 | 125 |
| | | Min-d | 2 | 3 | 4 | 4 | 5 | 4 | 4 | 2 | 2 | 6 | 5 | 5 | 2 |
| | Ochiishi | Mean | 16 | 12 | 12 | 19 | 21 | 11 | 14 | 15 | 21 | 19 | 22 | 12 | 16 |
| | | % | 76 | 99 | 99 | 93 | 92 | 57 | 99 | 100 | 100 | 99 | 99 | 99 | 93 |
| | | Max-d | 30 | 36 | 23 | 42 | 80 | 21 | 39 | 37 | 65 | 46 | 45 | 34 | 80 |
| | | Min-d | 4 | 4 | 6 | 5 | 6 | 7 | 4 | 6 | 10 | 6 | 10 | 6 | 4 |
| | Tappi | Mean | 13 | 13 | 15 | 22 | 20 | 13 | 18 | 13 | 14 | 15 | 18 | 13 | 16 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 100 | 92 | 99 | 99 | 99 | 99 |
| | | Max-d | 34 | 31 | 38 | 55 | 57 | 28 | 40 | 34 | 33 | 32 | 47 | 29 | 57 |
| | | Min-d | 6 | 6 | 9 | 9 | 5 | 5 | 9 | 4 | 6 | 5 | 7 | 6 | 4 |
| | Sado-seki | Mean | 24 | 24 | 25 | 27 | 29 | 17 | 15 | 13 | 19 | 17 | 24 | 18 | 21 |
| | | % | 99 | 100 | 100 | 99 | 100 | 100 | 99 | 81 | 100 | 96 | 100 | 87 | 97 |
| | | Max-d | 42 | 42 | 60 | 60 | 91 | 36 | 34 | 36 | 48 | 53 | 44 | 30 | 91 |
| | | Min-d | 10 | 8 | 7 | 8 | 7 | 7 | 2 | 6 | 9 | 3 | 11 | 7 | 2 |
| | Happo | Mean | 6 | 7 | 13 | 11 | - | - | - | - | 8 | 6 | 7 | 4 | 7 |
| | | % | 55 | 18 | 75 | 10 | 0 | 0 | 0 | 0 | 8 | 99 | 99 | 77 | 37 |
| | | Max-d | 11 | 10 | 42 | 13 | - | - | - | - | 11 | 12 | 16 | 8 | 42 |
| | | Min-d | <1 | 5 | 5 | 2 | - | - | - | - | 2 | 2 | 3 | 2 | <1 |
| | Ijira | Mean | 11 | 10 | 19 | 20 | 25 | 19 | 31 | 25 | 17 | 13 | 14 | 10 | 18 |
| | | % | 100 | 100 | 100 | 97 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 93 | 99 |
| | | Max-d | 23 | 21 | 43 | 32 | 67 | 39 | 49 | 49 | 33 | 24 | 24 | 23 | 67 |
| | | Min-d | 4 | 5 | 6 | 9 | 10 | 8 | 15 | 10 | 8 | 6 | 6 | 4 | 4 |
| | Oki | Mean | 31 | 31 | 29 | 33 | 38 | 23 | 25 | 22 | 22 | 21 | 34 | 30 | 28 |
| | | % | 100 | 100 | 100 | 100 | 99 | 100 | 99 | 100 | 100 | 90 | 91 | 100 | 98 |
| | | Max-d | 53 | 51 | 49 | 74 | 132 | 50 | 39 | 42 | 60 | 50 | 56 | 51 | 132 |
| | | Min-d | 9 | 13 | 10 | 8 | 9 | 8 | 10 | 10 | 9 | 8 | 14 | 16 | 8 |
| | Banryu | Mean | 21 | 19 | 24 | 26 | 34 | 24 | 26 | 24 | 23 | 17 | 25 | 21 | 24 |
| | | % | 99 | 93 | 100 | 100 | 100 | 100 | 100 | 59 | 100 | 99 | 100 | 95 | 95 |
| | | Max-d | 40 | 35 | 36 | 65 | 141 | 41 | 49 | 38 | 58 | 39 | 39 | 39 | 141 |
| | | Min-d | 7 | 10 | 13 | 9 | 11 | 7 | 12 | 15 | 14 | 6 | 12 | 11 | 6 |
| | Yusuhara | Mean | 12 | 12 | 16 | 15 | 20 | 15 | 16 | 16 | 13 | 9 | 14 | 11 | 14 |
| | | % | 100 | 100 | 100 | 97 | 100 | 100 | 96 | 100 | 100 | 100 | 100 | 96 | 99 |
| | | Max-d | 22 | 27 | 37 | 44 | 67 | 34 | 34 | 33 | 36 | 31 | 26 | 25 | 67 |
| | | Min-d | 2 | 5 | 5 | <1 | 3 | 2 | 2 | <1 | <1 | <1 | 5 | 5 | <1 |
| | Hedo | Mean | 22 | 31 | 33 | 37 | 29 | 23 | 17 | 36 | 31 | 38 | 27 | 26 | 29 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 95 | 99 | 99 |
| | | Max-d | 42 | 54 | 67 | 66 | 49 | 41 | 51 | 73 | 68 | 69 | 41 | 49 | 73 |
| | | Min-d | 11 | 11 | 13 | 18 | 9 | 13 | 8 | 8 | 12 | 21 | 16 | 10 | 8 |
| | Ogasawara | Mean | 14 | 15 | 22 | 21 | 20 | 16 | 12 | 25 | 14 | 27 | 23 | 16 | 19 |
| | | % | 100 | 93 | 99 | 99 | 99 | 99 | 99 | 96 | 51 | 100 | 99 | 100 | 95 |
| | | Max-d | 27 | 29 | 34 | 58 | 52 | 38 | 33 | 58 | 23 | 54 | 32 | 28 | 58 |
| | | Min-d | 6 | 7 | 9 | 5 | 3 | 4 | 6 | 9 | 8 | 10 | 9 | 7 | 3 |
| Mongolia | Ulaanbaatar | Mean | 167 | 138 | 94 | 98 | 80 | 75 | 70 | 43 | 61 | 88 | 145 | 174 | 102 |
| | | % | 99 | 100 | 100 | 80 | 100 | 97 | 100 | 100 | 100 | 100 | 87 | 99 | 97 |
| | | Max-d | 361 | 220 | 159 | 154 | 197 | 238 | 179 | 87 | 142 | 191 | 364 | 304 | 364 |
| | | Min-d | 40 | 49 | 27 | 36 | 29 | 21 | 33 | 20 | 21 | 41 | 51 | 76 | 20 |

**Table 4.11 $PM_{10}$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Republic of Korea | Kanghwa | Mean | 46 | 43 | 60 | 65 | 69 | 49 | 40 | 36 | 45 | 43 | 45 | 46 | 49 |
| | | % | 98 | 97 | 98 | 98 | 98 | 93 | 98 | 94 | 98 | 97 | 85 | 97 | 96 |
| | | Max-d | 86 | 77 | 122 | 139 | 272 | 72 | 65 | 69 | 79 | 89 | 102 | 111 | 272 |
| | | Min-d | 19 | 24 | 33 | 37 | 31 | 23 | 25 | 17 | 23 | 19 | 22 | 21 | 17 |
| | Cheju (Kosan) | Mean | - | - | 46 | 57 | 44 | 27 | 23 | 24 | 30 | 30 | 43 | 37 | 37 |
| | | % | 0 | 0 | 97 | 90 | 97 | 97 | 68 | 84 | 71 | 88 | 88 | 90 | 73 |
| | | Max-d | - | - | 73 | 112 | 205 | 39 | 46 | 35 | 55 | 71 | 73 | 78 | 205 |
| | | Min-d | - | - | 19 | 21 | 15 | 13 | 9 | 11 | 14 | 10 | 21 | 10 | 9 |
| | Imsil | Mean | 46 | 38 | 54 | 49 | 53 | 38 | 31 | 24 | 27 | 27 | 44 | 40 | 39 |
| | | % | 97 | 97 | 98 | 89 | 98 | 96 | 97 | 96 | 89 | 97 | 95 | 94 | 95 |
| | | Max-d | 111 | 71 | 83 | 104 | 167 | 60 | 51 | 42 | 56 | 61 | 81 | 107 | 167 |
| | | Min-d | 15 | 18 | 28 | 21 | 22 | 18 | 17 | 9 | 13 | 9 | 16 | 17 | 9 |
| Thailand | Bangkok | Mean | 46 | 56 | 39 | 34 | 30 | 27 | 24 | 29 | 23 | 32 | 47 | 49 | 36 |
| | | % | 100 | 100 | 100 | 99 | 100 | 100 | 92 | 35 | 99 | 99 | 50 | 100 | 89 |
| | | Max-d | 66 | 87 | 87 | 66 | 50 | 48 | 41 | 46 | 40 | 62 | 76 | 80 | 87 |
| | | Min-d | 25 | 21 | 18 | 13 | 18 | 18 | 17 | 20 | 12 | 16 | 24 | 23 | 12 |
| | Samutprakarn | Mean | 49 | 59 | 36 | 27 | 28 | 29 | 27 | 26 | 29 | 39 | 47 | 57 | 38 |
| | | % | 100 | 100 | 100 | 75 | 44 | 99 | 100 | 99 | 100 | 99 | 99 | 100 | 93 |
| | | Max-d | 73 | 95 | 84 | 56 | 51 | 61 | 44 | 45 | 54 | 70 | 81 | 92 | 95 |
| | | Min-d | 23 | 19 | 15 | 7 | 19 | 17 | 18 | 16 | 14 | 21 | 29 | 34 | 7 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 24 | - | - | 13 | 16 | - | - | 14 | 16 | 17 |
| | | % | 0 | 0 | 0 | 53 | 0 | 0 | 42 | 19 | 0 | 0 | 26 | 19 | 13 |
| | | Max-d | - | - | - | 37 | - | - | 31 | 27 | - | - | 18 | 21 | 37 |
| | | Min-d | - | - | - | 18 | - | - | 6 | 11 | - | - | 10 | 14 | 6 |
| | Chang Phueak | Mean | 38 | 69 | 85 | 75 | 32 | 20 | 25 | 27 | 29 | 32 | 41 | 49 | 43 |
| | | % | 99 | 99 | 100 | 100 | 96 | 95 | 100 | 100 | 99 | 100 | 100 | 100 | 99 |
| | | Max-d | 71 | 86 | 140 | 117 | 70 | 35 | 36 | 36 | 36 | 56 | 65 | 65 | 140 |
| | | Min-d | 19 | 46 | 57 | 29 | 8 | 12 | 15 | 20 | 19 | 23 | 28 | 28 | 8 |
| | Si Phum | Mean | 36 | 59 | 69 | 67 | 47 | 35 | 37 | 37 | 36 | 39 | 39 | 41 | 45 |
| | | % | 98 | 100 | 99 | 93 | 95 | 99 | 97 | 97 | 98 | 95 | 92 | 92 | 96 |
| | | Max-d | 89 | 72 | 116 | 101 | 65 | 57 | 51 | 47 | 51 | 53 | 48 | 56 | 116 |
| | | Min-d | 14 | 40 | 44 | 28 | 17 | 23 | 21 | 29 | 26 | 31 | 18 | 25 | 14 |
| | Nai Mueang | Mean | 48 | 77 | 65 | 46 | - | - | - | - | - | 34 | 30 | 49 | 54 |
| | | % | 99 | 100 | 100 | 36 | 0 | 0 | 0 | 0 | 0 | 28 | 48 | 98 | 42 |
| | | Max-d | 98 | 120 | 128 | 70 | - | - | - | - | - | 48 | 40 | 74 | 128 |
| | | Min-d | 28 | 38 | 36 | 27 | - | - | - | - | - | 22 | 20 | 15 | 15 |

Terms and abbreviations are given in Table 4.2.
1) $PM_{10}$ monitor was moved to Haibin-Park from Xiang Zhou.

**Table 4.12 $PM_{2.5}$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | | | | 20 | 13 | 13 | 11 | 11 | 11 | 13 | 13 | 19 | 13 |
| | | % | 0 | 0 | 0 | 35 | 93 | 99 | 100 | 100 | 100 | 100 | 100 | 100 | 69 |
| | | Max-d | - | - | - | 26 | 19 | 32 | 15 | 19 | 22 | 35 | 29 | 33 | 35 |
| | | Min-d | - | - | - | 8 | 8 | 7 | 6 | 5 | 5 | 7 | 6 | 6 | 5 |
| Indonesia | Jakarta | Mean | - | - | - | - | - | - | 36 | 42 | 43 | 40 | 40 | 16 | 39 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 23 | 81 | 99 | 56 | 24 | 25 |
| | | Max-d | - | - | - | - | - | - | 50 | 57 | 65 | 88 | 72 | 21 | 88 |
| | | Min-d | - | - | - | - | - | - | 27 | 25 | 29 | 25 | 25 | 8 | 8 |
| Japan | Rishiri | Mean | 7 | 6 | 6 | 11 | 9 | 6 | 6 | 6 | 5 | 9 | 14 | 6 | 8 |
| | | % | 99 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 93 | 100 | 100 | 100 | 99 |
| | | Max-d | 23 | 30 | 14 | 30 | 28 | 12 | 24 | 11 | 8 | 17 | 61 | 17 | 61 |
| | | Min-d | <1 | <1 | 2 | 1 | 2 | 1 | 2 | <1 | <1 | 1 | 2 | 2 | <1 |
| | Ochiishi | Mean | 8 | 5 | 6 | 8 | 9 | 5 | 7 | 6 | 6 | 7 | 8 | 5 | 7 |
| | | % | 76 | 99 | 99 | 93 | 92 | 57 | 99 | 100 | 100 | 99 | 99 | 99 | 93 |
| | | Max-d | 19 | 19 | 10 | 20 | 18 | 9 | 20 | 23 | 17 | 17 | 18 | 16 | 23 |
| | | Min-d | 4 | 1 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 4 | 2 | 1 |
| | Tappi | Mean | 8 | 7 | 10 | 12 | 11 | 8 | 9 | 6 | 6 | 8 | 9 | 7 | 8 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 100 | 92 | 99 | 99 | 99 | 99 |
| | | Max-d | 23 | 19 | 26 | 26 | 27 | 19 | 22 | 21 | 13 | 21 | 33 | 21 | 33 |
| | | Min-d | 2 | 3 | 5 | 4 | 2 | 2 | 4 | 1 | 2 | 2 | 4 | 3 | 1 |
| | Sado-seki | Mean | 8 | 8 | 13 | 13 | 14 | 8 | 9 | 6 | 9 | 8 | 10 | 8 | 10 |
| | | % | 99 | 100 | 100 | 99 | 100 | 100 | 99 | 81 | 100 | 96 | 100 | 87 | 97 |
| | | Max-d | 25 | 15 | 44 | 23 | 30 | 19 | 21 | 14 | 26 | 16 | 19 | 14 | 44 |
| | | Min-d | 5 | 4 | 6 | 5 | 5 | 4 | 1 | 2 | 5 | 2 | 5 | 3 | 1 |
| | Happo | Mean | 5 | 4 | 10 | 10 | - | - | - | - | 5 | 5 | 6 | 3 | 6 |
| | | % | 61 | 21 | 82 | 10 | 0 | 0 | 0 | 0 | 8 | 99 | 99 | 77 | 38 |
| | | Max-d | 9 | 6 | 34 | 11 | - | - | - | - | 6 | 11 | 14 | 7 | 34 |
| | | Min-d | <1 | 3 | 3 | 4 | - | - | - | - | <1 | 2 | 3 | <1 | <1 |
| | Ijira | Mean | 8 | 8 | 15 | 14 | 15 | 12 | 10 | 8 | 10 | 8 | 11 | 8 | 11 |
| | | % | 100 | 100 | 100 | 97 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 93 | 99 |
| | | Max-d | 19 | 17 | 33 | 26 | 31 | 22 | 16 | 17 | 21 | 15 | 20 | 19 | 33 |
| | | Min-d | 4 | 4 | 4 | 5 | 7 | 6 | 6 | 3 | 4 | 3 | 4 | 2 | 2 |
| | Oki | Mean | 12 | 11 | 15 | 13 | 16 | 11 | 11 | 8 | 9 | 7 | 13 | 11 | 11 |
| | | % | 100 | 100 | 100 | 100 | 99 | 100 | 99 | 100 | 100 | 90 | 91 | 100 | 98 |
| | | Max-d | 26 | 25 | 31 | 30 | 44 | 30 | 25 | 19 | 29 | 20 | 24 | 23 | 44 |
| | | Min-d | 3 | 6 | 7 | 4 | 4 | 4 | 3 | 4 | 3 | 2 | 6 | 5 | 2 |
| | Banryu | Mean | 12 | 11 | 15 | 13 | 18 | 15 | 13 | 11 | 12 | 8 | 14 | 11 | 13 |
| | | % | 99 | 93 | 100 | 100 | 100 | 100 | 100 | 59 | 100 | 99 | 100 | 95 | 95 |
| | | Max-d | 30 | 21 | 27 | 24 | 55 | 28 | 25 | 19 | 35 | 19 | 22 | 25 | 55 |
| | | Min-d | 3 | 6 | 8 | 6 | 7 | 4 | 4 | 6 | 4 | 3 | 7 | 5 | 3 |
| | Yusuhara | Mean | 10 | 10 | 13 | 9 | 12 | 11 | 10 | 11 | 9 | 7 | 10 | 8 | 10 |
| | | % | 100 | 100 | 100 | 96 | 100 | 100 | 96 | 100 | 100 | 100 | 100 | 96 | 99 |
| | | Max-d | 17 | 21 | 27 | 18 | 29 | 27 | 21 | 21 | 27 | 23 | 20 | 20 | 29 |
| | | Min-d | 2 | 4 | 5 | <1 | 2 | 2 | 2 | <1 | <1 | <1 | 5 | 3 | <1 |
| | Hedo | Mean | 10 | 15 | 15 | 15 | 11 | 8 | 5 | 8 | 8 | 10 | 11 | 11 | 11 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 95 | 99 | 99 |
| | | Max-d | 24 | 31 | 33 | 25 | 21 | 20 | 12 | 24 | 17 | 22 | 17 | 24 | 33 |
| | | Min-d | 4 | 5 | 5 | 8 | 3 | 3 | 3 | 2 | 3 | 4 | 4 | 4 | 2 |
| | Ogasawara | Mean | 6 | 6 | 9 | 8 | 6 | 5 | 3 | 5 | 2 | 5 | 7 | 6 | 6 |
| | | % | 100 | 93 | 99 | 99 | 99 | 99 | 99 | 96 | 51 | 100 | 99 | 100 | 95 |
| | | Max-d | 12 | 12 | 16 | 25 | 20 | 19 | 7 | 15 | 5 | 11 | 12 | 12 | 25 |
| | | Min-d | 2 | 3 | 4 | 2 | <1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | <1 |
| Mongolia | Ulaanbaatar | Mean | 125 | 78 | 33 | 21 | 14 | 13 | 27 | 9 | 17 | 28 | 89 | 121 | 48 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 83 | 100 | 100 | 100 | 100 | 100 | 99 |
| | | Max-d | 308 | 152 | 60 | 37 | 25 | 25 | 122 | 19 | 58 | 54 | 245 | 244 | 308 |
| | | Min-d | 31 | 23 | 11 | 11 | 6 | 5 | 5 | 4 | 7 | 12 | 11 | 48 | 4 |
| Myanmar | Mandalay | Mean | 67 | 88 | 66 | 42 | 25 | 7 | 7 | 11 | 36 | - | 37 | - | 37 |
| | | % | 100 | 96 | 78 | 95 | 100 | 100 | 99 | 100 | 61 | 0 | 54 | 0 | 73 |
| | | Max-d | 91 | 130 | 130 | 161 | 56 | 21 | 20 | 77 | 56 | - | 56 | - | 161 |
| | | Min-d | 30 | 45 | 33 | 12 | 9 | 2 | 1 | <1 | 12 | - | 10 | - | <1 |
| Philippines | Metro Manila | Mean | - | - | - | - | - | - | - | - | - | 20 | 17 | 18 | 18 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 100 | 100 | 20 |
| | | Max-d | - | - | - | - | - | - | - | - | - | 35 | 32 | 31 | 35 |
| | | Min-d | - | - | - | - | - | - | - | - | - | 9 | 11 | 6 | 6 |
| Republic of Korea | Kanghwa | Mean | 29 | 25 | 36 | 24 | 29 | 22 | 18 | 16 | 24 | 19 | 24 | 30 | 25 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-d | 29 | 25 | 36 | 24 | 29 | 22 | 18 | 16 | 24 | 19 | 24 | 30 | 36 |
| | | Min-d | 29 | 25 | 36 | 24 | 29 | 22 | 18 | 16 | 24 | 19 | 24 | 30 | 16 |
| | Cheju (Kosan) | Mean | - | - | 25 | 20 | 13 | 14 | 12 | 13 | 17 | 11 | - | - | 16 |
| | | % | 0 | 0 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 67 |
| | | Max-d | - | - | 25 | 20 | 13 | 14 | 12 | 13 | 17 | 11 | - | - | 25 |
| | | Min-d | - | - | 25 | 20 | 13 | 14 | 12 | 13 | 17 | 11 | - | - | 11 |

**Table 4.12 $PM_{2.5}$ (continued)**

| Unit : µg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Thailand | Bangkok | Mean | 30 | 40 | 29 | 24 | 24 | 18 | 18 | 19 | 15 | 23 | 28 | 33 | 25 |
| | | % | 99 | 100 | 96 | 96 | 97 | 92 | 81 | 75 | 90 | 94 | 49 | 93 | 89 |
| | | Max-d | 47 | 70 | 63 | 45 | 38 | 28 | 31 | 37 | 32 | 45 | 45 | 61 | 70 |
| | | Min-d | 17 | 15 | 14 | 8 | 15 | 12 | 12 | 10 | 5 | 6 | 15 | 15 | 5 |
| | Samutprakarn | Mean | 40 | 47 | 29 | 30 | 15 | 13 | 10 | 11 | 14 | 20 | 23 | 29 | 24 |
| | | % | 100 | 100 | 100 | 39 | 72 | 62 | 96 | 90 | 97 | 97 | 97 | 88 | 87 |
| | | Max-d | 62 | 76 | 67 | 47 | 30 | 27 | 20 | 20 | 28 | 42 | 44 | 54 | 76 |
| | | Min-d | 19 | 14 | 14 | 11 | 8 | 5 | 5 | 5 | 4 | 9 | 10 | 9 | 4 |
| | Khanchanaburi | Mean | - | - | - | - | - | - | - | - | - | - | 7 | 7 | 7 |
| | (Vachiralongkorn Dam) | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 18 | 3 |
| | | Max-d | - | - | - | - | - | - | - | - | - | - | 10 | 10 | 10 |
| | | Min-d | - | - | - | - | - | - | - | - | - | - | 4 | 5 | 4 |
| | Chang Phueak | Mean | 31 | 50 | 63 | 56 | 21 | 16 | 14 | 14 | 15 | 18 | 26 | 31 | 30 |
| | | % | 80 | 99 | 100 | 96 | 95 | 56 | 87 | 100 | 98 | 100 | 100 | 100 | 92 |
| | | Max-d | 52 | 63 | 114 | 90 | 50 | 23 | 20 | 20 | 21 | 38 | 44 | 43 | 114 |
| | | Min-d | 18 | 36 | 40 | 22 | 5 | 11 | 10 | 10 | 10 | 11 | 17 | 16 | 5 |
| | Si Phum | Mean | 21 | 40 | 51 | 42 | 22 | 14 | 13 | 12 | 10 | 11 | 18 | 20 | 23 |
| | | % | 82 | 100 | 98 | 99 | 97 | 100 | 91 | 96 | 86 | 94 | 92 | 90 | 94 |
| | | Max-d | 40 | 54 | 98 | 74 | 38 | 22 | 20 | 15 | 16 | 24 | 33 | 34 | 98 |
| | | Min-d | 12 | 25 | 29 | 11 | 7 | 8 | 8 | 9 | 4 | 6 | 10 | 10 | 4 |
| Vietnam | Hoa Binh | Mean | 55 | 51 | 51 | 42 | 32 | 25 | 20 | 17 | 23 | 35 | 42 | 61 | 37 |
| | | % | 99 | 100 | 86 | 50 | 98 | 98 | 99 | 100 | 100 | 90 | 100 | 96 | 93 |
| | | Max-d | 115 | 106 | 109 | 83 | 70 | 91 | 58 | 38 | 47 | 92 | 71 | 163 | 163 |
| | | Min-d | 5 | 23 | 16 | 17 | 10 | 9 | 8 | 7 | 11 | 8 | 22 | 23 | 5 |

Terms and abbreviations are given in Table 4.2.

**Table 4.13 Particulate matter component: $SO_4^{2-}$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 2.68 | 3.23 | 2.34 | 2.03 | 2.18 | 2.05 | 1.91 | 2.06 | 1.77 | 1.80 | 1.81 | 1.60 | 2.11 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 2.89 | 3.84 | 2.68 | 2.58 | 2.80 | 2.08 | 2.11 | 2.11 | 2.04 | 2.15 | 2.16 | 1.78 | 3.84 |
| | | Min-2w | 2.46 | 2.63 | 1.99 | 1.47 | 1.78 | 2.01 | 1.71 | 2.01 | 1.49 | 1.46 | 1.47 | 1.42 | 1.42 |
| China | Hongwen | Mean | 10.27 | 10.43 | 10.20 | 11.50 | 11.16 | 8.17 | 4.24 | 8.10 | 8.16 | 8.80 | 7.72 | 8.15 | 9.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 11.00 | 10.43 | 12.73 | 11.50 | 11.16 | 8.17 | 4.24 | 8.10 | 8.16 | 9.67 | 7.72 | 8.15 | 12.73 |
| | | Min-m | 9.54 | 10.43 | 7.67 | 11.50 | 11.16 | 8.17 | 4.24 | 8.10 | 8.16 | 7.93 | 7.72 | 8.15 | 4.24 |
| Indonesia | Jakarta | Mean | 1.49 | 1.73 | 2.73 | 4.21 | 6.74 | 4.12 | 7.66 | 6.25 | 7.91 | 0.25 | 3.21 | 0.76 | 4.23 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 1.8 | 2.15 | 3.34 | 4.21 | 12.01 | 5.84 | 8.11 | 6.74 | 9.33 | 0.25 | 6.17 | 0.76 | 12.01 |
| | | Min-2w | 1.2 | 1.31 | 2.12 | 4.21 | 1.48 | 2.40 | 7.22 | 5.76 | 6.49 | 0.25 | 0.25 | 0.76 | 0.25 |
| | Serpong | Mean | 0.33 | 3.31 | 0.38 | 3.73 | 5.22 | 2.74 | 8.43 | 7.33 | 7.95 | 5.82 | 2.27 | 1.12 | 4.43 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.33 | 3.31 | 0.43 | 5.55 | 8.15 | 2.74 | 8.54 | 7.85 | 8.41 | 6.57 | 3.59 | 1.40 | 8.54 |
| | | Min-2w | 0.33 | 3.31 | 0.34 | 1.91 | 3.53 | 2.74 | 8.33 | 6.81 | 7.49 | 5.13 | 0.96 | 0.83 | 0.33 |
| | Bandung | Mean | 0.85 | 1.82 | 2.39 | 2.75 | 2.87 | 2.73 | 2.69 | 3.55 | 2.91 | 2.04 | 1.05 | 1.70 | 2.28 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.15 | 2.10 | 2.86 | 3.14 | 2.94 | 3.08 | 2.85 | 4.24 | 3.11 | 2.47 | 1.37 | 1.99 | 4.24 |
| | | Min-2w | 0.55 | 1.55 | 1.93 | 2.36 | 2.80 | 2.37 | 2.53 | 2.87 | 2.71 | 1.61 | 0.72 | 1.40 | 0.55 |
| Japan | Rishiri | Mean | 2.35 | 2.14 | 1.78 | 2.78 | 2.48 | 2.40 | 2.93 | 1.40 | 1.79 | 1.64 | 1.59 | 1.74 | 2.13 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 2.78 | 2.38 | 2.07 | 3.86 | 2.65 | 2.43 | 4.09 | 1.59 | 2.29 | 1.70 | 2.07 | 1.74 | 4.09 |
| | | Min-2w | 1.92 | 1.90 | 1.49 | 1.71 | 2.32 | 2.37 | 1.88 | 1.21 | 1.30 | 1.58 | 1.11 | 1.74 | 1.11 |
| | Ochiishi | Mean | 2.30 | 1.74 | 2.07 | 2.95 | 2.74 | 1.92 | 3.40 | 2.20 | 1.90 | 2.04 | 1.94 | 2.11 | 2.38 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 3.19 | 1.99 | 2.24 | 3.56 | 2.77 | 2.45 | 4.20 | 2.30 | 1.90 | 2.04 | 1.94 | 2.11 | 4.20 |
| | | Min-2w | 1.42 | 1.50 | 1.89 | 2.33 | 2.71 | 1.39 | 2.71 | 2.11 | 1.90 | 2.04 | 1.94 | 2.11 | 1.39 |
| | Tappi | Mean | 2.70 | 2.68 | 3.07 | 4.25 | 3.73 | 3.84 | 3.61 | 1.82 | 2.53 | 1.79 | 2.59 | 3.47 | 3.02 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 4.38 | 2.95 | 3.46 | 4.91 | 4.62 | 3.93 | 3.90 | 2.16 | 2.76 | 1.88 | 2.60 | 4.55 | 4.91 |
| | | Min-2w | 1.73 | 2.40 | 2.67 | 3.58 | 2.83 | 3.75 | 3.42 | 1.48 | 2.30 | 1.70 | 2.59 | 2.39 | 1.48 |
| | Sado-seki | Mean | 2.38 | 1.63 | 3.70 | 3.52 | 4.75 | 3.74 | 3.18 | 2.35 | 3.34 | 1.89 | 1.76 | 1.51 | 2.82 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 3.04 | 1.63 | 3.70 | 3.81 | 5.40 | 4.11 | 4.63 | 2.89 | 4.02 | 1.93 | 2.52 | 2.34 | 5.40 |
| | | Min-2w | 1.69 | 1.63 | 3.70 | 3.23 | 4.10 | 3.37 | 2.17 | 1.80 | 2.66 | 1.86 | 1.00 | 0.68 | 0.68 |
| | Happo | Mean | 0.95 | 1.50 | 2.87 | 1.60 | 2.50 | 1.87 | 2.70 | 1.23 | 1.37 | 0.58 | 0.64 | 0.71 | 1.57 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.09 | 1.68 | 3.05 | 1.71 | 2.50 | 1.90 | 3.20 | 1.49 | 2.54 | 0.84 | 0.64 | 0.72 | 3.20 |
| | | Min-2w | 0.70 | 1.32 | 2.69 | 1.50 | 2.50 | 1.84 | 2.29 | 0.97 | 0.19 | 0.32 | 0.64 | 0.71 | 0.19 |
| | Ijira | Mean | 1.61 | 2.13 | 3.34 | 2.68 | 3.68 | 3.29 | 3.66 | 2.77 | 2.35 | 1.30 | 1.32 | 1.77 | 2.50 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.95 | 2.26 | 3.42 | 2.77 | 3.73 | 3.42 | 3.98 | 3.43 | 2.88 | 1.66 | 1.39 | 1.78 | 3.98 |
| | | Min-2w | 1.24 | 2.00 | 3.26 | 2.59 | 3.62 | 3.16 | 3.33 | 2.11 | 1.83 | 0.93 | 1.26 | 1.76 | 0.93 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 4.39 | 4.22 | 4.31 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 4.64 | 4.25 | 4.64 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 4.14 | 4.19 | 4.14 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 3.68 | 3.36 | 3.52 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 3.96 | 3.37 | 3.96 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 3.40 | 3.35 | 3.35 |
| | Yusuhara | Mean | 2.30 | 2.79 | 3.60 | 2.60 | 3.05 | 4.67 | 3.65 | 4.71 | 3.53 | 2.06 | 2.76 | 2.16 | 3.16 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 2.32 | 2.96 | 3.96 | 2.65 | 3.72 | 5.13 | 5.18 | 5.32 | 4.65 | 3.19 | 3.41 | 2.25 | 5.32 |
| | | Min-2w | 2.29 | 2.71 | 3.23 | 2.55 | 2.39 | 4.22 | 2.08 | 4.10 | 2.41 | 0.94 | 2.11 | 2.08 | 0.94 |
| | Hedo | Mean | 4.89 | 6.60 | 6.81 | 4.72 | 4.26 | 3.53 | 2.88 | 4.12 | 3.40 | 3.46 | 4.71 | 3.57 | 4.37 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 5.47 | 7.00 | 8.15 | 5.25 | 4.78 | 5.34 | 6.12 | 4.79 | 3.47 | 3.95 | 4.72 | 4.66 | 8.15 |
| | | Min-2w | 4.35 | 6.21 | 5.48 | 4.19 | 3.73 | 1.71 | 1.03 | 3.45 | 3.33 | 2.96 | 4.71 | 2.48 | 1.03 |
| | Ogasawara | Mean | 2.09 | 2.39 | 3.31 | 2.29 | 2.37 | 1.70 | 0.79 | 2.62 | 0.75 | 1.30 | 2.38 | 1.79 | 1.94 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 2.70 | 2.50 | 3.44 | 2.32 | 3.65 | 2.56 | 0.99 | 4.15 | 0.77 | 1.49 | 2.57 | 1.87 | 4.15 |
| | | Min-2w | 1.68 | 2.29 | 3.18 | 2.26 | 1.08 | 0.84 | 0.62 | 1.09 | 0.73 | 1.10 | 2.20 | 1.71 | 0.62 |
| | Tokyo | Mean | 1.54 | 2.16 | 3.17 | 3.28 | 4.37 | 3.95 | 4.62 | 3.96 | 2.97 | 2.11 | - | 1.70 | 3.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 1.78 | 2.70 | 3.25 | 3.93 | 4.87 | 4.20 | 6.10 | 4.21 | 3.05 | 2.82 | - | 1.76 | 6.10 |
| | | Min-2w | 1.40 | 1.62 | 3.08 | 2.63 | 3.87 | 3.70 | 3.49 | 3.71 | 2.90 | 1.39 | - | 1.64 | 1.39 |

**Table 4.13 Particulate matter component: $SO_4^{2-}$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 2.18 | - | 2.19 | 1.94 | - | 4.38 | 2.71 | 2.78 | 2.69 | 3.15 | 2.77 | 3.35 | 2.77 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 3.84 | - | 6.22 | 1.94 | - | 4.38 | 4.17 | 3.51 | 3.50 | 4.80 | 3.00 | 5.47 | 6.22 |
| | | Min-w | 0.55 | - | 0.14 | 1.94 | - | 4.38 | 1.76 | 2.02 | 1.66 | 1.85 | 2.32 | 0.56 | 0.14 |
| | Tanah Rata | Mean | 0.40 | 0.70 | 1.68 | 0.72 | 1.91 | 1.69 | 3.13 | 1.80 | 0.81 | 1.28 | 0.38 | 0.88 | 1.28 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.82 | 1.31 | 3.46 | 1.03 | 2.47 | 2.45 | 5.68 | 2.35 | 1.69 | 2.40 | 0.95 | 2.09 | 5.68 |
| | | Min-w | <0.01 | 0.28 | 0.33 | 0.15 | 1.18 | 0.81 | 1.85 | 1.39 | 0.33 | 0.67 | 0.02 | 0.28 | <0.01 |
| | Danum Valley | Mean | 0.37 | 1.07 | 1.22 | 0.82 | 0.72 | 0.33 | 0.98 | 0.57 | 0.55 | 1.04 | 0.55 | 0.58 | 0.75 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.73 | 1.16 | 1.50 | 1.13 | 1.55 | 0.40 | 1.53 | 0.83 | 0.64 | 1.34 | 0.55 | 0.62 | 1.55 |
| | | Min-2w | 0.02 | 0.98 | 0.94 | 0.52 | 0.23 | 0.25 | 0.43 | 0.31 | 0.47 | 0.69 | 0.55 | 0.50 | 0.02 |
| Mongolia | Ulaanbaatar | Mean | 11.14 | 6.07 | 1.89 | 0.25 | 0.31 | 0.17 | 0.11 | 0.11 | 0.25 | 1.36 | 2.94 | 3.24 | 2.23 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 37.85 | 12.17 | 4.16 | 0.89 | 0.97 | 0.43 | 0.21 | 0.19 | 0.49 | 2.96 | 6.32 | 9.83 | 37.85 |
| | | Min-w | 0.44 | 0.14 | 0.03 | 0.01 | 0.01 | <0.01 | 0.01 | 0.01 | 0.01 | 0.10 | 0.55 | 0.19 | <0.01 |
| | Terelj | Mean | - | - | - | - | - | 0.14 | 0.14 | 0.05 | 0.24 | 0.06 | 0.10 | 0.08 | 0.11 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.18 | 0.20 | 0.11 | 0.24 | 0.11 | 0.18 | 0.14 | 0.24 |
| | | Min-2w | - | - | - | - | - | 0.11 | 0.07 | <0.01 | 0.24 | 0.01 | 0.02 | 0.02 | <0.01 |
| Myanmar | Yangon | Mean | 3.17 | 5.94 | 4.80 | 3.27 | 0.05 | 0.52 | 0.28 | 0.66 | 0.34 | 0.02 | 1.34 | 2.84 | 1.70 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 3.17 | 6.66 | 9.37 | 6.54 | 0.13 | 1.02 | 0.44 | 1.33 | 0.66 | 0.04 | 1.34 | 2.84 | 9.37 |
| | | Min-2w | 3.17 | 5.21 | 0.23 | <0.01 | <0.01 | 0.01 | 0.12 | <0.01 | 0.02 | <0.01 | 1.34 | 2.84 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 5.16 | 3.97 | 5.21 | 5.44 | 2.33 | 6.38 | 3.87 | 1.90 | 5.91 | 4.32 | 2.86 | 2.62 | 4.20 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 17.58 | 9.11 | 11.82 | 12.85 | 7.11 | 12.75 | 6.64 | 3.47 | 11.21 | 7.39 | 6.93 | 3.76 | 17.58 |
| | | Min-d | 1.12 | 2.03 | 2.31 | 2.00 | 0.03 | 1.00 | 1.63 | 0.24 | 0.96 | 0.64 | 1.10 | 1.19 | 0.03 |
| | Cheju (Kosan) | Mean | 8.56 | 1.54 | 2.23 | 1.53 | 2.34 | 1.37 | 1.10 | 1.20 | 1.46 | 1.53 | 2.49 | 2.64 | 2.01 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 11.27 | 2.38 | 5.38 | 3.55 | 3.48 | 2.87 | 3.49 | 3.06 | 2.04 | 3.89 | 3.78 | 4.62 | 11.27 |
| | | Min-d | 5.86 | 0.98 | 0.13 | 0.33 | 1.45 | 0.14 | 0.06 | 0.29 | 0.57 | 0.11 | 1.61 | 1.47 | 0.06 |
| | Imsil | Mean | 4.02 | 4.20 | 4.21 | 6.53 | 3.94 | 5.42 | 5.20 | 1.96 | 2.43 | 1.33 | 2.41 | 1.78 | 3.55 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 8.56 | 6.22 | 4.26 | 12.25 | 9.46 | 7.64 | 8.29 | 1.96 | 4.33 | 2.66 | 4.06 | 3.44 | 12.25 |
| | | Min-d | 1.37 | 2.85 | 4.13 | 3.71 | 0.96 | 3.57 | 1.15 | 1.96 | 0.83 | 0.19 | 0.82 | 0.95 | 0.19 |
| Russia | Mondy | Mean | 0.52 | 0.54 | 1.27 | 0.73 | 0.72 | 0.29 | 0.45 | 0.53 | 0.46 | 0.52 | 0.45 | 0.38 | 0.58 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.58 | 0.54 | 1.73 | 0.73 | 0.80 | 0.30 | 0.45 | 0.53 | 0.72 | 0.52 | 0.69 | 0.42 | 1.73 |
| | | Min-m | 0.46 | 0.54 | 0.81 | 0.73 | 0.64 | 0.28 | 0.45 | 0.53 | 0.20 | 0.52 | 0.21 | 0.33 | 0.20 |
| | Listvyanka | Mean | 0.68 | 1.51 | 0.84 | 0.60 | 1.02 | 0.72 | 0.98 | 0.95 | 0.71 | 0.58 | 0.75 | 0.87 | 0.85 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.28 | 2.16 | 1.72 | 1.00 | 2.06 | 0.82 | 1.53 | 1.12 | 0.96 | 0.64 | 1.30 | 1.04 | 2.16 |
| | | Min-w | 0.08 | 0.93 | 0.08 | 0.04 | 0.48 | 0.59 | 0.33 | 0.83 | 0.42 | 0.50 | 0.40 | 0.71 | 0.04 |
| | Irkutsk | Mean | 3.14 | 3.79 | 2.17 | 1.50 | 1.38 | 1.03 | 1.32 | 1.48 | 0.82 | 1.71 | 1.44 | 2.50 | 1.85 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 4.64 | 4.47 | 2.88 | 1.82 | 2.74 | 1.37 | 1.98 | 2.15 | 1.18 | 3.01 | 2.16 | 3.92 | 4.64 |
| | | Min-w | 1.84 | 2.80 | 1.25 | 1.35 | 0.61 | 0.82 | 0.22 | 1.04 | 0.70 | 1.19 | 1.00 | 0.70 | 0.22 |
| | Primorskaya | Mean | 1.60 | 1.15 | 1.54 | 0.97 | 1.00 | 0.23 | 0.88 | 0.91 | 0.88 | 0.90 | 1.34 | 1.56 | 1.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 3.13 | 2.03 | 2.89 | 1.74 | 1.07 | 0.27 | 1.61 | 1.21 | 1.00 | 1.51 | 1.51 | 2.06 | 3.13 |
| | | Min-2w | 0.07 | 0.27 | 0.19 | 0.19 | 0.93 | 0.19 | 0.15 | 0.60 | 0.76 | 0.28 | 1.16 | 1.06 | 0.07 |
| Thailand | Bangkok | Mean | 1.48 | 1.86 | 0.18 | 2.16 | <0.01 | 0.65 | 0.53 | 0.40 | 0.22 | 0.06 | 4.81 | 5.30 | 1.47 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 1.71 | 3.71 | 0.55 | 3.50 | <0.01 | 1.11 | 0.69 | 0.46 | 0.48 | 0.09 | 6.49 | 6.55 | 6.55 |
| | | Min-10d | 1.07 | 0.28 | <0.01 | 1.45 | <0.01 | 0.24 | 0.27 | 0.31 | 0.03 | 0.02 | 3.76 | 4.44 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 1.19 | - | - | 2.23 | - | - | - | 2.06 | - | 1.82 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 1.19 | - | - | 2.23 | - | - | - | 2.06 | - | 2.23 |
| | | Min-2w | - | - | - | 1.19 | - | - | 2.23 | - | - | - | 2.06 | - | 1.19 |
| | Mae Hia | Mean | 0.27 | 1.76 | 0.54 | 4.16 | 0.90 | 0.22 | 0.32 | 0.04 | 0.36 | 0.15 | - | - | 0.87 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.60 | 4.21 | 1.26 | 8.18 | 1.42 | 0.59 | 0.73 | 0.07 | 0.50 | 0.32 | - | - | 8.18 |
| | | Min-10d | 0.10 | 0.25 | 0.10 | 0.86 | 0.15 | <0.01 | 0.07 | <0.01 | 0.13 | 0.01 | - | - | <0.01 |
| | Sakaerat | Mean | 1.60 | 3.00 | 4.48 | 3.73 | 2.63 | 1.97 | 1.08 | 1.71 | 1.62 | 1.70 | - | - | 2.35 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 1.86 | 3.79 | 5.72 | 5.65 | 3.18 | 2.61 | 1.85 | 3.13 | 2.32 | 3.04 | - | - | 5.72 |
| | | Min-10d | 1.42 | 2.04 | 2.63 | 2.49 | 1.90 | 1.46 | 0.06 | 0.61 | 1.12 | 0.82 | - | - | 0.06 |

**Table 4.13 Particulate matter component: $SO_4^{2-}$ (continued)**

| Unit : μg/m$^3$ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 9.73 | 15.34 | 9.75 | 6.48 | 5.87 | 6.27 | 5.57 | 6.64 | 6.72 | 8.29 | 7.52 | 7.80 | 7.96 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 10.57 | 34.86 | 16.67 | 7.94 | 10.09 | 8.00 | 7.13 | 7.56 | 7.37 | 13.93 | 9.62 | 10.08 | 34.86 |
| | | Min-w | 8.68 | 2.48 | 2.57 | 3.77 | 2.73 | 4.40 | 3.57 | 5.69 | 6.32 | 5.15 | 5.56 | 5.40 | 2.48 |
| | Hoa Binh | Mean | 4.41 | 2.62 | 4.36 | 3.88 | 3.05 | 4.42 | 1.83 | 1.25 | 2.97 | 3.51 | 3.41 | 3.12 | 3.24 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 6.84 | 5.37 | 6.19 | 5.51 | 4.59 | 7.10 | 3.33 | 2.21 | 6.48 | 3.96 | 5.76 | 3.93 | 7.10 |
| | | Min-w | 1.40 | 1.27 | 2.75 | 1.66 | 1.05 | 1.15 | 1.05 | 0.55 | 0.93 | 2.68 | 1.46 | 1.56 | 0.55 |
| | Can Tho | Mean | 5.45 | 5.83 | 7.05 | 7.49 | 6.98 | 4.88 | 3.98 | 4.59 | 5.06 | 4.34 | 5.91 | 5.40 | 5.58 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 6.14 | 7.10 | 7.87 | 8.26 | 8.16 | 5.95 | 4.70 | 6.72 | 6.82 | 4.70 | 7.49 | 5.57 | 8.26 |
| | | Min-w | 4.61 | 4.41 | 5.85 | 6.91 | 5.66 | 3.65 | 3.36 | 3.06 | 4.03 | 4.03 | 3.84 | 5.09 | 3.06 |
| | Ho Chi Minh | Mean | 10.62 | 9.88 | 8.80 | 11.09 | 7.49 | 7.96 | 4.27 | 3.94 | 4.17 | 7.34 | 6.00 | 9.99 | 7.68 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 12.68 | 11.60 | 13.50 | 12.87 | 7.79 | 10.08 | 5.18 | 4.61 | 4.51 | 8.06 | 6.82 | 11.62 | 13.50 |
| | | Min-w | 5.42 | 7.20 | 5.89 | 9.22 | 7.15 | 5.39 | 3.26 | 3.00 | 3.54 | 6.21 | 5.02 | 7.90 | 3.00 |
| | Yen Bai | Mean | 3.47 | 7.49 | 8.60 | 8.80 | 6.94 | 5.63 | 5.61 | 6.83 | 6.61 | 5.09 | 5.59 | 8.62 | 6.61 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 4.75 | 16.17 | 12.83 | 12.09 | 10.37 | 7.77 | 6.38 | 7.47 | 7.30 | 9.96 | 7.03 | 10.57 | 16.17 |
| | | Min-w | 1.95 | 1.74 | 5.74 | 6.98 | 5.12 | 3.40 | 4.48 | 5.87 | 4.67 | 3.09 | 3.45 | 6.74 | 1.74 |

Terms and abbreviations are given in Table 4.2.

**Table 4.14 Particulate matter component: $NO_3^-$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 1.81 | 2.90 | 2.68 | 1.38 | 1.46 | 1.42 | 1.42 | 1.38 | 1.02 | 1.20 | 1.24 | 1.29 | 1.58 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.85 | 3.03 | 2.88 | 1.54 | 1.82 | 1.66 | 1.53 | 1.47 | 1.04 | 1.42 | 1.32 | 1.38 | 3.03 |
| | | Min-2w | 1.77 | 2.77 | 2.48 | 1.22 | 1.12 | 1.19 | 1.32 | 1.29 | 1.00 | 1.01 | 1.16 | 1.20 | 1.00 |
| China | Hongwen | Mean | 9.51 | 13.11 | 14.35 | 7.81 | 5.37 | 1.64 | 3.84 | 3.59 | 7.93 | 6.88 | 8.38 | 10.75 | 8.26 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 11.59 | 13.11 | 18.0 | 7.81 | 5.37 | 1.64 | 3.84 | 3.59 | 7.93 | 7.77 | 8.38 | 10.75 | 17.96 |
| | | Min-m | 7.43 | 13.11 | 10.7 | 7.81 | 5.37 | 1.64 | 3.84 | 3.59 | 7.93 | 5.99 | 8.38 | 10.75 | 1.64 |
| Indonesia | Jakarta | Mean | 0.94 | 0.68 | 0.63 | 1.00 | 1.83 | 1.19 | 1.93 | 2.94 | 2.17 | 0.26 | 0.96 | 0.80 | 1.36 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 1.11 | 1.36 | 0.87 | 1.00 | 3.00 | 1.48 | 2.46 | 3.40 | 2.49 | 0.26 | 1.79 | 0.80 | 3.40 |
| | | Min-2w | 0.77 | 0.01 | 0.38 | 1.00 | 0.66 | 0.90 | 1.41 | 2.48 | 1.84 | 0.26 | 0.12 | 0.80 | 0.01 |
| | Serpong | Mean | 2.38 | 0.43 | 0.20 | 0.38 | 1.02 | 0.45 | 2.49 | 1.70 | 1.51 | 0.68 | 0.39 | 1.26 | 1.05 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 2.38 | 0.43 | 0.25 | 0.52 | 1.19 | 0.45 | 3.00 | 2.40 | 1.68 | 0.74 | 0.40 | 1.95 | 3.00 |
| | | Min-2w | 2.38 | 0.43 | 0.14 | 0.24 | 0.80 | 0.45 | 1.98 | 1.01 | 1.35 | 0.58 | 0.37 | 0.58 | 0.14 |
| | Bandung | Mean | 0.26 | 0.58 | 0.42 | 0.91 | 0.88 | 1.05 | 0.83 | 1.18 | 1.03 | 0.26 | 0.55 | 0.86 | 0.73 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.35 | 0.94 | 0.77 | 1.09 | 0.95 | 1.28 | 0.96 | 1.33 | 1.10 | 0.51 | 0.73 | 1.00 | 1.33 |
| | | Min-2w | 0.18 | 0.21 | 0.06 | 0.72 | 0.82 | 0.82 | 0.71 | 1.04 | 0.96 | <0.01 | 0.37 | 0.71 | <0.01 |
| Japan | Rishiri | Mean | 0.59 | 0.73 | 0.45 | 1.44 | 1.29 | 0.60 | 0.48 | 0.36 | 0.56 | 0.70 | 0.64 | 0.60 | 0.70 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.69 | 0.97 | 0.68 | 2.15 | 1.36 | 0.67 | 0.81 | 0.50 | 0.69 | 0.77 | 0.65 | 0.60 | 2.15 |
| | | Min-2w | 0.49 | 0.49 | 0.22 | 0.73 | 1.22 | 0.53 | 0.30 | 0.23 | 0.42 | 0.64 | 0.62 | 0.60 | 0.22 |
| | Ochiishi | Mean | 0.59 | 0.59 | 0.55 | 1.32 | 1.98 | 0.57 | 0.81 | 0.74 | 0.71 | 0.93 | 0.13 | 0.68 | 0.82 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.96 | 0.61 | 0.65 | 1.81 | 2.19 | 0.70 | 1.23 | 0.96 | 0.71 | 0.93 | 0.13 | 0.68 | 2.19 |
| | | Min-2w | 0.33 | 0.57 | 0.44 | 0.83 | 1.76 | 0.45 | 0.46 | 0.53 | 0.71 | 0.93 | 0.13 | 0.68 | 0.13 |
| | Tappi | Mean | 0.84 | 1.08 | 1.29 | 2.58 | 2.25 | 1.77 | 0.73 | 0.80 | 1.30 | 1.15 | 0.64 | 1.27 | 1.27 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.60 | 1.09 | 1.70 | 3.39 | 2.63 | 2.19 | 0.85 | 1.28 | 2.02 | 1.29 | 0.97 | 1.32 | 3.39 |
| | | Min-2w | 0.40 | 1.07 | 0.89 | 1.77 | 1.88 | 1.35 | 0.67 | 0.33 | 0.59 | 1.00 | 0.31 | 1.22 | 0.31 |
| | Sado-seki | Mean | 0.73 | 0.40 | 1.46 | 2.05 | 2.18 | 1.42 | 0.77 | 1.02 | 1.42 | 0.76 | 0.55 | 0.57 | 1.10 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 1.20 | 0.40 | 1.46 | 2.35 | 2.89 | 1.91 | 0.87 | 1.18 | 2.23 | 0.90 | 0.77 | 0.92 | 2.89 |
| | | Min-2w | 0.44 | 0.40 | 1.46 | 1.74 | 1.47 | 0.93 | 0.72 | 0.86 | 0.60 | 0.62 | 0.33 | 0.21 | 0.21 |
| | Happo | Mean | 0.11 | 0.50 | 1.18 | 1.23 | 0.32 | 0.28 | 0.11 | 0.03 | 0.30 | 0.12 | 0.24 | 0.08 | 0.36 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.13 | 0.86 | 1.72 | 1.41 | 0.32 | 0.32 | 0.23 | 0.06 | 0.57 | 0.13 | 0.24 | 0.11 | 1.72 |
| | | Min-2w | 0.08 | 0.14 | 0.63 | 1.06 | 0.32 | 0.24 | <0.01 | <0.01 | 0.03 | 0.11 | 0.24 | 0.05 | <0.01 |
| | Ijira | Mean | 0.29 | 0.59 | 0.65 | 0.83 | 0.84 | 0.34 | 0.13 | 0.16 | 0.26 | 0.22 | 0.35 | 0.44 | 0.41 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.35 | 0.74 | 0.82 | 1.02 | 1.23 | 0.36 | 0.16 | 0.22 | 0.33 | 0.24 | 0.41 | 0.48 | 1.23 |
| | | Min-2w | 0.26 | 0.43 | 0.49 | 0.64 | 0.46 | 0.32 | 0.08 | 0.09 | 0.19 | 0.21 | 0.28 | 0.39 | 0.08 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 2.71 | 2.68 | 2.70 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 3.09 | 2.81 | 3.09 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 2.34 | 2.55 | 2.34 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 2.04 | 2.23 | 2.13 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 2.34 | 2.45 | 2.45 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 1.73 | 2.00 | 1.73 |
| | Yusuhara | Mean | 0.78 | 1.03 | 1.24 | 0.71 | 0.52 | 0.17 | 0.02 | 0.15 | 0.22 | 0.18 | 0.86 | 0.92 | 0.56 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.82 | 1.14 | 1.30 | 0.74 | 0.80 | 0.31 | 0.04 | 0.29 | 0.32 | 0.32 | 1.04 | 1.04 | 1.30 |
| | | Min-2w | 0.74 | 0.87 | 1.18 | 0.68 | 0.24 | 0.03 | <0.01 | 0.01 | 0.12 | 0.03 | 0.69 | 0.80 | <0.01 |
| | Hedo | Mean | 1.60 | 2.47 | 3.52 | 2.65 | 1.67 | 1.02 | 0.93 | 1.64 | 1.63 | 0.65 | 2.08 | 1.58 | 1.75 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.82 | 2.54 | 4.20 | 3.01 | 1.90 | 1.44 | 1.56 | 2.17 | 2.07 | 1.07 | 2.22 | 2.09 | 4.20 |
| | | Min-2w | 1.29 | 2.40 | 2.84 | 2.29 | 1.44 | 0.60 | 0.43 | 1.10 | 1.19 | 0.23 | 1.95 | 1.07 | 0.23 |
| | Ogasawara | Mean | 0.68 | 0.75 | 1.07 | 0.79 | 0.62 | 0.30 | 0.17 | 0.34 | 0.15 | 0.33 | 0.93 | 0.67 | 0.55 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.71 | 0.85 | 1.16 | 0.95 | 0.89 | 0.41 | 0.23 | 0.60 | 0.16 | 0.43 | 1.17 | 0.72 | 1.17 |
| | | Min-2w | 0.65 | 0.64 | 0.98 | 0.64 | 0.35 | 0.19 | 0.12 | 0.08 | 0.14 | 0.22 | 0.68 | 0.61 | 0.08 |
| | Tokyo | Mean | 2.34 | 3.05 | 3.12 | 3.68 | 3.80 | 2.82 | 2.15 | 2.44 | 2.35 | 2.94 | - | 4.92 | 2.99 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 2.70 | 4.51 | 3.21 | 4.20 | 4.40 | 2.84 | 2.59 | 2.61 | 2.96 | 3.94 | - | 5.71 | 5.71 |
| | | Min-2w | 2.13 | 1.59 | 3.02 | 3.16 | 3.20 | 2.80 | 1.49 | 2.27 | 1.74 | 1.93 | - | 4.14 | 1.49 |

**Table 4.14 Particulate matter component: $NO_3^-$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 1.23 | - | 0.53 | 0.81 | - | 1.29 | 1.15 | 1.34 | 1.30 | 1.81 | 1.31 | 1.56 | 1.29 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 2.20 | - | 1.45 | 0.81 | - | 1.29 | 1.48 | 1.95 | 1.83 | 2.59 | 1.41 | 2.20 | 2.59 |
| | | Min-w | 0.49 | - | 0.01 | 0.81 | - | 1.29 | 0.80 | 0.79 | 0.70 | 1.26 | 1.19 | 0.32 | 0.01 |
| | Tanah Rata | Mean | 0.16 | 0.19 | 0.14 | 0.05 | 0.08 | 0.17 | 0.22 | 0.06 | 0.06 | 0.17 | 0.05 | 0.16 | 0.13 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.45 | 0.32 | 0.29 | 0.10 | 0.15 | 0.28 | 0.36 | 0.11 | 0.08 | 0.32 | 0.10 | 0.28 | 0.45 |
| | | Min-w | <0.01 | 0.06 | 0.03 | 0.02 | 0.02 | 0.05 | 0.02 | 0.04 | 0.02 | 0.03 | <0.01 | 0.07 | <0.01 |
| | Danum Valley | Mean | 0.07 | 0.31 | 0.24 | 0.05 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.05 | 0.11 | 0.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.13 | 0.36 | 0.26 | 0.08 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 | 0.02 | 0.05 | 0.13 | 0.36 |
| | | Min-2w | <0.01 | 0.25 | 0.22 | 0.03 | 0.02 | 0.01 | 0.02 | 0.02 | <0.01 | <0.01 | 0.05 | 0.08 | <0.01 |
| Mongolia | Ulaanbaatar | Mean | 0.29 | 0.24 | 0.22 | 0.08 | 0.09 | 0.04 | 0.23 | 0.04 | 0.13 | 0.39 | 0.42 | 0.09 | 0.18 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 0.89 | 0.40 | 0.44 | 0.30 | 0.31 | 0.09 | 0.70 | 0.08 | 0.25 | 0.78 | 0.91 | 0.26 | 0.91 |
| | | Min-w | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.06 | 0.02 | <0.01 | 0.02 | 0.07 | 0.02 | <0.01 |
| | Terelj | Mean | - | - | - | - | - | 0.02 | 0.02 | <0.01 | 0.03 | <0.01 | <0.01 | <0.01 | 0.01 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.03 | 0.02 | <0.01 | 0.05 | <0.01 | <0.01 | <0.01 | 0.05 |
| | | Min-2w | - | - | - | - | - | <0.01 | 0.02 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Myanmar | Yangon | Mean | 2.97 | 1.95 | 0.37 | 0.92 | <0.01 | 0.24 | 0.02 | 0.20 | 0.08 | 0.02 | 3.71 | 23.60 | 1.65 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 2.97 | 2.86 | 0.74 | 1.77 | 0.01 | 0.44 | 0.03 | 0.40 | 0.16 | 0.07 | 3.71 | 23.60 | 23.60 |
| | | Min-2w | 2.97 | 1.05 | 0.01 | 0.06 | <0.01 | 0.05 | <0.01 | <0.01 | <0.01 | <0.01 | 3.71 | 23.60 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 5.60 | 2.75 | 6.32 | 2.54 | 0.56 | 0.83 | 0.22 | 0.09 | 0.03 | 0.54 | 5.85 | 4.59 | 2.82 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 14.89 | 7.69 | 14.84 | 8.33 | 1.49 | 1.22 | 0.28 | 0.16 | 0.05 | 1.68 | 17.76 | 8.46 | 17.76 |
| | | Min-d | 0.83 | 1.04 | 1.70 | 0.41 | 0.15 | 0.48 | 0.13 | 0.05 | 0.01 | 0.06 | 0.79 | 0.65 | 0.01 |
| | Cheju (Kosan) | Mean | 6.12 | 1.89 | 1.43 | 0.67 | 13.34 | 0.52 | 0.51 | 0.46 | 0.95 | 0.55 | 2.24 | 1.58 | 1.92 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 9.40 | 4.52 | 3.49 | 1.06 | 15.80 | 1.05 | 0.98 | 0.92 | 1.47 | 0.81 | 4.13 | 3.84 | 15.80 |
| | | Min-d | 2.84 | 0.47 | 0.42 | 0.34 | 11.00 | 0.31 | 0.29 | 0.20 | 0.51 | 0.36 | 0.79 | 0.28 | 0.20 |
| | Imsil | Mean | 5.59 | 2.73 | 3.50 | 5.42 | 2.35 | 0.44 | 0.39 | 0.73 | 0.38 | 0.76 | 4.37 | 3.96 | 2.72 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 8.78 | 4.62 | 5.77 | 11.34 | 8.91 | 0.51 | 0.66 | 0.73 | 0.53 | 1.63 | 8.93 | 6.96 | 11.34 |
| | | Min-d | 3.44 | 1.14 | 1.82 | 0.50 | 0.33 | 0.38 | 0.23 | 0.73 | 0.28 | 0.11 | 0.62 | 1.76 | 0.11 |
| Russia | Mondy | Mean | 0.03 | 0.03 | 0.09 | 0.06 | 0.03 | 0.03 | 0.02 | <0.01 | 0.04 | 0.04 | 0.05 | 0.03 | 0.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.04 | 0.03 | 0.16 | 0.06 | 0.04 | 0.05 | 0.02 | <0.01 | 0.05 | 0.04 | 0.09 | 0.04 | 0.16 |
| | | Min-m | 0.02 | 0.03 | 0.03 | 0.06 | 0.03 | <0.01 | 0.02 | <0.01 | 0.03 | 0.04 | 0.02 | 0.02 | <0.01 |
| | Listvyanka | Mean | 0.09 | 0.03 | 0.06 | 0.07 | 0.06 | 0.05 | 0.04 | 0.05 | 0.09 | 0.12 | 0.13 | 0.13 | 0.07 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.14 | 0.05 | 0.16 | 0.12 | 0.09 | 0.05 | 0.07 | 0.08 | 0.21 | 0.12 | 0.25 | 0.16 | 0.25 |
| | | Min-w | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.04 | 0.03 | 0.04 | 0.05 | 0.11 | 0.04 | 0.11 | 0.01 |
| | Irkutsk | Mean | 1.50 | 1.50 | 0.96 | 0.48 | 0.43 | 0.22 | 0.21 | 0.27 | 0.15 | 0.44 | 0.48 | 0.91 | 0.63 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.23 | 2.03 | 1.28 | 0.66 | 1.19 | 0.28 | 0.47 | 0.51 | 0.23 | 0.78 | 0.74 | 1.48 | 2.23 |
| | | Min-w | 0.70 | 0.66 | 0.57 | 0.40 | 0.20 | 0.18 | <0.01 | 0.12 | 0.10 | 0.23 | 0.31 | 0.22 | <0.01 |
| | Primorskaya | Mean | 0.89 | 0.62 | 0.56 | 0.38 | 0.46 | 0.04 | 0.04 | 0.14 | 0.28 | 0.93 | 0.90 | 1.18 | 0.53 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.72 | 1.09 | 1.07 | 0.71 | 0.70 | 0.06 | 0.07 | 0.19 | 0.35 | 1.71 | 1.07 | 1.47 | 1.72 |
| | | Min-2w | 0.05 | 0.15 | 0.05 | 0.05 | 0.23 | 0.03 | <0.01 | 0.08 | 0.22 | 0.14 | 0.74 | 0.89 | <0.01 |
| Thailand | Bangkok | Mean | 1.90 | 1.38 | 0.09 | 1.01 | <0.01 | 0.96 | 0.52 | 0.47 | 0.24 | 0.11 | 4.01 | 4.62 | 1.28 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 3.02 | 3.06 | 0.27 | 1.12 | <0.01 | 1.65 | 0.64 | 0.54 | 0.50 | 0.14 | 4.09 | 5.33 | 5.33 |
| | | Min-10d | 1.01 | 0.15 | <0.01 | 0.86 | <0.01 | 0.42 | 0.30 | 0.43 | 0.08 | 0.10 | 3.91 | 4.18 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.01 | - | - | 0.67 | - | - | - | 0.02 | - | 0.24 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.01 | - | - | 0.67 | - | - | - | 0.02 | - | 0.67 |
| | | Min-2w | - | - | - | 0.01 | - | - | 0.67 | - | - | - | 0.02 | - | 0.01 |
| | Mae Hia | Mean | 0.24 | 0.23 | 0.09 | 0.32 | 0.12 | 0.16 | 0.21 | 0.10 | 0.18 | 0.11 | - | - | 0.18 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.39 | 0.35 | 0.25 | 0.47 | 0.25 | 0.45 | 0.52 | 0.17 | 0.25 | 0.18 | - | - | 0.52 |
| | | Min-10d | 0.14 | 0.17 | <0.01 | 0.10 | <0.01 | <0.01 | 0.04 | <0.01 | 0.11 | <0.01 | - | - | <0.01 |
| | Sakaerat | Mean | 0.20 | 0.32 | 0.11 | 0.14 | 0.19 | 0.76 | 0.40 | 0.40 | 0.14 | 0.03 | - | - | 0.27 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.27 | 0.39 | 0.22 | 0.20 | 0.30 | 1.30 | 0.67 | 0.65 | 0.17 | 0.07 | - | - | 1.30 |
| | | Min-10d | 0.13 | 0.24 | <0.01 | 0.11 | <0.01 | 0.49 | 0.07 | 0.07 | 0.13 | <0.01 | - | - | <0.01 |

**Table 4.14 Particulate matter component: $NO_3^-$ (continued)**

| Unit : μg/m$^3$ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 14.94 | 22.99 | 12.92 | 9.34 | 7.99 | 8.08 | 7.41 | 9.52 | 9.52 | 9.60 | 10.70 | 11.56 | 11.14 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 16.58 | 53.21 | 19.34 | 12.64 | 13.74 | 9.80 | 8.06 | 11.54 | 10.01 | 10.68 | 17.83 | 15.12 | 53.21 |
| | | Min-w | 13.00 | 4.18 | 3.99 | 6.24 | 3.42 | 5.86 | 6.64 | 8.55 | 9.07 | 8.62 | 5.91 | 9.64 | 3.42 |
| | Hoa Binh | Mean | 7.89 | 3.20 | 5.91 | 3.73 | 2.96 | 4.18 | 1.02 | 0.83 | 1.74 | 2.36 | 1.93 | 3.63 | 3.28 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 11.68 | 5.96 | 10.28 | 4.80 | 3.81 | 7.74 | 1.26 | 1.19 | 3.45 | 2.96 | 2.91 | 4.73 | 11.68 |
| | | Min-w | 3.18 | 1.59 | 1.93 | 1.93 | 2.00 | 1.91 | 0.59 | 0.48 | 0.55 | 1.98 | 0.91 | 0.87 | 0.48 |
| | Can Tho | Mean | 1.96 | 2.38 | 3.07 | 4.00 | 3.92 | 2.04 | 1.20 | 1.11 | 1.70 | 1.20 | 2.03 | 1.77 | 2.19 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.60 | 2.97 | 4.27 | 4.53 | 4.40 | 2.97 | 1.48 | 2.17 | 1.98 | 1.61 | 2.35 | 1.98 | 4.53 |
| | | Min-w | 1.34 | 1.36 | 1.96 | 3.59 | 3.16 | 0.68 | 1.05 | 0.44 | 1.30 | 0.69 | 1.73 | 1.59 | 0.44 |
| | Ho Chi Minh | Mean | 7.28 | 8.45 | 7.38 | 7.53 | 5.43 | 3.85 | 3.76 | 3.03 | 3.59 | 5.63 | 4.57 | 7.64 | 5.67 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 8.37 | 10.96 | 11.50 | 9.11 | 6.57 | 4.35 | 4.05 | 4.05 | 4.32 | 6.34 | 5.08 | 8.99 | 11.50 |
| | | Min-w | 3.87 | 7.10 | 4.62 | 5.72 | 3.75 | 3.16 | 3.48 | 2.01 | 3.22 | 5.01 | 4.01 | 4.81 | 2.01 |
| | Yen Bai | Mean | 5.13 | 9.76 | 11.06 | 9.18 | 5.74 | 5.69 | 8.45 | 9.10 | 8.05 | 4.93 | 7.82 | 10.64 | 8.00 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 7.85 | 19.68 | 15.94 | 13.36 | 11.03 | 9.95 | 9.51 | 10.46 | 9.72 | 7.92 | 8.83 | 15.13 | 19.68 |
| | | Min-w | 2.44 | 2.96 | 7.98 | 6.94 | 3.36 | 2.04 | 7.33 | 7.77 | 6.21 | 2.51 | 7.19 | 7.37 | 2.04 |

Terms and abbreviations are given in Table 4.2.

**Table 4.15 Particulate matter component: Cl⁻**

| Unit : μg/m$^3$ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 0.22 | 0.28 | 0.55 | 0.28 | 0.32 | 0.38 | 0.43 | 0.34 | 0.30 | 0.27 | 0.28 | 0.27 | 0.32 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.27 | 0.31 | 0.72 | 0.29 | 0.40 | 0.56 | 0.50 | 0.42 | 0.31 | 0.29 | 0.31 | 0.30 | 0.72 |
| | | Min-2w | 0.17 | 0.25 | 0.39 | 0.27 | 0.28 | 0.20 | 0.35 | 0.26 | 0.30 | 0.26 | 0.26 | 0.24 | 0.17 |
| China | Hongwen | Mean | 1.85 | 1.11 | 1.81 | 0.52 | 0.18 | 0.14 | 0.36 | 0.40 | 0.73 | 0.82 | 0.61 | 1.18 | 0.95 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 1.93 | 1.11 | 2.62 | 0.52 | 0.18 | 0.14 | 0.36 | 0.40 | 0.73 | 0.91 | 0.61 | 1.18 | 2.62 |
| | | Min-m | 1.76 | 1.11 | 1.00 | 0.52 | 0.18 | 0.14 | 0.36 | 0.40 | 0.73 | 0.74 | 0.61 | 1.18 | 0.14 |
| Indonesia | Jakarta | Mean | 0.49 | 0.58 | 0.18 | 0.37 | 1.08 | 0.38 | 1.05 | 0.67 | 0.28 | 0.10 | 0.28 | 0.86 | 0.54 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.66 | 1.12 | 0.23 | 0.37 | 1.46 | 0.42 | 1.86 | 0.78 | 0.37 | 0.10 | 0.47 | 0.86 | 1.86 |
| | | Min-2w | 0.32 | 0.05 | 0.14 | 0.37 | 0.69 | 0.35 | 0.24 | 0.56 | 0.18 | 0.10 | 0.09 | 0.86 | 0.05 |
| | Serpong | Mean | 0.40 | 0.33 | 0.16 | 0.14 | 0.11 | 0.11 | 0.41 | 0.34 | 0.13 | 0.05 | 0.47 | 0.38 | 0.23 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.40 | 0.33 | 0.23 | 0.14 | 0.20 | 0.11 | 0.44 | 0.41 | 0.17 | 0.08 | 0.92 | 0.41 | 0.92 |
| | | Min-2w | 0.40 | 0.33 | 0.09 | 0.13 | 0.06 | 0.11 | 0.38 | 0.28 | 0.08 | <0.01 | 0.03 | 0.35 | <0.01 |
| | Bandung | Mean | 0.23 | 0.28 | 0.15 | 0.21 | 0.22 | 0.31 | 0.28 | 0.18 | 1.70 | 1.07 | 0.93 | 1.35 | 0.57 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.27 | 0.47 | 0.21 | 0.29 | 0.22 | 0.41 | 0.36 | 0.20 | 1.77 | 1.32 | 1.03 | 1.37 | 1.77 |
| | | Min-2w | 0.19 | 0.08 | 0.09 | 0.14 | 0.21 | 0.21 | 0.21 | 0.15 | 1.63 | 0.82 | 0.83 | 1.32 | 0.08 |
| Japan | Rishiri | Mean | 1.84 | 3.02 | 1.10 | 4.35 | 3.81 | 1.56 | 0.50 | 1.98 | 5.20 | 3.13 | 3.56 | 3.12 | 2.66 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 2.14 | 3.60 | 1.19 | 6.98 | 5.10 | 2.20 | 1.05 | 3.70 | 8.18 | 3.28 | 4.55 | 3.12 | 8.18 |
| | | Min-2w | 1.55 | 2.45 | 1.01 | 1.73 | 2.52 | 0.92 | 0.11 | 0.27 | 2.23 | 2.98 | 2.58 | 3.12 | 0.11 |
| | Ochiishi | Mean | 3.99 | 3.92 | 2.76 | 6.32 | 3.33 | 1.20 | 0.65 | 3.33 | 4.94 | 6.40 | 10.85 | 6.02 | 3.81 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 6.73 | 4.74 | 2.77 | 6.75 | 4.33 | 1.53 | 1.46 | 3.80 | 4.94 | 6.40 | 10.85 | 6.02 | 10.85 |
| | | Min-2w | 1.64 | 3.10 | 2.75 | 5.89 | 2.34 | 0.88 | 0.15 | 2.86 | 4.94 | 6.40 | 10.85 | 6.02 | 0.15 |
| | Tappi | Mean | 7.56 | 5.27 | 2.80 | 10.58 | 3.10 | 1.46 | 0.18 | 2.01 | 6.78 | 3.61 | 12.98 | 13.84 | 5.70 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 10.38 | 5.95 | 2.95 | 11.34 | 4.89 | 2.35 | 0.24 | 3.16 | 8.20 | 3.61 | 16.26 | 21.62 | 21.62 |
| | | Min-2w | 4.93 | 4.59 | 2.66 | 9.82 | 1.31 | 0.57 | 0.08 | 0.86 | 5.37 | 3.60 | 9.69 | 6.05 | 0.08 |
| | Sado-seki | Mean | 5.99 | 4.97 | 3.49 | 5.92 | 2.09 | 1.80 | 0.22 | 2.17 | 2.13 | 5.45 | 5.54 | 3.57 | 3.52 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 7.90 | 4.97 | 3.49 | 8.73 | 3.30 | 3.02 | 0.35 | 3.21 | 3.18 | 6.62 | 7.95 | 5.68 | 8.73 |
| | | Min-2w | 4.94 | 4.97 | 3.49 | 3.11 | 0.89 | 0.58 | 0.12 | 1.13 | 1.08 | 4.28 | 3.14 | 1.47 | 0.12 |
| | Happo | Mean | 0.02 | 0.04 | 0.02 | 0.06 | <0.01 | 0.01 | 0.01 | <0.01 | 0.07 | 0.06 | 0.06 | <0.01 | 0.03 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.06 | 0.06 | 0.04 | 0.07 | <0.01 | 0.02 | 0.03 | <0.01 | 0.13 | 0.09 | 0.06 | <0.01 | 0.13 |
| | | Min-2w | <0.01 | 0.02 | <0.01 | 0.06 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | 0.02 | 0.06 | <0.01 | <0.01 |
| | Ijira | Mean | 0.15 | 0.10 | 0.03 | 0.03 | 0.04 | <0.01 | 0.02 | 0.03 | 0.07 | 0.08 | 0.09 | 0.08 | 0.06 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.25 | 0.12 | 0.04 | 0.05 | 0.06 | 0.01 | 0.03 | 0.05 | 0.10 | 0.12 | 0.13 | 0.10 | 0.25 |
| | | Min-2w | 0.08 | 0.07 | 0.02 | 0.02 | 0.03 | <0.01 | <0.01 | <0.01 | 0.05 | 0.04 | 0.06 | 0.05 | <0.01 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 9.75 | 11.14 | 10.45 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 11.67 | 12.36 | 12.36 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 7.83 | 9.91 | 7.83 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 2.80 | 2.78 | 2.79 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 3.44 | 3.15 | 3.44 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 2.16 | 2.41 | 2.16 |
| | Yusuhara | Mean | 0.08 | 0.11 | 0.04 | 0.01 | <0.01 | <0.01 | <0.01 | 0.04 | 0.03 | 0.07 | 0.17 | 0.11 | 0.06 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.08 | 0.16 | 0.05 | 0.02 | 0.01 | <0.01 | <0.01 | 0.07 | 0.05 | 0.15 | 0.23 | 0.11 | 0.23 |
| | | Min-2w | 0.08 | 0.02 | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.11 | 0.10 | <0.01 |
| | Hedo | Mean | 8.80 | 9.53 | 7.17 | 4.60 | 3.05 | 2.72 | 3.26 | 4.90 | 6.87 | 16.63 | 10.85 | 8.61 | 7.16 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 9.51 | 10.86 | 8.35 | 5.20 | 4.75 | 3.90 | 6.89 | 5.40 | 10.20 | 24.73 | 10.91 | 9.91 | 24.73 |
| | | Min-2w | 8.32 | 8.20 | 5.99 | 4.00 | 1.35 | 1.55 | 0.60 | 4.40 | 3.54 | 8.53 | 10.79 | 7.32 | 0.60 |
| | Ogasawara | Mean | 4.77 | 4.82 | 4.39 | 3.61 | 2.48 | 1.71 | 2.08 | 2.64 | 1.97 | 5.74 | 6.86 | 3.72 | 3.71 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 5.23 | 4.88 | 5.04 | 5.39 | 2.78 | 1.77 | 3.05 | 4.66 | 2.21 | 6.18 | 7.05 | 3.97 | 7.05 |
| | | Min-2w | 4.53 | 4.77 | 3.74 | 1.83 | 2.17 | 1.65 | 1.36 | 0.61 | 1.72 | 5.30 | 6.67 | 3.48 | 0.61 |
| | Tokyo | Mean | 0.41 | 0.67 | 0.30 | 0.50 | 0.29 | 0.23 | 0.16 | 0.34 | 0.42 | 0.68 | - | 0.93 | 0.43 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.51 | 0.92 | 0.38 | 0.65 | 0.45 | 0.32 | 0.25 | 0.37 | 0.43 | 0.94 | - | 1.09 | 1.09 |
| | | Min-2w | 0.36 | 0.42 | 0.21 | 0.35 | 0.13 | 0.15 | 0.05 | 0.30 | 0.40 | 0.42 | - | 0.76 | 0.05 |

**Table 4.15 Particulate matter component: Cl⁻ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.14 | - | 0.05 | 0.06 | - | 0.14 | 0.10 | 0.13 | 0.14 | 0.16 | 0.20 | 0.13 | 0.13 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.29 | - | 0.10 | 0.06 | - | 0.14 | 0.13 | 0.20 | 0.20 | 0.34 | 0.37 | 0.17 | 0.37 |
| | | Min-w | 0.04 | - | <0.01 | 0.06 | - | 0.14 | 0.08 | 0.01 | 0.08 | 0.07 | 0.07 | 0.02 | <0.01 |
| | Tanah Rata | Mean | 0.06 | 0.18 | 0.06 | 0.02 | 0.01 | 0.03 | 0.02 | <0.01 | 0.03 | <0.01 | 0.04 | 0.04 | 0.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.18 | 0.43 | 0.22 | 0.03 | 0.02 | 0.08 | 0.05 | <0.01 | 0.06 | 0.01 | 0.08 | 0.07 | 0.43 |
| | | Min-w | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 | 0.01 | <0.01 | <0.01 |
| | Danum Valley | Mean | 0.03 | 0.64 | 0.13 | 0.03 | <0.01 | 0.01 | 0.01 | 0.01 | 0.02 | <0.01 | 0.06 | 0.05 | 0.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.05 | 0.69 | 0.17 | 0.05 | <0.01 | 0.01 | 0.03 | 0.02 | 0.03 | 0.02 | 0.06 | 0.08 | 0.69 |
| | | Min-2w | 0.02 | 0.59 | 0.09 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.06 | 0.03 | <0.01 |
| Mongolia | Ulaanbaatar | Mean | 0.60 | 0.60 | 0.22 | 0.03 | 0.09 | 0.04 | 0.03 | 0.14 | 0.04 | 0.15 | 0.35 | 0.10 | 0.20 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 1.92 | 0.90 | 0.56 | 0.06 | 0.18 | 0.09 | 0.04 | 0.62 | 0.06 | 0.32 | 0.95 | 0.15 | 1.92 |
| | | Min-w | 0.06 | 0.06 | 0.02 | 0.02 | 0.04 | 0.01 | 0.02 | 0.02 | 0.02 | 0.06 | 0.09 | 0.04 | 0.01 |
| | Terelj | Mean | - | - | - | - | - | 0.05 | 0.06 | <0.01 | 0.07 | 0.02 | 0.01 | 0.02 | 0.03 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.05 | 0.07 | 0.02 | 0.08 | 0.03 | 0.02 | 0.03 | 0.08 |
| | | Min-2w | - | - | - | - | - | 0.04 | 0.04 | <0.01 | 0.05 | <0.01 | <0.01 | 0.02 | <0.01 |
| Myanmar | Yangon | Mean | 0.75 | 0.13 | <0.01 | 0.08 | <0.01 | 0.41 | 0.04 | 0.32 | <0.01 | <0.01 | 0.04 | 0.22 | 0.13 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.75 | 0.26 | <0.01 | 0.15 | <0.01 | 0.83 | 0.08 | 0.64 | <0.01 | <0.01 | 0.04 | 0.22 | 0.83 |
| | | Min-2w | 0.75 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 | 0.22 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 0.25 | 0.08 | 0.04 | 0.06 | 2.39 | 0.15 | 0.18 | 0.04 | 0.03 | 0.05 | 0.08 | 0.25 | 0.28 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.54 | 0.10 | 0.07 | 0.12 | 6.68 | 0.18 | 0.24 | 0.11 | 0.05 | 0.06 | 0.25 | 0.44 | 6.68 |
| | | Min-d | 0.14 | 0.07 | 0.03 | 0.01 | 0.02 | 0.12 | 0.15 | <0.01 | 0.01 | 0.02 | 0.01 | 0.11 | <0.01 |
| | Cheju (Kosan) | Mean | 0.69 | 0.56 | 0.70 | 0.52 | 0.35 | 0.43 | 0.57 | 0.33 | 0.55 | 0.51 | 0.85 | 0.40 | 0.54 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 0.79 | 0.99 | 2.02 | 1.13 | 0.42 | 0.55 | 0.87 | 0.36 | 0.89 | 1.14 | 2.75 | 0.52 | 2.75 |
| | | Min-d | 0.60 | 0.34 | 0.38 | 0.30 | 0.25 | 0.38 | 0.45 | 0.31 | 0.36 | 0.28 | 0.25 | 0.30 | 0.25 |
| | Imsil | Mean | 0.66 | 0.45 | 0.49 | 0.20 | 0.35 | 0.30 | 0.37 | 0.28 | 0.25 | 0.36 | 0.36 | 0.56 | 0.39 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 0.87 | 0.47 | 0.84 | 0.23 | 0.38 | 0.32 | 0.41 | 0.28 | 0.26 | 0.43 | 0.63 | 0.79 | 0.87 |
| | | Min-d | 0.51 | 0.43 | 0.28 | 0.16 | 0.31 | 0.26 | 0.31 | 0.28 | 0.24 | 0.25 | 0.24 | 0.30 | 0.16 |
| Russia | Mondy | Mean | 0.01 | 0.01 | 0.05 | 0.07 | 0.04 | 0.05 | <0.01 | <0.01 | 0.02 | <0.01 | 0.02 | 0.02 | 0.03 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.02 | 0.01 | 0.10 | 0.07 | 0.05 | 0.09 | <0.01 | <0.01 | 0.02 | <0.01 | 0.02 | 0.02 | 0.10 |
| | | Min-m | <0.01 | 0.01 | <0.01 | 0.07 | 0.02 | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 | 0.02 | <0.01 | <0.01 |
| | Listvyanka | Mean | 0.10 | 0.02 | 0.06 | 0.03 | 0.10 | 0.06 | 0.01 | 0.02 | 0.03 | 0.08 | 0.05 | 0.05 | 0.05 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.15 | 0.03 | 0.14 | 0.03 | 0.14 | 0.12 | 0.02 | 0.02 | 0.11 | 0.15 | 0.06 | 0.07 | 0.15 |
| | | Min-w | 0.03 | 0.01 | 0.01 | 0.02 | 0.03 | 0.01 | <0.01 | 0.01 | <0.01 | 0.02 | 0.04 | 0.04 | <0.01 |
| | Irkutsk | Mean | 0.24 | 0.43 | 0.65 | 0.23 | 0.08 | 0.06 | 0.02 | 0.07 | 0.03 | 0.16 | 0.23 | 0.19 | 0.19 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.38 | 0.97 | 0.94 | 0.33 | 0.13 | 0.08 | 0.03 | 0.17 | 0.04 | 0.31 | 0.35 | 0.27 | 0.97 |
| | | Min-w | 0.09 | 0.21 | 0.46 | 0.16 | 0.05 | 0.03 | 0.02 | 0.02 | 0.02 | 0.06 | 0.10 | 0.12 | 0.02 |
| | Primorskaya | Mean | 0.24 | 0.16 | 0.17 | 0.09 | 0.10 | 0.03 | <0.01 | 0.03 | 0.08 | 0.20 | 0.20 | 0.08 | 0.12 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.25 | 0.17 | 0.34 | 0.17 | 0.19 | 0.05 | <0.01 | 0.03 | 0.12 | 0.36 | 0.28 | 0.09 | 0.36 |
| | | Min-2w | 0.22 | 0.15 | <0.01 | 0.01 | 0.02 | <0.01 | <0.01 | 0.02 | 0.04 | 0.04 | 0.12 | 0.08 | <0.01 |
| Thailand | Bangkok | Mean | 0.11 | 0.07 | 0.11 | 0.08 | <0.01 | 0.11 | 0.09 | 0.07 | 0.04 | 0.03 | 0.18 | 0.18 | 0.09 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.28 | 0.11 | 0.22 | 0.16 | <0.01 | 0.14 | 0.14 | 0.09 | 0.11 | 0.03 | 0.23 | 0.26 | 0.28 |
| | | Min-10d | 0.02 | 0.03 | <0.01 | 0.03 | <0.01 | 0.07 | 0.05 | 0.04 | 0.01 | 0.02 | 0.13 | 0.11 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.04 | - | - | 0.61 | - | - | - | <0.01 | - | 0.22 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.04 | - | - | 0.61 | - | - | - | <0.01 | - | 0.61 |
| | | Min-2w | - | - | - | 0.04 | - | - | 0.61 | - | - | - | <0.01 | - | <0.01 |
| | Mae Hia | Mean | 0.10 | 0.40 | 0.08 | 0.11 | 0.05 | 0.25 | 0.05 | 0.07 | 0.21 | 0.13 | - | - | 0.15 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.12 | 1.04 | 0.11 | 0.25 | 0.08 | 0.39 | 0.05 | 0.16 | 0.27 | 0.24 | - | - | 1.04 |
| | | Min-10d | 0.08 | 0.04 | 0.05 | 0.04 | 0.02 | 0.03 | 0.04 | 0.02 | 0.15 | 0.03 | - | - | 0.02 |
| | Sakaerat | Mean | 0.02 | 0.03 | <0.01 | <0.01 | <0.01 | 0.14 | 0.07 | 0.07 | <0.01 | 0.04 | - | - | 0.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.02 | 0.05 | 0.02 | 0.02 | 0.02 | 0.24 | 0.14 | 0.12 | 0.02 | 0.07 | - | - | 0.24 |
| | | Min-10d | 0.01 | 0.02 | <0.01 | <0.01 | <0.01 | 0.08 | <0.01 | 0.03 | <0.01 | 0.01 | - | - | <0.01 |

**Table 4.15 Particulate matter component: Cl⁻ (continued)**

| Unit : μg/m$^3$ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 2.18 | 3.47 | 4.41 | 4.25 | 2.18 | 3.24 | 3.48 | 4.98 | 4.92 | 3.22 | 6.52 | 4.93 | 4.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.60 | 5.69 | 12.57 | 5.73 | 2.69 | 5.59 | 4.35 | 6.67 | 5.59 | 4.42 | 14.05 | 6.92 | 14.05 |
| | | Min-w | 1.83 | 1.71 | 1.92 | 1.70 | 1.77 | 1.32 | 2.11 | 3.84 | 4.28 | 1.09 | 4.09 | 3.69 | 1.09 |
| | Hoa Binh | Mean | 0.65 | 0.50 | 1.69 | 0.47 | 1.32 | 0.70 | 0.37 | 0.22 | 1.41 | 1.79 | 1.30 | 2.08 | 1.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.93 | 0.97 | 4.68 | 0.90 | 1.87 | 1.32 | 0.74 | 0.40 | 1.96 | 2.05 | 1.91 | 3.62 | 4.68 |
| | | Min-w | 0.33 | 0.20 | 0.43 | 0.20 | 0.99 | 0.03 | 0.20 | 0.13 | 0.67 | 1.56 | 0.14 | 0.74 | 0.03 |
| | Can Tho | Mean | 0.88 | 1.55 | 1.79 | 1.38 | 1.20 | 0.59 | 1.02 | 1.04 | 0.89 | 1.09 | 0.80 | 0.69 | 1.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.02 | 2.32 | 2.41 | 2.21 | 1.56 | 1.26 | 1.52 | 1.86 | 1.20 | 1.52 | 1.30 | 0.80 | 2.41 |
| | | Min-w | 0.59 | 0.85 | 1.10 | 0.86 | 0.34 | 0.36 | 0.64 | 0.61 | 0.60 | 0.58 | 0.42 | 0.62 | 0.34 |
| | Ho Chi Minh | Mean | 1.71 | 2.91 | 2.64 | 2.13 | 0.84 | 0.60 | 0.84 | 0.99 | 0.63 | 0.88 | 0.69 | 1.95 | 1.40 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.26 | 4.56 | 4.15 | 5.04 | 1.28 | 0.74 | 1.04 | 1.14 | 0.87 | 1.01 | 0.92 | 2.90 | 5.04 |
| | | Min-w | 0.62 | 1.25 | 1.05 | 0.97 | 0.47 | 0.50 | 0.57 | 0.78 | 0.48 | 0.77 | 0.53 | 1.02 | 0.47 |
| | Yen Bai | Mean | 3.01 | 2.99 | 3.08 | 4.07 | 1.96 | 3.63 | 4.32 | 5.43 | 4.23 | 4.34 | 3.54 | 2.01 | 3.58 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 4.26 | 7.27 | 5.43 | 4.86 | 4.12 | 6.44 | 5.09 | 6.56 | 6.15 | 4.88 | 4.43 | 4.27 | 7.27 |
| | | Min-w | 1.51 | 0.31 | 1.10 | 3.28 | 0.30 | 2.01 | 3.92 | 4.19 | 2.19 | 4.04 | 2.19 | 0.54 | 0.30 |

Terms and abbreviations are given in Table 4.2.

**Table 4.16 Particulate matter component: $NH_4^+$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 0.39 | 0.47 | 0.38 | 0.42 | 0.37 | 0.33 | 0.26 | 0.33 | 0.25 | 0.36 | 0.57 | 0.43 | 0.38 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.40 | 0.50 | 0.44 | 0.46 | 0.46 | 0.38 | 0.27 | 0.42 | 0.27 | 0.62 | 0.75 | 0.46 | 0.75 |
| | | Min-2w | 0.38 | 0.44 | 0.32 | 0.38 | 0.33 | 0.27 | 0.26 | 0.24 | 0.23 | 0.21 | 0.39 | 0.40 | 0.21 |
| China | Hongwen | Mean | 3.78 | 5.74 | 5.13 | 3.97 | 2.59 | 0.92 | 1.00 | 0.81 | 1.12 | 1.75 | 2.37 | 2.67 | 2.83 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 4.49 | 5.74 | 6.29 | 3.97 | 2.59 | 0.92 | 1.00 | 0.81 | 1.12 | 2.37 | 2.37 | 2.67 | 6.29 |
| | | Min-m | 3.07 | 5.74 | 3.98 | 3.97 | 2.59 | 0.92 | 1.00 | 0.81 | 1.12 | 1.12 | 2.37 | 2.67 | 0.81 |
| Indonesia | Jakarta | Mean | 0.11 | 0.07 | 0.22 | 0.30 | 0.39 | 0.44 | 0.38 | 0.43 | 0.68 | 0.03 | 0.38 | 0.19 | 0.32 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.13 | 0.13 | 0.39 | 0.30 | 0.73 | 0.83 | 0.44 | 0.47 | 0.78 | 0.03 | 0.65 | 0.19 | 0.83 |
| | | Min-2w | 0.10 | 0.01 | 0.05 | 0.30 | 0.04 | 0.05 | 0.31 | 0.38 | 0.58 | 0.03 | 0.12 | 0.19 | 0.01 |
| | Serpong | Mean | 0.07 | 0.14 | 0.19 | 0.34 | 0.78 | 0.50 | 1.17 | 0.52 | 0.51 | 0.31 | 0.32 | 0.74 | 0.50 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.07 | 0.14 | 0.35 | 0.58 | 1.24 | 0.50 | 1.25 | 0.56 | 0.67 | 0.40 | 0.50 | 1.33 | 1.33 |
| | | Min-2w | 0.07 | 0.14 | 0.03 | 0.10 | 0.47 | 0.50 | 1.10 | 0.47 | 0.34 | 0.24 | 0.14 | 0.15 | 0.03 |
| | Bandung | Mean | 0.52 | 1.52 | 1.55 | 2.16 | 1.09 | 1.04 | 0.98 | 1.08 | 1.16 | 0.91 | 0.63 | 0.91 | 1.13 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.57 | 1.63 | 1.76 | 2.46 | 1.13 | 1.08 | 1.09 | 1.58 | 1.22 | 0.97 | 0.91 | 1.00 | 2.46 |
| | | Min-2w | 0.46 | 1.41 | 1.35 | 1.86 | 1.05 | 1.00 | 0.87 | 0.58 | 1.11 | 0.85 | 0.36 | 0.81 | 0.36 |
| Japan | Rishiri | Mean | 0.54 | 0.51 | 0.46 | 0.66 | 0.36 | 0.41 | 0.54 | 0.25 | 0.19 | 0.31 | 0.36 | 0.36 | 0.42 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.67 | 0.57 | 0.58 | 0.88 | 0.44 | 0.41 | 0.69 | 0.35 | 0.23 | 0.31 | 0.44 | 0.36 | 0.88 |
| | | Min-2w | 0.42 | 0.45 | 0.34 | 0.43 | 0.28 | 0.41 | 0.37 | 0.15 | 0.15 | 0.31 | 0.28 | 0.36 | 0.15 |
| | Ochiishi | Mean | 0.48 | 0.35 | 0.41 | 0.53 | 0.44 | 0.28 | 0.53 | 0.19 | 0.16 | 0.23 | 0.12 | 0.39 | 0.38 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.84 | 0.35 | 0.48 | 0.72 | 0.53 | 0.30 | 0.88 | 0.20 | 0.16 | 0.23 | 0.12 | 0.39 | 0.88 |
| | | Min-2w | 0.25 | 0.34 | 0.34 | 0.33 | 0.35 | 0.26 | 0.31 | 0.18 | 0.16 | 0.23 | 0.12 | 0.39 | 0.12 |
| | Tappi | Mean | 0.36 | 0.48 | 0.79 | 0.68 | 0.75 | 0.75 | 0.63 | 0.27 | 0.34 | 0.30 | 0.15 | 0.39 | 0.49 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.68 | 0.55 | 0.94 | 0.91 | 1.16 | 0.75 | 0.68 | 0.29 | 0.49 | 0.32 | 0.24 | 0.42 | 1.16 |
| | | Min-2w | 0.18 | 0.41 | 0.64 | 0.45 | 0.34 | 0.74 | 0.55 | 0.24 | 0.19 | 0.27 | 0.07 | 0.36 | 0.07 |
| | Sado-seki | Mean | 0.36 | 0.22 | 0.96 | 0.65 | 0.83 | 0.55 | 0.56 | 0.21 | 0.44 | 0.21 | 0.19 | 0.23 | 0.44 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 0.64 | 0.22 | 0.96 | 0.72 | 1.03 | 0.62 | 0.87 | 0.24 | 0.47 | 0.23 | 0.34 | 0.36 | 1.03 |
| | | Min-2w | 0.20 | 0.22 | 0.96 | 0.58 | 0.63 | 0.48 | 0.33 | 0.18 | 0.40 | 0.20 | 0.05 | 0.10 | 0.05 |
| | Happo | Mean | 0.22 | 0.48 | 1.11 | 0.55 | 0.64 | 0.61 | 0.84 | 0.32 | 0.33 | 0.12 | 0.11 | 0.17 | 0.47 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.28 | 0.63 | 1.30 | 0.61 | 0.64 | 0.65 | 1.02 | 0.40 | 0.64 | 0.19 | 0.11 | 0.18 | 1.30 |
| | | Min-2w | 0.12 | 0.33 | 0.92 | 0.49 | 0.64 | 0.57 | 0.69 | 0.25 | 0.03 | 0.06 | 0.11 | 0.17 | 0.03 |
| | Ijira | Mean | 0.49 | 0.66 | 1.12 | 0.74 | 0.86 | 0.93 | 0.92 | 0.61 | 0.55 | 0.34 | 0.36 | 0.59 | 0.68 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.59 | 0.70 | 1.19 | 0.74 | 0.95 | 0.96 | 0.95 | 0.76 | 0.70 | 0.46 | 0.40 | 0.59 | 1.19 |
| | | Min-2w | 0.34 | 0.63 | 1.05 | 0.73 | 0.77 | 0.91 | 0.88 | 0.46 | 0.40 | 0.23 | 0.33 | 0.59 | 0.23 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.76 | 0.78 | 0.77 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.80 | 0.81 | 0.81 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.73 | 0.74 | 0.73 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.85 | 1.01 | 0.93 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.86 | 1.15 | 1.15 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.84 | 0.87 | 0.84 |
| | Yusuhara | Mean | 0.75 | 0.92 | 1.30 | 0.65 | 0.62 | 1.38 | 1.01 | 1.15 | 0.97 | 0.43 | 0.71 | 0.71 | 0.89 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.75 | 0.93 | 1.47 | 0.65 | 0.63 | 1.59 | 1.55 | 1.41 | 1.35 | 0.66 | 0.82 | 0.77 | 1.59 |
| | | Min-2w | 0.75 | 0.90 | 1.12 | 0.65 | 0.61 | 1.17 | 0.54 | 0.90 | 0.59 | 0.20 | 0.61 | 0.65 | 0.20 |
| | Hedo | Mean | 0.59 | 0.93 | 1.09 | 0.63 | 0.41 | 0.47 | 0.39 | 0.51 | 0.36 | 0.06 | 0.45 | 0.48 | 0.53 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.70 | 1.00 | 1.38 | 0.73 | 0.45 | 0.78 | 0.78 | 0.53 | 0.54 | 0.12 | 0.50 | 0.67 | 1.38 |
| | | Min-2w | 0.50 | 0.86 | 0.79 | 0.53 | 0.37 | 0.17 | 0.13 | 0.49 | 0.18 | <0.01 | 0.41 | 0.30 | <0.01 |
| | Ogasawara | Mean | 0.27 | 0.32 | 0.43 | 0.21 | 0.21 | 0.20 | 0.10 | 0.27 | 0.07 | 0.07 | 0.26 | 0.23 | 0.22 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.38 | 0.35 | 0.45 | 0.25 | 0.36 | 0.33 | 0.15 | 0.51 | 0.07 | 0.08 | 0.32 | 0.26 | 0.51 |
| | | Min-2w | 0.21 | 0.28 | 0.41 | 0.18 | 0.06 | 0.07 | 0.07 | 0.04 | 0.06 | 0.06 | 0.19 | 0.20 | 0.04 |
| | Tokyo | Mean | 1.01 | 1.26 | 1.60 | 1.03 | 1.34 | 1.24 | 1.21 | 1.12 | 0.67 | 0.75 | - | 1.60 | 1.16 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 1.14 | 1.74 | 1.61 | 1.13 | 1.52 | 1.31 | 1.66 | 1.25 | 0.80 | 1.14 | - | 1.71 | 1.74 |
| | | Min-2w | 0.95 | 0.78 | 1.58 | 0.94 | 1.16 | 1.18 | 0.91 | 0.98 | 0.53 | 0.37 | - | 1.49 | 0.37 |

**Table 4.16 Particulate matter component: $NH_4^+$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.48 | - | 0.86 | 0.76 | - | 1.58 | 0.72 | 0.74 | 0.75 | 0.77 | 0.83 | 0.62 | 0.74 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.62 | - | 1.56 | 0.76 | - | 1.58 | 0.93 | 0.95 | 1.31 | 1.04 | 0.98 | 1.01 | 1.58 |
| | | Min-w | 0.19 | - | 0.13 | 0.76 | - | 1.58 | 0.60 | 0.63 | 0.36 | 0.52 | 0.66 | 0.12 | 0.12 |
| | Tanah Rata | Mean | 0.05 | 0.10 | 0.40 | 0.19 | 0.47 | 0.44 | 0.77 | 0.52 | 0.26 | 0.34 | 0.12 | 0.21 | 0.32 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.09 | 0.31 | 0.80 | 0.31 | 0.58 | 0.74 | 1.20 | 0.63 | 0.65 | 0.54 | 0.28 | 0.42 | 1.20 |
| | | Min-w | 0.02 | <0.01 | 0.13 | 0.03 | 0.38 | 0.12 | 0.45 | 0.42 | 0.07 | 0.18 | 0.01 | 0.08 | <0.01 |
| | Danum Valley | Mean | 0.02 | 0.06 | 0.06 | 0.12 | 0.12 | 0.07 | 0.16 | 0.09 | 0.09 | 0.17 | 0.03 | 0.04 | 0.09 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.04 | 0.07 | 0.08 | 0.18 | 0.28 | 0.09 | 0.23 | 0.13 | 0.12 | 0.21 | 0.03 | 0.05 | 0.28 |
| | | Min-2w | <0.01 | 0.05 | 0.03 | 0.07 | 0.04 | 0.05 | 0.08 | 0.05 | 0.07 | 0.11 | 0.03 | 0.02 | <0.01 |
| Mongolia | Ulaanbaatar | Mean | 2.31 | 1.38 | 0.51 | 0.07 | 0.09 | 0.10 | 0.04 | 0.07 | 0.02 | 0.29 | 1.10 | 1.27 | 0.58 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 7.14 | 1.97 | 1.16 | 0.14 | 0.14 | 0.17 | 0.09 | 0.18 | 0.05 | 0.52 | 2.83 | 3.21 | 7.14 |
| | | Min-w | 0.19 | 0.08 | <0.01 | <0.01 | 0.04 | 0.04 | <0.01 | 0.02 | <0.01 | 0.04 | 0.15 | 0.08 | <0.01 |
| | Terelj | Mean | - | - | - | - | - | 0.04 | 0.04 | 0.04 | 0.07 | 0.02 | 0.05 | 0.02 | 0.04 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.07 | 0.06 | 0.05 | 0.09 | 0.04 | 0.08 | 0.03 | 0.09 |
| | | Min-2w | - | - | - | - | - | 0.01 | 0.01 | 0.03 | 0.05 | 0.01 | 0.02 | 0.02 | 0.01 |
| Myanmar | Yangon | Mean | 0.68 | 0.99 | 1.26 | 0.67 | 0.16 | 0.20 | 0.04 | 0.41 | 0.05 | 0.01 | 1.28 | 8.72 | 0.80 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.68 | 1.10 | 2.42 | 1.33 | 0.31 | 0.25 | 0.07 | 0.65 | 0.09 | 0.04 | 1.28 | 8.72 | 8.72 |
| | | Min-2w | 0.68 | 0.87 | 0.09 | <0.01 | 0.07 | 0.15 | <0.01 | 0.18 | <0.01 | <0.01 | 1.28 | 8.72 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 3.35 | 2.21 | 3.70 | 2.72 | 2.49 | 2.90 | 1.62 | 0.68 | 2.43 | 1.83 | 2.49 | 2.57 | 2.50 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 9.46 | 5.31 | 7.64 | 6.73 | 3.94 | 6.25 | 2.73 | 1.34 | 4.32 | 3.17 | 6.66 | 4.36 | 9.46 |
| | | Min-d | 0.71 | 1.10 | 1.51 | 1.23 | 1.01 | 0.42 | 0.72 | 0.05 | 0.39 | 0.13 | 0.58 | 0.59 | 0.05 |
| | Cheju (Kosan) | Mean | 4.95 | 1.37 | 0.98 | 0.57 | 4.28 | 0.53 | 1.11 | 0.47 | 0.40 | 0.87 | 1.29 | 0.98 | 1.19 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 6.78 | 2.17 | 2.50 | 1.12 | 4.85 | 1.04 | 1.81 | 0.94 | 0.58 | 1.60 | 2.25 | 1.73 | 6.78 |
| | | Min-d | 3.13 | 0.94 | 0.05 | 0.23 | 3.47 | 0.12 | 0.70 | 0.24 | 0.13 | 0.38 | 0.85 | 0.44 | 0.05 |
| | Imsil | Mean | 3.45 | 2.68 | 2.11 | 3.56 | 1.83 | 1.97 | 1.86 | 0.62 | 0.74 | 0.79 | 1.85 | 1.64 | 1.96 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 5.71 | 3.83 | 2.71 | 5.09 | 3.24 | 2.67 | 2.71 | 0.62 | 1.31 | 1.26 | 3.35 | 3.04 | 5.71 |
| | | Min-d | 2.36 | 2.01 | 1.61 | 1.46 | 0.46 | 1.33 | 0.38 | 0.62 | 0.23 | 0.30 | 0.44 | 0.80 | 0.23 |
| Russia | Mondy | Mean | 0.10 | <0.01 | 0.24 | 0.15 | 0.07 | 0.09 | 0.27 | 0.18 | 0.12 | 0.07 | 0.07 | 0.06 | 0.12 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.15 | <0.01 | 0.34 | 0.15 | 0.08 | 0.17 | 0.27 | 0.18 | 0.14 | 0.07 | 0.12 | 0.06 | 0.34 |
| | | Min-m | 0.05 | <0.01 | 0.14 | 0.15 | 0.07 | <0.01 | 0.27 | 0.18 | 0.10 | 0.07 | 0.02 | 0.06 | <0.01 |
| | Listvyanka | Mean | 0.04 | 0.01 | 0.11 | 0.14 | 0.08 | 0.43 | 0.38 | 1.10 | 1.10 | 0.04 | 0.05 | 0.10 | 0.32 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.13 | 0.02 | 0.17 | 0.23 | 0.22 | 0.90 | 0.61 | 1.66 | 4.66 | 0.05 | 0.13 | 0.16 | 4.66 |
| | | Min-w | <0.01 | <0.01 | <0.01 | 0.05 | <0.01 | <0.01 | 0.14 | 0.60 | 0.07 | 0.03 | <0.01 | 0.06 | <0.01 |
| | Irkutsk | Mean | 1.04 | 0.30 | 0.39 | 0.56 | 0.29 | 0.20 | 0.65 | 1.13 | 0.79 | 0.21 | 0.33 | 0.80 | 0.57 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.72 | 0.93 | 0.75 | 0.93 | 0.84 | 0.70 | 0.97 | 1.39 | 2.19 | 0.42 | 0.61 | 1.33 | 2.19 |
| | | Min-w | 0.71 | 0.06 | 0.04 | 0.24 | <0.01 | <0.01 | 0.38 | 0.88 | 0.05 | 0.12 | 0.19 | 0.12 | <0.01 |
| | Primorskaya | Mean | 0.35 | 0.06 | 1.34 | 0.80 | 0.77 | 0.03 | 0.29 | 0.18 | 0.17 | 0.28 | 0.48 | 0.61 | 0.45 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.70 | 0.11 | 2.55 | 1.29 | 1.39 | 0.05 | 0.57 | 0.23 | 0.18 | 0.54 | 0.50 | 0.77 | 2.55 |
| | | Min-2w | <0.01 | <0.01 | 0.13 | 0.31 | 0.16 | 0.02 | <0.01 | 0.12 | 0.17 | 0.03 | 0.46 | 0.45 | <0.01 |
| Thailand | Bangkok | Mean | 0.49 | 7.05 | 0.23 | 1.06 | <0.01 | 0.11 | 0.12 | 0.08 | 0.13 | 0.08 | 1.42 | 1.45 | 1.02 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.57 | 13.18 | 0.38 | 1.51 | <0.01 | 0.16 | 0.17 | 0.11 | 0.22 | 0.16 | 2.58 | 2.11 | 13.18 |
| | | Min-10d | 0.34 | 0.66 | 0.09 | 0.74 | <0.01 | 0.07 | 0.05 | 0.06 | 0.06 | 0.03 | 0.69 | 0.89 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.96 | - | - | 0.31 | - | - | - | 0.49 | - | 0.58 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.96 | - | - | 0.31 | - | - | - | 0.49 | - | 0.96 |
| | | Min-2w | - | - | - | 0.96 | - | - | 0.31 | - | - | - | 0.49 | - | 0.31 |
| | Mae Hia | Mean | 0.06 | 0.42 | 0.17 | 1.05 | 0.36 | 0.09 | 0.06 | 0.08 | 0.14 | 0.03 | - | - | 0.25 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.18 | 0.99 | 0.36 | 1.77 | 0.57 | 0.28 | 0.13 | 0.12 | 0.22 | 0.04 | - | - | 1.77 |
| | | Min-10d | <0.01 | 0.03 | <0.01 | 0.30 | 0.09 | <0.01 | 0.02 | <0.01 | 0.07 | 0.02 | - | - | <0.01 |
| | Sakaerat | Mean | 0.35 | 0.98 | 1.49 | 1.15 | 0.97 | 0.54 | 0.34 | 0.46 | 0.67 | 0.71 | - | - | 0.77 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.46 | 1.30 | 1.82 | 1.60 | 1.10 | 0.67 | 0.53 | 0.70 | 0.90 | 1.32 | - | - | 1.82 |
| | | Min-10d | 0.21 | 0.75 | 0.94 | 0.78 | 0.72 | 0.47 | <0.01 | 0.27 | 0.45 | 0.35 | - | - | <0.01 |

**Table 4.16 Particulate matter component: $NH_4^+$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 2.46 | 5.70 | 3.23 | 1.57 | 1.68 | 1.26 | 3.81 | 4.60 | 4.43 | 4.15 | 3.50 | 4.75 | 3.41 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.99 | 13.62 | 6.25 | 2.00 | 2.89 | 1.94 | 4.77 | 5.66 | 4.81 | 4.89 | 5.11 | 5.53 | 13.62 |
| | | Min-w | 1.90 | 1.90 | 1.01 | 1.22 | 1.24 | 0.80 | 2.86 | 3.88 | 3.82 | 3.27 | 1.92 | 3.35 | 0.80 |
| | Hoa Binh | Mean | 2.30 | 0.72 | 1.54 | 0.76 | 0.85 | 0.69 | 0.25 | 0.20 | 1.08 | 1.32 | 0.96 | 1.88 | 1.03 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 4.78 | 1.41 | 2.23 | 1.08 | 1.07 | 1.03 | 0.42 | 0.26 | 2.08 | 1.36 | 1.50 | 2.94 | 4.78 |
| | | Min-w | 0.74 | 0.41 | 0.59 | 0.43 | 0.46 | 0.23 | 0.14 | 0.15 | 0.43 | 1.29 | 0.45 | 0.26 | 0.14 |
| | Can Tho | Mean | 1.15 | 1.41 | 1.44 | 1.43 | 1.92 | 1.30 | 1.30 | 1.26 | 1.84 | 1.16 | 1.37 | 1.15 | 1.39 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.37 | 1.53 | 1.84 | 1.71 | 2.14 | 2.10 | 1.55 | 1.82 | 2.09 | 1.37 | 1.80 | 1.30 | 2.14 |
| | | Min-w | 0.97 | 1.17 | 1.19 | 1.22 | 1.65 | 0.81 | 0.98 | 0.81 | 1.56 | 1.00 | 0.74 | 0.99 | 0.74 |
| | Ho Chi Minh | Mean | 1.19 | 1.59 | 1.79 | 2.43 | 1.29 | 1.54 | 0.43 | 0.28 | 0.30 | 0.70 | 1.00 | 2.06 | 1.23 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.78 | 2.56 | 3.21 | 3.46 | 1.78 | 2.20 | 0.52 | 0.46 | 0.37 | 1.00 | 1.32 | 2.83 | 3.46 |
| | | Min-w | 0.46 | 0.63 | 0.78 | 1.94 | 0.98 | 0.97 | 0.26 | 0.10 | 0.19 | 0.42 | 0.78 | 0.99 | 0.10 |
| | Yen Bai | Mean | 1.14 | 3.96 | 4.83 | 4.25 | 1.97 | 2.73 | 3.51 | 4.31 | 3.00 | 2.12 | 2.44 | 3.42 | 3.17 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.61 | 8.12 | 7.40 | 5.81 | 3.03 | 5.00 | 3.73 | 5.48 | 5.00 | 3.10 | 3.41 | 4.97 | 8.12 |
| | | Min-w | 0.42 | 0.90 | 3.56 | 3.41 | 1.27 | 0.90 | 3.05 | 3.22 | 2.21 | 1.45 | 0.97 | 2.81 | 0.42 |

Terms and abbreviations are given in Table 4.2.

**Table 4.17 Particulate matter component: $Na^+$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 0.55 | 0.89 | 1.40 | 0.48 | 0.47 | 0.72 | 0.51 | 0.60 | 0.56 | 0.43 | 0.61 | 0.52 | 0.63 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.56 | 1.19 | 1.66 | 0.48 | 0.67 | 0.82 | 0.60 | 0.65 | 0.66 | 0.66 | 0.79 | 0.65 | 1.66 |
| | | Min-2w | 0.54 | 0.59 | 1.13 | 0.47 | 0.34 | 0.61 | 0.42 | 0.54 | 0.46 | 0.30 | 0.43 | 0.39 | 0.30 |
| China | Hongwen | Mean | 1.58 | 1.07 | 1.28 | 1.23 | 1.24 | 1.58 | 1.38 | 2.16 | 2.21 | 2.26 | 1.08 | 1.45 | 1.58 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 1.84 | 1.07 | 1.79 | 1.23 | 1.24 | 1.58 | 1.38 | 2.16 | 2.21 | 2.31 | 1.08 | 1.45 | 2.31 |
| | | Min-m | 1.32 | 1.07 | 0.77 | 1.23 | 1.24 | 1.58 | 1.38 | 2.16 | 2.21 | 2.20 | 1.08 | 1.45 | 0.77 |
| Indonesia | Jakarta | Mean | 0.25 | 0.25 | 0.12 | 0.51 | 0.68 | 0.53 | 1.19 | 0.66 | 0.53 | <0.01 | 0.48 | 0.34 | 0.49 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.4 | 0.5 | 0.2 | 0.5 | 0.9 | 0.8 | 1.9 | 0.8 | 0.6 | <0.01 | 0.8 | 0.3 | 1.9 |
| | | Min-2w | 0.14 | <0.01 | 0.02 | 0.51 | 0.47 | 0.23 | 0.48 | 0.50 | 0.48 | <0.01 | 0.12 | 0.34 | <0.01 |
| | Serpong | Mean | 0.17 | 0.21 | 0.03 | 0.15 | 0.33 | 0.23 | 0.45 | 0.53 | 0.43 | 0.18 | 0.63 | 0.43 | 0.32 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.17 | 0.21 | 0.06 | 0.16 | 0.53 | 0.23 | 0.56 | 0.61 | 0.53 | 0.27 | 0.80 | 0.67 | 0.80 |
| | | Min-2w | 0.17 | 0.21 | <0.01 | 0.15 | 0.11 | 0.23 | 0.34 | 0.44 | 0.33 | 0.07 | 0.46 | 0.18 | <0.01 |
| | Bandung | Mean | 0.26 | 0.35 | 0.28 | 0.34 | 0.60 | 0.58 | 0.65 | 1.00 | 0.72 | 0.36 | 0.29 | 0.42 | 0.49 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.35 | 0.62 | 0.35 | 0.37 | 0.68 | 0.74 | 0.70 | 1.05 | 0.89 | 0.43 | 0.41 | 0.51 | 1.05 |
| | | Min-2w | 0.17 | 0.08 | 0.22 | 0.30 | 0.53 | 0.43 | 0.60 | 0.94 | 0.54 | 0.29 | 0.18 | 0.32 | 0.08 |
| Japan | Rishiri | Mean | 1.37 | 1.94 | 0.88 | 2.97 | 2.76 | 1.50 | 0.92 | 1.44 | 2.94 | 2.10 | 2.23 | 2.05 | 1.88 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 1.56 | 2.33 | 0.98 | 4.61 | 3.32 | 1.85 | 1.61 | 2.48 | 4.23 | 2.25 | 2.80 | 2.05 | 4.61 |
| | | Min-2w | 1.17 | 1.55 | 0.77 | 1.34 | 2.19 | 1.15 | 0.51 | 0.40 | 1.65 | 1.95 | 1.65 | 2.05 | 0.40 |
| | Ochiishi | Mean | 2.43 | 2.67 | 1.95 | 4.02 | 2.67 | 1.21 | 1.17 | 2.54 | 3.22 | 3.97 | 6.22 | 3.67 | 2.64 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 3.90 | 3.18 | 1.99 | 4.42 | 3.22 | 1.22 | 1.68 | 2.88 | 3.22 | 3.97 | 6.22 | 3.67 | 6.22 |
| | | Min-2w | 1.31 | 2.15 | 1.92 | 3.62 | 2.12 | 1.19 | 0.89 | 2.21 | 3.22 | 3.97 | 6.22 | 3.67 | 0.89 |
| | Tappi | Mean | 4.59 | 3.39 | 2.09 | 6.59 | 2.52 | 1.85 | 0.86 | 1.64 | 4.33 | 2.55 | 7.73 | 8.20 | 3.77 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 6.50 | 3.70 | 2.28 | 6.87 | 3.27 | 2.34 | 1.08 | 2.49 | 4.95 | 2.60 | 9.45 | 12.55 | 12.55 |
| | | Min-2w | 2.97 | 3.07 | 1.90 | 6.32 | 1.77 | 1.35 | 0.69 | 0.80 | 3.70 | 2.51 | 6.01 | 3.85 | 0.69 |
| | Sado-seki | Mean | 3.71 | 3.00 | 2.57 | 4.04 | 2.12 | 2.04 | 0.88 | 1.99 | 1.91 | 3.40 | 3.42 | 2.23 | 2.57 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 4.74 | 3.00 | 2.57 | 5.72 | 2.67 | 2.89 | 1.08 | 2.73 | 3.05 | 3.94 | 4.87 | 3.56 | 5.72 |
| | | Min-2w | 3.03 | 3.00 | 2.57 | 2.35 | 1.57 | 1.18 | 0.54 | 1.25 | 0.77 | 2.86 | 1.97 | 0.90 | 0.54 |
| | Happo | Mean | 0.08 | 0.11 | 0.10 | 0.08 | 0.08 | 0.04 | 0.04 | 0.05 | 0.19 | 0.06 | 0.12 | 0.05 | 0.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.10 | 0.11 | 0.11 | 0.08 | 0.08 | 0.05 | 0.07 | 0.08 | 0.35 | 0.06 | 0.12 | 0.06 | 0.35 |
| | | Min-2w | 0.05 | 0.10 | 0.09 | 0.08 | 0.08 | 0.03 | 0.02 | 0.01 | 0.03 | 0.05 | 0.12 | 0.05 | 0.01 |
| | Ijira | Mean | 0.22 | 0.28 | 0.24 | 0.34 | 0.37 | 0.23 | 0.27 | 0.21 | 0.27 | 0.15 | 0.22 | 0.18 | 0.25 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.28 | 0.34 | 0.25 | 0.39 | 0.44 | 0.24 | 0.58 | 0.30 | 0.29 | 0.18 | 0.29 | 0.18 | 0.58 |
| | | Min-2w | 0.16 | 0.22 | 0.24 | 0.29 | 0.29 | 0.23 | 0.06 | 0.12 | 0.26 | 0.12 | 0.15 | 0.17 | 0.06 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 6.49 | 6.87 | 6.68 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 7.28 | 7.72 | 7.72 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 5.69 | 6.03 | 5.69 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 2.35 | 2.11 | 2.23 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 2.60 | 2.38 | 2.60 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 2.11 | 1.85 | 1.85 |
| | Yusuhara | Mean | 0.32 | 0.37 | 0.26 | 0.27 | 0.26 | 0.18 | 0.15 | 0.31 | 0.23 | 0.23 | 0.51 | 0.32 | 0.28 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.33 | 0.44 | 0.30 | 0.27 | 0.31 | 0.20 | 0.21 | 0.43 | 0.25 | 0.32 | 0.58 | 0.33 | 0.58 |
| | | Min-2w | 0.30 | 0.33 | 0.22 | 0.26 | 0.21 | 0.17 | 0.10 | 0.20 | 0.21 | 0.14 | 0.43 | 0.30 | 0.10 |
| | Hedo | Mean | 5.92 | 6.76 | 5.66 | 3.75 | 2.97 | 2.41 | 2.53 | 3.95 | 4.74 | 9.79 | 7.14 | 5.54 | 5.03 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 6.41 | 7.53 | 6.52 | 4.12 | 4.17 | 2.58 | 5.39 | 4.05 | 6.45 | 14.10 | 7.24 | 6.50 | 14.10 |
| | | Min-2w | 5.53 | 6.00 | 4.81 | 3.38 | 1.76 | 2.23 | 0.69 | 3.84 | 3.03 | 5.48 | 7.04 | 4.58 | 0.69 |
| | Ogasawara | Mean | 3.17 | 3.21 | 3.14 | 2.57 | 1.98 | 1.36 | 1.31 | 2.12 | 1.29 | 3.32 | 4.27 | 2.55 | 2.50 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 3.53 | 3.25 | 3.48 | 3.63 | 2.17 | 1.51 | 1.90 | 2.79 | 1.41 | 3.55 | 4.30 | 2.66 | 4.30 |
| | | Min-2w | 2.92 | 3.16 | 2.80 | 1.52 | 1.79 | 1.21 | 0.91 | 1.45 | 1.18 | 3.09 | 4.24 | 2.44 | 0.91 |
| | Tokyo | Mean | 0.32 | 0.59 | 0.41 | 1.10 | 0.99 | 0.92 | 0.77 | 1.06 | 1.08 | 0.97 | - | 0.35 | 0.76 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.42 | 0.83 | 0.48 | 1.17 | 1.14 | 0.92 | 0.94 | 1.20 | 1.10 | 0.99 | - | 0.39 | 1.20 |
| | | Min-2w | 0.26 | 0.36 | 0.34 | 1.02 | 0.84 | 0.91 | 0.53 | 0.92 | 1.07 | 0.96 | - | 0.30 | 0.26 |

**Table 4.17 Particulate matter component: $Na^+$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.24 | - | 0.19 | 0.10 | - | 0.25 | 0.36 | 0.48 | 0.20 | 0.33 | 0.27 | 0.40 | 0.30 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.56 | - | 0.41 | 0.10 | - | 0.25 | 0.48 | 0.84 | 0.27 | 0.65 | 0.32 | 0.72 | 0.84 |
| | | Min-w | 0.09 | - | <0.01 | 0.10 | - | 0.25 | 0.28 | 0.30 | 0.14 | 0.16 | 0.22 | 0.06 | <0.01 |
| | Tanah Rata | Mean | 0.03 | 0.11 | 0.13 | 0.03 | 0.03 | 0.08 | 0.14 | 0.08 | 0.05 | 0.10 | 0.03 | 0.16 | 0.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.11 | 0.36 | 0.33 | 0.04 | 0.06 | 0.18 | 0.20 | 0.13 | 0.08 | 0.23 | 0.09 | 0.27 | 0.36 |
| | | Min-w | <0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.06 | 0.03 | 0.02 | 0.03 | <0.01 | 0.02 | <0.01 |
| | Danum Valley | Mean | 0.11 | 0.70 | 0.48 | 0.18 | 0.05 | 0.03 | 0.11 | 0.07 | 0.08 | 0.09 | 0.17 | 0.19 | 0.18 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.22 | 0.73 | 0.52 | 0.18 | 0.12 | 0.04 | 0.16 | 0.11 | 0.09 | 0.11 | 0.17 | 0.25 | 0.73 |
| | | Min-2w | 0.01 | 0.67 | 0.44 | 0.17 | 0.02 | 0.03 | 0.05 | 0.03 | 0.06 | 0.05 | 0.17 | 0.15 | 0.01 |
| Mongolia | Ulaanbaatar | Mean | 0.89 | 0.94 | 0.26 | 0.11 | 0.17 | 0.13 | 0.09 | 0.19 | 0.11 | 0.13 | 0.45 | 0.30 | 0.31 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 1.84 | 2.21 | 0.52 | 0.16 | 0.23 | 0.20 | 0.16 | 0.58 | 0.18 | 0.21 | 1.31 | 0.67 | 2.21 |
| | | Min-w | 0.08 | 0.11 | 0.04 | 0.08 | 0.13 | 0.06 | 0.04 | 0.08 | 0.06 | 0.06 | 0.15 | 0.10 | 0.04 |
| | Terelj | Mean | - | - | - | - | - | 0.03 | 0.04 | 0.01 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.04 | 0.05 | 0.01 | 0.02 | 0.05 | 0.04 | 0.03 | 0.05 |
| | | Min-2w | - | - | - | - | - | 0.03 | 0.02 | <0.01 | 0.02 | <0.01 | 0.02 | 0.02 | <0.01 |
| Myanmar | Yangon | Mean | 0.37 | 0.43 | 0.13 | 0.43 | <0.01 | 0.29 | 0.02 | 0.24 | 0.22 | 0.04 | 0.04 | 0.26 | 0.19 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.37 | 0.52 | 0.26 | 0.86 | <0.01 | 0.58 | 0.03 | 0.48 | 0.45 | 0.12 | 0.04 | 0.26 | 0.86 |
| | | Min-2w | 0.37 | 0.35 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.04 | 0.26 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 0.25 | 0.26 | 0.20 | 0.34 | 0.30 | 0.29 | 0.15 | 0.09 | 0.19 | 0.13 | 0.26 | 0.21 | 0.23 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.54 | 0.34 | 0.38 | 0.60 | 0.53 | 0.64 | 0.20 | 0.14 | 0.25 | 0.18 | 0.41 | 0.23 | 0.64 |
| | | Min-d | 0.14 | 0.17 | 0.10 | 0.24 | 0.17 | 0.04 | 0.09 | <0.01 | 0.09 | 0.06 | 0.16 | 0.17 | <0.01 |
| | Cheju (Kosan) | Mean | 0.73 | 0.34 | 0.40 | 0.35 | 0.29 | 0.27 | 0.26 | 0.17 | 0.46 | 0.32 | 0.64 | 0.46 | 0.38 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 1.00 | 0.46 | 0.95 | 0.67 | 0.37 | 0.46 | 0.48 | 0.27 | 0.70 | 0.63 | 1.38 | 0.65 | 1.38 |
| | | Min-d | 0.46 | 0.24 | 0.18 | 0.15 | 0.23 | 0.15 | 0.17 | 0.08 | 0.19 | 0.12 | 0.26 | 0.17 | 0.08 |
| | Imsil | Mean | 0.35 | 0.35 | 0.44 | 0.33 | 0.23 | 0.24 | 0.25 | 0.16 | 0.15 | 0.18 | 0.23 | 0.23 | 0.26 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 0.47 | 0.39 | 0.68 | 0.37 | 0.29 | 0.26 | 0.28 | 0.16 | 0.17 | 0.22 | 0.26 | 0.32 | 0.68 |
| | | Min-d | 0.28 | 0.27 | 0.26 | 0.26 | 0.19 | 0.23 | 0.22 | 0.16 | 0.12 | 0.11 | 0.18 | 0.19 | 0.11 |
| Russia | Mondy | Mean | 0.02 | 0.34 | 0.54 | 0.99 | 0.05 | 0.09 | 0.02 | 0.03 | 0.07 | 0.03 | 0.02 | 0.02 | 0.16 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.03 | 0.34 | 1.05 | 0.99 | 0.08 | 0.13 | 0.02 | 0.03 | 0.09 | 0.03 | 0.02 | 0.02 | 1.05 |
| | | Min-m | 0.02 | 0.34 | 0.03 | 0.99 | 0.02 | 0.06 | 0.02 | 0.03 | 0.05 | 0.03 | 0.02 | 0.01 | 0.01 |
| | Listvyanka | Mean | 0.04 | 0.69 | 0.35 | 0.10 | 0.01 | 0.43 | 0.54 | 0.15 | 0.31 | 0.07 | 0.04 | 0.04 | 0.24 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.08 | 1.03 | 0.83 | 0.20 | 0.02 | 1.22 | 0.79 | 0.37 | 0.69 | 0.10 | 0.04 | 0.05 | 1.22 |
| | | Min-w | 0.01 | 0.27 | <0.01 | 0.03 | <0.01 | 0.04 | 0.27 | 0.06 | 0.01 | 0.03 | 0.03 | 0.04 | <0.01 |
| | Irkutsk | Mean | 0.26 | 1.58 | 1.08 | 1.12 | 0.29 | 0.05 | 0.38 | 0.20 | 0.07 | 0.16 | 0.12 | 0.33 | 0.45 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.83 | 2.54 | 1.99 | 1.22 | 0.63 | 0.09 | 0.78 | 0.55 | 0.11 | 0.23 | 0.16 | 1.07 | 2.54 |
| | | Min-w | 0.06 | 0.23 | 0.15 | 1.02 | 0.07 | 0.02 | 0.07 | 0.05 | 0.04 | 0.08 | 0.07 | 0.12 | 0.02 |
| | Primorskaya | Mean | 0.21 | 0.01 | 0.04 | 0.31 | 0.14 | 0.04 | 0.02 | 0.08 | 0.12 | 0.09 | 0.10 | 0.04 | 0.10 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.39 | 0.02 | 0.05 | 0.39 | 0.19 | 0.06 | 0.03 | 0.11 | 0.16 | 0.12 | 0.14 | 0.05 | 0.39 |
| | | Min-2w | 0.03 | <0.01 | 0.03 | 0.23 | 0.09 | 0.02 | <0.01 | 0.05 | 0.08 | 0.05 | 0.07 | 0.04 | <0.01 |
| Thailand | Bangkok | Mean | 0.27 | 0.29 | 0.13 | 0.38 | <0.01 | 0.09 | 0.03 | 0.03 | 0.01 | 0.01 | 0.22 | 0.32 | 0.15 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.35 | 0.88 | 0.33 | 0.41 | <0.01 | 0.16 | 0.05 | 0.05 | 0.04 | 0.04 | 0.26 | 0.42 | 0.88 |
| | | Min-10d | 0.15 | <0.01 | <0.01 | 0.32 | <0.01 | 0.05 | <0.01 | 0.02 | <0.01 | <0.01 | 0.18 | 0.20 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.05 | - | - | 0.49 | - | - | - | 0.06 | - | 0.20 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.05 | - | - | 0.49 | - | - | - | 0.06 | - | 0.49 |
| | | Min-2w | - | - | - | 0.05 | - | - | 0.49 | - | - | - | 0.06 | - | 0.05 |
| | Mae Hia | Mean | 0.12 | 1.07 | 0.17 | 0.24 | 0.08 | 0.29 | 0.08 | 0.04 | 0.30 | 0.12 | - | - | 0.25 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.25 | 2.91 | 0.43 | 0.47 | 0.13 | 0.39 | 0.12 | 0.13 | 0.51 | 0.29 | - | - | 2.91 |
| | | Min-10d | 0.05 | 0.08 | <0.01 | 0.10 | <0.01 | 0.15 | 0.02 | <0.01 | <0.01 | <0.01 | - | - | <0.01 |
| | Sakaerat | Mean | 0.18 | 0.23 | 0.33 | 0.23 | 0.12 | 0.28 | 0.16 | 0.19 | 0.06 | 0.06 | - | - | 0.18 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.24 | 0.34 | 0.49 | 0.28 | 0.19 | 0.45 | 0.29 | 0.38 | 0.11 | 0.10 | - | - | 0.49 |
| | | Min-10d | 0.13 | 0.10 | 0.13 | 0.17 | 0.02 | 0.18 | <0.01 | 0.03 | 0.02 | 0.03 | - | - | <0.01 |

**Table 4.17 Particulate matter component: $Na^+$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 1.43 | 2.47 | 3.26 | 1.86 | 1.04 | 1.53 | 0.63 | 0.69 | 0.69 | 0.50 | 1.84 | 0.97 | 1.44 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.44 | 4.84 | 7.78 | 2.41 | 1.23 | 2.27 | 0.73 | 1.34 | 1.06 | 0.68 | 4.32 | 1.35 | 7.78 |
| | | Min-w | 0.79 | 0.60 | 1.72 | 1.16 | 0.67 | 0.68 | 0.50 | 0.46 | 0.44 | 0.32 | 0.48 | 0.60 | 0.32 |
| | Hoa Binh | Mean | 0.96 | 0.69 | 0.95 | 0.62 | 0.74 | 0.78 | 0.25 | 0.18 | 0.32 | 0.28 | 0.30 | 0.42 | 0.54 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.22 | 0.83 | 2.07 | 0.73 | 0.89 | 1.02 | 0.31 | 0.28 | 0.44 | 0.31 | 0.43 | 0.50 | 2.07 |
| | | Min-w | 0.58 | 0.51 | 0.44 | 0.48 | 0.58 | 0.30 | 0.16 | 0.08 | 0.20 | 0.24 | 0.15 | 0.31 | 0.08 |
| | Can Tho | Mean | 0.56 | 0.49 | 0.49 | 0.57 | 0.41 | 0.42 | 0.39 | 0.42 | 0.49 | 0.54 | 0.52 | 0.49 | 0.48 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.74 | 0.68 | 0.67 | 0.70 | 0.54 | 0.63 | 0.54 | 0.60 | 0.60 | 0.65 | 0.60 | 0.61 | 0.74 |
| | | Min-w | 0.39 | 0.37 | 0.35 | 0.42 | 0.33 | 0.30 | 0.29 | 0.26 | 0.38 | 0.47 | 0.42 | 0.39 | 0.26 |
| | Ho Chi Minh | Mean | 1.51 | 1.40 | 0.94 | 1.47 | 0.95 | 0.82 | 0.60 | 0.66 | 0.89 | 1.11 | 0.95 | 1.71 | 1.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.21 | 2.34 | 1.37 | 1.72 | 1.65 | 1.06 | 1.01 | 0.97 | 1.14 | 1.36 | 1.23 | 2.03 | 2.34 |
| | | Min-w | 0.65 | 0.67 | 0.67 | 1.21 | 0.38 | 0.69 | 0.36 | 0.39 | 0.67 | 0.93 | 0.67 | 1.42 | 0.36 |
| | Yen Bai | Mean | 1.76 | 1.34 | 1.18 | 1.37 | 0.98 | 0.71 | 0.58 | 0.56 | 0.76 | 0.34 | 0.43 | 0.69 | 0.88 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 3.17 | 2.35 | 1.78 | 1.49 | 1.50 | 0.91 | 0.71 | 0.70 | 2.02 | 0.43 | 0.74 | 1.64 | 3.17 |
| | | Min-w | 0.75 | 0.47 | 0.62 | 1.31 | 0.45 | 0.53 | 0.52 | 0.38 | 0.25 | 0.24 | 0.26 | 0.32 | 0.24 |

Terms and abbreviations are given in Table 4.2.

**Table 4.18 Particulate matter component: $K^+$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 0.49 | 0.69 | 0.98 | 0.61 | 0.55 | 0.50 | 0.42 | 0.55 | 0.48 | 0.56 | 0.49 | 0.45 | 0.56 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.70 | 0.74 | 0.99 | 0.65 | 0.62 | 0.51 | 0.48 | 0.66 | 0.56 | 0.65 | 0.67 | 0.46 | 0.99 |
| | | Min-2w | 0.27 | 0.63 | 0.97 | 0.58 | 0.42 | 0.50 | 0.35 | 0.44 | 0.41 | 0.39 | 0.31 | 0.45 | 0.27 |
| China | Hongwen | Mean | 1.00 | 1.11 | 0.62 | 0.21 | 0.35 | 0.21 | 0.05 | 0.30 | 0.54 | 0.35 | 0.42 | 0.56 | 0.51 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 1.42 | 1.11 | 0.85 | 0.21 | 0.35 | 0.21 | 0.05 | 0.30 | 0.54 | 0.51 | 0.42 | 0.56 | 1.42 |
| | | Min-m | 0.59 | 1.11 | 0.38 | 0.21 | 0.35 | 0.21 | 0.05 | 0.30 | 0.54 | 0.20 | 0.42 | 0.56 | 0.05 |
| Indonesia | Jakarta | Mean | 0.04 | 0.06 | 0.07 | 0.28 | 0.40 | 0.39 | 0.22 | 0.26 | 0.25 | <0.01 | 0.37 | 0.14 | 0.22 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.06 | 0.10 | 0.13 | 0.28 | 0.70 | 0.46 | 0.24 | 0.31 | 0.28 | <0.01 | 0.59 | 0.14 | 0.70 |
| | | Min-2w | 0.03 | 0.02 | 0.02 | 0.28 | 0.10 | 0.33 | 0.20 | 0.21 | 0.21 | <0.01 | 0.15 | 0.14 | <0.01 |
| | Serpong | Mean | 0.27 | 0.26 | 0.15 | 0.21 | 0.35 | 0.27 | 0.35 | 0.33 | 0.34 | 0.20 | 0.33 | 0.29 | 0.28 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.27 | 0.26 | 0.27 | 0.26 | 0.54 | 0.27 | 0.38 | 0.35 | 0.34 | 0.25 | 0.43 | 0.31 | 0.54 |
| | | Min-2w | 0.27 | 0.26 | 0.02 | 0.16 | 0.25 | 0.27 | 0.33 | 0.32 | 0.33 | 0.12 | 0.23 | 0.26 | 0.02 |
| | Bandung | Mean | 0.22 | 0.28 | 0.45 | 0.50 | 0.51 | 0.52 | 0.46 | 0.68 | 0.74 | 0.40 | 0.29 | 0.56 | 0.47 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.29 | 0.34 | 0.52 | 0.58 | 0.54 | 0.52 | 0.51 | 0.70 | 0.77 | 0.48 | 0.29 | 0.72 | 0.77 |
| | | Min-2w | 0.16 | 0.22 | 0.38 | 0.43 | 0.49 | 0.51 | 0.42 | 0.65 | 0.71 | 0.32 | 0.29 | 0.41 | 0.16 |
| Japan | Rishiri | Mean | 0.11 | 0.12 | 0.07 | 0.20 | 0.14 | 0.10 | 0.08 | 0.09 | 0.15 | 0.24 | 0.19 | 0.13 | 0.13 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.11 | 0.13 | 0.09 | 0.31 | 0.16 | 0.12 | 0.13 | 0.13 | 0.22 | 0.28 | 0.20 | 0.13 | 0.31 |
| | | Min-2w | 0.10 | 0.10 | 0.06 | 0.08 | 0.13 | 0.08 | 0.06 | 0.04 | 0.09 | 0.19 | 0.18 | 0.13 | 0.04 |
| | Ochiishi | Mean | 0.11 | 0.12 | 0.09 | 0.19 | 0.12 | 0.04 | 0.06 | 0.09 | 0.12 | 0.16 | 0.24 | 0.17 | 0.11 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.15 | 0.13 | 0.09 | 0.23 | 0.15 | 0.04 | 0.07 | 0.11 | 0.12 | 0.16 | 0.24 | 0.17 | 0.24 |
| | | Min-2w | 0.07 | 0.10 | 0.09 | 0.15 | 0.10 | 0.04 | 0.05 | 0.08 | 0.12 | 0.16 | 0.24 | 0.17 | 0.04 |
| | Tappi | Mean | 0.19 | 0.15 | 0.15 | 0.37 | 0.13 | 0.13 | 0.09 | 0.07 | 0.18 | 0.23 | 0.32 | 0.35 | 0.19 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.29 | 0.16 | 0.19 | 0.43 | 0.15 | 0.19 | 0.09 | 0.11 | 0.20 | 0.30 | 0.35 | 0.51 | 0.51 |
| | | Min-2w | 0.11 | 0.14 | 0.11 | 0.31 | 0.11 | 0.08 | 0.08 | 0.04 | 0.17 | 0.17 | 0.29 | 0.19 | 0.04 |
| | Sado-seki | Mean | 0.16 | 0.12 | 0.21 | 0.23 | 0.14 | 0.15 | 0.08 | 0.09 | 0.10 | 0.17 | 0.15 | 0.09 | 0.14 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 0.20 | 0.12 | 0.21 | 0.26 | 0.16 | 0.21 | 0.09 | 0.11 | 0.16 | 0.22 | 0.21 | 0.15 | 0.26 |
| | | Min-2w | 0.12 | 0.12 | 0.21 | 0.19 | 0.11 | 0.09 | 0.06 | 0.07 | 0.04 | 0.12 | 0.08 | 0.04 | 0.04 |
| | Happo | Mean | 0.02 | 0.03 | 0.09 | 0.05 | 0.04 | 0.03 | 0.03 | 0.01 | 0.03 | 0.01 | 0.02 | 0.01 | 0.03 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.02 | 0.03 | 0.09 | 0.05 | 0.04 | 0.03 | 0.04 | 0.02 | 0.05 | 0.01 | 0.02 | 0.01 | 0.09 |
| | | Min-2w | 0.02 | 0.03 | 0.09 | 0.04 | 0.04 | 0.02 | 0.02 | <0.01 | <0.01 | 0.01 | 0.02 | <0.01 | <0.01 |
| | Ijira | Mean | 0.05 | 0.07 | 0.14 | 0.13 | 0.14 | 0.10 | 0.16 | 0.09 | 0.09 | 0.08 | 0.08 | 0.06 | 0.10 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.06 | 0.08 | 0.16 | 0.15 | 0.16 | 0.11 | 0.19 | 0.11 | 0.10 | 0.09 | 0.11 | 0.07 | 0.19 |
| | | Min-2w | 0.03 | 0.07 | 0.11 | 0.11 | 0.11 | 0.09 | 0.13 | 0.08 | 0.09 | 0.07 | 0.05 | 0.06 | 0.03 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.31 | 0.27 | 0.29 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.37 | 0.29 | 0.37 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.26 | 0.24 | 0.24 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.17 | 0.17 | 0.17 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.19 | 0.24 | 0.24 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.14 | 0.11 | 0.11 |
| | Yusuhara | Mean | 0.05 | 0.08 | 0.10 | 0.10 | 0.08 | 0.09 | 0.04 | 0.09 | 0.07 | 0.04 | 0.12 | 0.06 | 0.07 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.05 | 0.12 | 0.11 | 0.10 | 0.11 | 0.11 | 0.05 | 0.12 | 0.09 | 0.06 | 0.16 | 0.06 | 0.16 |
| | | Min-2w | 0.05 | 0.05 | 0.09 | 0.09 | 0.06 | 0.06 | 0.03 | 0.05 | 0.05 | 0.03 | 0.07 | 0.05 | 0.03 |
| | Hedo | Mean | 0.28 | 0.35 | 0.33 | 0.24 | 0.20 | 0.17 | 0.13 | 0.17 | 0.21 | 0.37 | 0.33 | 0.23 | 0.25 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.29 | 0.41 | 0.38 | 0.26 | 0.21 | 0.18 | 0.24 | 0.19 | 0.27 | 0.53 | 0.35 | 0.28 | 0.53 |
| | | Min-2w | 0.25 | 0.30 | 0.28 | 0.23 | 0.18 | 0.17 | 0.04 | 0.16 | 0.15 | 0.22 | 0.31 | 0.19 | 0.04 |
| | Ogasawara | Mean | 0.13 | 0.14 | 0.16 | 0.13 | 0.11 | 0.08 | 0.07 | 0.11 | 0.06 | 0.14 | 0.18 | 0.10 | 0.12 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.14 | 0.14 | 0.17 | 0.16 | 0.13 | 0.09 | 0.09 | 0.11 | 0.07 | 0.15 | 0.18 | 0.11 | 0.18 |
| | | Min-2w | 0.12 | 0.13 | 0.14 | 0.09 | 0.10 | 0.07 | 0.05 | 0.11 | 0.06 | 0.13 | 0.18 | 0.10 | 0.05 |
| | Tokyo | Mean | 0.09 | 0.09 | 0.14 | 0.18 | 0.14 | 0.12 | 0.14 | 0.13 | 0.12 | 0.14 | - | 0.13 | 0.13 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.10 | 0.10 | 0.14 | 0.19 | 0.14 | 0.12 | 0.15 | 0.15 | 0.13 | 0.14 | - | 0.14 | 0.19 |
| | | Min-2w | 0.08 | 0.08 | 0.13 | 0.18 | 0.13 | 0.12 | 0.12 | 0.11 | 0.11 | 0.14 | - | 0.12 | 0.08 |

**Table 4.18 Particulate matter component: $K^+$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.20 | - | 0.19 | 0.17 | - | 0.23 | 0.29 | 0.28 | 0.25 | 0.45 | 0.34 | 0.25 | 0.28 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.29 | - | 0.36 | 0.17 | - | 0.23 | 0.38 | 0.33 | 0.45 | 0.93 | 0.38 | 0.37 | 0.93 |
| | | Min-w | 0.11 | - | <0.01 | 0.17 | - | 0.23 | 0.19 | 0.19 | 0.14 | 0.28 | 0.30 | 0.01 | <0.01 |
| | Tanah Rata | Mean | 0.01 | 0.05 | 0.14 | 0.05 | 0.08 | 0.09 | 0.20 | 0.11 | 0.07 | 0.10 | 0.03 | 0.06 | 0.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.03 | 0.17 | 0.28 | 0.08 | 0.10 | 0.20 | 0.32 | 0.14 | 0.14 | 0.19 | 0.07 | 0.15 | 0.32 |
| | | Min-w | <0.01 | <0.01 | 0.04 | 0.01 | 0.06 | 0.02 | 0.11 | 0.07 | 0.02 | 0.06 | <0.01 | <0.01 | <0.01 |
| | Danum Valley | Mean | 0.07 | 0.18 | 0.16 | 0.15 | 0.13 | 0.15 | 0.22 | 0.12 | 0.11 | 0.19 | 0.17 | 0.13 | 0.15 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.14 | 0.19 | 0.20 | 0.18 | 0.15 | 0.16 | 0.26 | 0.17 | 0.17 | 0.23 | 0.17 | 0.14 | 0.26 |
| | | Min-2w | <0.01 | 0.17 | 0.12 | 0.11 | 0.09 | 0.14 | 0.18 | 0.07 | 0.05 | 0.15 | 0.17 | 0.11 | <0.01 |
| Mongolia | Ulaanbaatar | Mean | 0.21 | 0.21 | 0.16 | 0.10 | 0.13 | 0.10 | 0.09 | 0.15 | 0.08 | 0.13 | 0.25 | 0.15 | 0.15 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 0.42 | 0.40 | 0.26 | 0.16 | 0.19 | 0.17 | 0.16 | 0.44 | 0.12 | 0.20 | 0.61 | 0.23 | 0.61 |
| | | Min-w | 0.08 | 0.06 | 0.02 | 0.07 | 0.11 | 0.04 | 0.04 | 0.06 | 0.06 | 0.06 | 0.09 | 0.06 | 0.02 |
| | Terelj | Mean | - | - | - | - | - | 0.03 | 0.05 | 0.01 | 0.02 | 0.03 | 0.03 | 0.02 | 0.03 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.03 | 0.05 | 0.01 | 0.02 | 0.05 | 0.05 | 0.03 | 0.05 |
| | | Min-2w | - | - | - | - | - | 0.03 | 0.04 | <0.01 | 0.02 | <0.01 | 0.02 | 0.02 | <0.01 |
| Myanmar | Yangon | Mean | 1.25 | 1.52 | 1.20 | 0.73 | 0.05 | 0.06 | 0.02 | 0.11 | 0.28 | 0.05 | 0.55 | 0.78 | 0.47 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 1.25 | 1.63 | 1.63 | 1.47 | 0.14 | 0.11 | 0.04 | 0.16 | 0.55 | 0.16 | 0.55 | 0.78 | 1.63 |
| | | Min-2w | 1.25 | 1.42 | 0.76 | <0.01 | <0.01 | <0.01 | <0.01 | 0.05 | <0.01 | <0.01 | 0.55 | 0.78 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 0.25 | 0.20 | 0.22 | 0.18 | 0.09 | 0.08 | 0.03 | 0.04 | 0.12 | 0.19 | 0.17 | 0.32 | 0.17 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.62 | 0.41 | 0.53 | 0.46 | 0.14 | 0.15 | 0.07 | 0.06 | 0.20 | 0.37 | 0.27 | 0.53 | 0.62 |
| | | Min-d | 0.07 | 0.09 | 0.04 | 0.06 | 0.04 | <0.01 | <0.01 | 0.02 | 0.02 | 0.02 | 0.12 | 0.08 | <0.01 |
| | Cheju (Kosan) | Mean | 0.19 | 0.08 | 0.14 | 0.08 | 0.03 | 0.11 | 0.15 | 0.05 | 0.15 | 0.02 | 0.12 | 0.13 | 0.10 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 0.28 | 0.20 | 0.21 | 0.14 | 0.04 | 0.14 | 0.27 | 0.07 | 0.19 | 0.05 | 0.28 | 0.21 | 0.28 |
| | | Min-d | 0.10 | 0.03 | 0.04 | 0.03 | <0.01 | 0.08 | 0.11 | 0.04 | 0.10 | <0.01 | 0.03 | 0.08 | <0.01 |
| | Imsil | Mean | 0.12 | 0.11 | 0.16 | 0.24 | 0.11 | 0.21 | 0.11 | 0.07 | 0.13 | 0.08 | 0.26 | 0.15 | 0.15 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 0.19 | 0.17 | 0.29 | 0.39 | 0.28 | 0.34 | 0.15 | 0.07 | 0.18 | 0.22 | 0.50 | 0.25 | 0.50 |
| | | Min-d | 0.06 | 0.07 | 0.09 | 0.13 | 0.04 | 0.12 | 0.08 | 0.07 | 0.09 | <0.01 | 0.05 | 0.09 | <0.01 |
| Russia | Mondy | Mean | 0.01 | 0.02 | 0.26 | 0.37 | 0.02 | 0.13 | 0.03 | 0.04 | 0.02 | 0.06 | 0.03 | 0.01 | 0.08 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.02 | 0.02 | 0.47 | 0.37 | 0.03 | 0.23 | 0.03 | 0.04 | 0.02 | 0.06 | 0.03 | 0.02 | 0.47 |
| | | Min-m | <0.01 | 0.02 | 0.05 | 0.37 | 0.02 | 0.03 | 0.03 | 0.04 | 0.02 | 0.06 | 0.02 | <0.01 | <0.01 |
| | Listvyanka | Mean | 0.04 | 0.46 | 0.12 | 0.07 | 0.05 | 0.61 | 0.99 | 0.07 | 0.57 | 0.03 | 0.01 | 0.02 | 0.28 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.07 | 0.86 | 0.25 | 0.24 | 0.08 | 2.38 | 1.54 | 0.11 | 1.31 | 0.04 | 0.02 | 0.03 | 2.38 |
| | | Min-w | 0.01 | 0.18 | <0.01 | <0.01 | <0.01 | <0.01 | 0.20 | 0.03 | <0.01 | 0.01 | <0.01 | 0.02 | <0.01 |
| | Irkutsk | Mean | 0.17 | 2.59 | 0.89 | 0.23 | 0.13 | 0.07 | 0.77 | 0.81 | 0.13 | 0.65 | 0.07 | 0.14 | 0.53 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.24 | 3.96 | 2.35 | 0.31 | 0.41 | 0.07 | 1.51 | 1.40 | 0.18 | 1.66 | 0.09 | 0.25 | 3.96 |
| | | Min-w | 0.08 | 0.11 | 0.18 | 0.16 | 0.01 | 0.07 | 0.08 | 0.23 | 0.05 | 0.07 | 0.05 | 0.03 | 0.01 |
| | Primorskaya | Mean | 0.18 | 0.10 | 0.17 | 0.33 | 0.13 | 0.04 | 0.02 | 0.04 | 0.06 | 0.30 | 0.17 | 0.13 | 0.14 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.33 | 0.15 | 0.21 | 0.34 | 0.15 | 0.05 | 0.03 | 0.07 | 0.07 | 0.58 | 0.20 | 0.18 | 0.58 |
| | | Min-2w | 0.04 | 0.04 | 0.14 | 0.33 | 0.11 | 0.03 | <0.01 | 0.01 | 0.04 | 0.02 | 0.15 | 0.08 | <0.01 |
| Thailand | Bangkok | Mean | 0.46 | 0.31 | 0.05 | 0.19 | <0.01 | 0.07 | 0.07 | 0.08 | 0.04 | 0.03 | 0.55 | 0.68 | 0.21 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.70 | 0.50 | 0.16 | 0.31 | <0.01 | 0.09 | 0.09 | 0.11 | 0.11 | 0.03 | 0.66 | 0.73 | 0.73 |
| | | Min-10d | 0.31 | 0.03 | <0.01 | 0.10 | <0.01 | 0.05 | 0.02 | 0.04 | <0.01 | 0.02 | 0.49 | 0.64 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.24 | - | - | 20.20 | - | - | - | 0.26 | - | 6.90 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.24 | - | - | 20.20 | - | - | - | 0.26 | - | 20.20 |
| | | Min-2w | - | - | - | 0.24 | - | - | 20.20 | - | - | - | 0.26 | - | 0.24 |
| | Mae Hia | Mean | 0.11 | 0.48 | 0.19 | 0.57 | 0.11 | 0.02 | 0.05 | 0.04 | 0.16 | 0.18 | - | - | 0.19 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.24 | 1.11 | 0.41 | 0.86 | 0.18 | 0.06 | 0.16 | 0.06 | 0.18 | 0.20 | - | - | 1.11 |
| | | Min-10d | 0.01 | 0.13 | 0.04 | 0.23 | <0.01 | <0.01 | <0.01 | 0.02 | 0.11 | 0.16 | - | - | <0.01 |
| | Sakaerat | Mean | 0.34 | 0.54 | 0.49 | 0.25 | 0.20 | <0.01 | 0.08 | 0.13 | 0.14 | 0.01 | - | - | 0.22 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.42 | 0.59 | 0.71 | 0.38 | 0.34 | <0.01 | 0.14 | 0.17 | 0.14 | 0.03 | - | - | 0.71 |
| | | Min-10d | 0.28 | 0.51 | 0.26 | 0.13 | 0.12 | <0.01 | <0.01 | 0.05 | 0.13 | <0.01 | - | - | <0.01 |

**Table 4.18 Particulate matter component: $K^+$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 1.06 | 1.76 | 1.24 | 0.72 | 0.46 | 0.90 | 0.27 | 0.60 | 0.55 | 0.79 | 1.48 | 1.53 | 0.96 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.34 | 3.81 | 3.95 | 1.24 | 0.68 | 1.53 | 0.54 | 1.25 | 0.64 | 1.83 | 2.81 | 2.21 | 3.95 |
| | | Min-w | 0.45 | 0.63 | 0.05 | 0.08 | 0.22 | 0.57 | 0.13 | 0.34 | 0.41 | 0.32 | 0.77 | 0.96 | 0.05 |
| | Hoa Binh | Mean | 0.41 | 0.15 | 0.44 | 0.32 | 0.36 | 0.62 | 0.17 | 0.09 | 0.34 | 0.31 | 0.20 | 0.29 | 0.31 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.68 | 0.39 | 0.90 | 0.47 | 0.64 | 1.12 | 0.27 | 0.11 | 0.64 | 0.40 | 0.39 | 0.60 | 1.12 |
| | | Min-w | 0.14 | 0.04 | 0.11 | 0.15 | 0.18 | 0.12 | 0.08 | 0.06 | 0.13 | 0.26 | 0.02 | 0.02 | 0.02 |
| | Can Tho | Mean | 0.38 | 0.38 | 0.27 | 0.37 | 0.26 | 0.22 | 0.15 | 0.20 | 0.26 | 0.34 | 0.33 | 0.31 | 0.29 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.51 | 0.56 | 0.45 | 0.54 | 0.33 | 0.40 | 0.28 | 0.45 | 0.39 | 0.41 | 0.40 | 0.36 | 0.56 |
| | | Min-w | 0.26 | 0.27 | 0.15 | 0.20 | 0.19 | 0.09 | 0.07 | 0.04 | 0.07 | 0.27 | 0.26 | 0.22 | 0.04 |
| | Ho Chi Minh | Mean | 1.11 | 0.72 | 0.49 | 1.22 | 0.61 | 0.40 | 0.33 | 0.36 | 0.44 | 0.58 | 0.55 | 1.06 | 0.66 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.75 | 1.02 | 0.60 | 1.42 | 1.00 | 0.54 | 0.54 | 0.55 | 0.61 | 0.68 | 0.75 | 1.41 | 1.75 |
| | | Min-w | 0.30 | 0.39 | 0.34 | 1.10 | 0.21 | 0.31 | 0.22 | 0.20 | 0.29 | 0.48 | 0.42 | 0.81 | 0.20 |
| | Yen Bai | Mean | 0.69 | 0.87 | 0.85 | 0.72 | 0.42 | 0.60 | 1.00 | 0.97 | 1.01 | 0.72 | 1.27 | 1.84 | 0.91 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.14 | 2.27 | 1.24 | 1.23 | 0.60 | 1.36 | 1.30 | 1.13 | 1.39 | 1.63 | 1.58 | 2.62 | 2.62 |
| | | Min-w | 0.54 | 0.04 | 0.48 | 0.35 | 0.22 | 0.07 | 0.83 | 0.84 | 0.71 | 0.18 | 0.99 | 1.26 | 0.04 |

Terms and abbreviations are given in Table 4.2.

**Table 4.19 Particulate matter component: $Mg^{2+}$**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 0.20 | 0.20 | 0.21 | 0.14 | 0.15 | 0.19 | 0.14 | 0.15 | 0.15 | 0.16 | 0.13 | 0.15 | 0.16 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.29 | 0.22 | 0.21 | 0.14 | 0.17 | 0.21 | 0.15 | 0.16 | 0.16 | 0.16 | 0.15 | 0.15 | 0.29 |
| | | Min-2w | 0.12 | 0.17 | 0.20 | 0.13 | 0.12 | 0.16 | 0.13 | 0.14 | 0.15 | 0.15 | 0.11 | 0.14 | 0.11 |
| China | Hongwen | Mean | 0.32 | 0.24 | 0.27 | 0.24 | 0.28 | 0.26 | 0.22 | 0.36 | 0.37 | 0.36 | 0.24 | 0.33 | 0.30 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.40 | 0.24 | 0.36 | 0.24 | 0.28 | 0.26 | 0.22 | 0.36 | 0.37 | 0.37 | 0.24 | 0.33 | 0.40 |
| | | Min-m | 0.23 | 0.24 | 0.19 | 0.24 | 0.28 | 0.26 | 0.22 | 0.36 | 0.37 | 0.36 | 0.24 | 0.33 | 0.19 |
| Indonesia | Jakarta | Mean | 0.04 | 0.04 | 0.03 | 0.09 | 0.10 | 0.09 | 0.08 | 0.10 | 0.08 | <0.01 | 0.09 | 0.05 | 0.07 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.06 | 0.08 | 0.04 | 0.09 | 0.16 | 0.14 | 0.09 | 0.12 | 0.09 | <0.01 | 0.15 | 0.05 | 0.16 |
| | | Min-2w | 0.03 | 0.01 | 0.01 | 0.09 | 0.03 | 0.05 | 0.08 | 0.08 | 0.08 | <0.01 | 0.03 | 0.05 | <0.01 |
| | Serpong | Mean | 0.04 | 0.03 | <0.01 | 0.03 | 0.07 | 0.04 | 0.08 | 0.06 | 0.08 | 0.03 | 0.08 | 0.06 | 0.05 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.04 | 0.03 | 0.02 | 0.03 | 0.12 | 0.04 | 0.12 | 0.12 | 0.09 | 0.05 | 0.11 | 0.08 | 0.12 |
| | | Min-2w | 0.04 | 0.03 | <0.01 | 0.02 | 0.04 | 0.04 | 0.04 | <0.01 | 0.07 | 0.02 | 0.04 | 0.03 | <0.01 |
| | Bandung | Mean | 0.10 | 0.12 | 0.13 | 0.13 | 0.18 | 0.16 | 0.18 | 0.23 | 0.20 | 0.11 | 0.09 | 0.15 | 0.15 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.13 | 0.17 | 0.14 | 0.14 | 0.18 | 0.20 | 0.19 | 0.24 | 0.22 | 0.14 | 0.10 | 0.17 | 0.24 |
| | | Min-2w | 0.07 | 0.07 | 0.12 | 0.12 | 0.18 | 0.13 | 0.17 | 0.23 | 0.18 | 0.08 | 0.07 | 0.14 | 0.07 |
| Japan | Rishiri | Mean | 0.16 | 0.25 | 0.10 | 0.36 | 0.34 | 0.18 | 0.11 | 0.17 | 0.38 | 0.28 | 0.27 | 0.25 | 0.23 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.18 | 0.30 | 0.11 | 0.57 | 0.41 | 0.22 | 0.20 | 0.29 | 0.56 | 0.30 | 0.34 | 0.25 | 0.57 |
| | | Min-2w | 0.14 | 0.21 | 0.08 | 0.16 | 0.27 | 0.14 | 0.06 | 0.05 | 0.20 | 0.26 | 0.21 | 0.25 | 0.05 |
| | Ochiishi | Mean | 0.23 | 0.30 | 0.21 | 0.47 | 0.32 | 0.13 | 0.14 | 0.29 | 0.36 | 0.46 | 0.74 | 0.44 | 0.30 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.39 | 0.36 | 0.22 | 0.53 | 0.39 | 0.14 | 0.19 | 0.33 | 0.36 | 0.46 | 0.74 | 0.44 | 0.74 |
| | | Min-2w | 0.12 | 0.23 | 0.21 | 0.42 | 0.24 | 0.13 | 0.12 | 0.25 | 0.36 | 0.46 | 0.74 | 0.44 | 0.12 |
| | Tappi | Mean | 0.53 | 0.38 | 0.23 | 0.80 | 0.31 | 0.21 | 0.10 | 0.19 | 0.52 | 0.29 | 0.90 | 0.99 | 0.44 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.76 | 0.42 | 0.26 | 0.81 | 0.41 | 0.27 | 0.12 | 0.29 | 0.59 | 0.30 | 1.10 | 1.51 | 1.51 |
| | | Min-2w | 0.34 | 0.35 | 0.21 | 0.78 | 0.22 | 0.15 | 0.09 | 0.09 | 0.45 | 0.29 | 0.70 | 0.46 | 0.09 |
| | Sado-seki | Mean | 0.47 | 0.37 | 0.30 | 0.48 | 0.28 | 0.26 | 0.13 | 0.27 | 0.27 | 0.41 | 0.39 | 0.25 | 0.32 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 0.55 | 0.37 | 0.30 | 0.65 | 0.37 | 0.35 | 0.18 | 0.36 | 0.40 | 0.50 | 0.55 | 0.40 | 0.65 |
| | | Min-2w | 0.39 | 0.37 | 0.30 | 0.31 | 0.20 | 0.16 | 0.08 | 0.17 | 0.13 | 0.33 | 0.24 | 0.10 | 0.08 |
| | Happo | Mean | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 | 0.01 | <0.01 | 0.01 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.01 | 0.02 | 0.02 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.04 | <0.01 | 0.01 | <0.01 | 0.04 |
| | | Min-2w | <0.01 | 0.02 | 0.02 | 0.03 | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 |
| | Ijira | Mean | 0.02 | 0.03 | 0.03 | 0.06 | 0.08 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.03 | 0.04 | 0.03 | 0.06 | 0.10 | 0.04 | 0.03 | 0.03 | 0.04 | 0.02 | 0.02 | 0.02 | 0.10 |
| | | Min-2w | <0.01 | 0.03 | 0.03 | 0.05 | 0.05 | 0.03 | 0.03 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | <0.01 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.77 | 0.81 | 0.79 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.86 | 0.93 | 0.93 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.69 | 0.69 | 0.69 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.31 | 0.26 | 0.28 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.34 | 0.29 | 0.34 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.27 | 0.23 | 0.23 |
| | Yusuhara | Mean | 0.04 | 0.04 | 0.05 | 0.07 | 0.08 | 0.03 | 0.02 | 0.04 | 0.04 | 0.03 | 0.07 | 0.04 | 0.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.04 | 0.05 | 0.05 | 0.07 | 0.12 | 0.04 | 0.03 | 0.06 | 0.05 | 0.03 | 0.07 | 0.04 | 0.12 |
| | | Min-2w | 0.04 | 0.02 | 0.05 | 0.07 | 0.04 | 0.03 | 0.01 | 0.03 | 0.03 | 0.02 | 0.07 | 0.04 | 0.01 |
| | Hedo | Mean | 0.77 | 0.88 | 0.75 | 0.52 | 0.40 | 0.32 | 0.33 | 0.51 | 0.60 | 1.27 | 0.90 | 0.70 | 0.65 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.84 | 0.97 | 0.87 | 0.54 | 0.54 | 0.34 | 0.69 | 0.52 | 0.81 | 1.84 | 0.90 | 0.81 | 1.84 |
| | | Min-2w | 0.72 | 0.79 | 0.63 | 0.50 | 0.27 | 0.29 | 0.09 | 0.49 | 0.40 | 0.70 | 0.90 | 0.59 | 0.09 |
| | Ogasawara | Mean | 0.38 | 0.40 | 0.40 | 0.33 | 0.26 | 0.17 | 0.17 | 0.27 | 0.16 | 0.41 | 0.52 | 0.31 | 0.31 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.43 | 0.40 | 0.45 | 0.44 | 0.29 | 0.18 | 0.24 | 0.35 | 0.17 | 0.44 | 0.52 | 0.32 | 0.52 |
| | | Min-2w | 0.35 | 0.39 | 0.35 | 0.21 | 0.23 | 0.15 | 0.12 | 0.19 | 0.15 | 0.38 | 0.52 | 0.29 | 0.12 |
| | Tokyo | Mean | 0.05 | 0.09 | 0.07 | 0.17 | 0.18 | 0.14 | 0.12 | 0.15 | 0.15 | 0.13 | - | 0.07 | 0.12 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.06 | 0.12 | 0.07 | 0.19 | 0.19 | 0.14 | 0.14 | 0.16 | 0.15 | 0.13 | - | 0.07 | 0.19 |
| | | Min-2w | 0.04 | 0.05 | 0.06 | 0.14 | 0.16 | 0.13 | 0.08 | 0.14 | 0.15 | 0.13 | - | 0.06 | 0.04 |

**Table 4.19 Particulate matter component: $Mg^{2+}$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.03 | - | 0.03 | 0.01 | - | 0.03 | 0.04 | 0.04 | 0.03 | 0.05 | 0.02 | 0.05 | 0.04 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.06 | - | 0.05 | 0.01 | - | 0.03 | 0.05 | 0.07 | 0.05 | 0.11 | 0.02 | 0.08 | 0.11 |
| | | Min-w | 0.02 | - | <0.01 | 0.01 | - | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | <0.01 | <0.01 |
| | Tanah Rata | Mean | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | 0.02 | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | <0.01 | 0.03 | 0.04 | <0.01 | <0.01 | 0.03 | 0.07 | <0.01 | <0.01 | 0.02 | <0.01 | 0.03 | 0.07 |
| | | Min-w | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | Danum Valley | Mean | 0.01 | 0.09 | 0.06 | 0.02 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | 0.01 | 0.01 | 0.02 | 0.02 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.02 | 0.09 | 0.06 | 0.03 | 0.01 | <0.01 | 0.03 | 0.01 | 0.01 | 0.02 | 0.01 | 0.03 | 0.09 |
| | | Min-2w | <0.01 | 0.08 | 0.05 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | 0.01 | <0.01 |
| Mongolia | Ulaanbaatar | Mean | 0.11 | 0.09 | 0.07 | 0.03 | 0.04 | 0.03 | 0.02 | 0.02 | 0.07 | 0.08 | 0.07 | 0.03 | 0.05 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 0.31 | 0.18 | 0.12 | 0.06 | 0.10 | 0.04 | 0.02 | 0.04 | 0.17 | 0.16 | 0.14 | 0.06 | 0.31 |
| | | Min-w | <0.01 | 0.01 | <0.01 | <0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | <0.01 |
| | Terelj | Mean | - | - | - | - | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | <0.01 | 0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | 0.01 |
| | | Min-2w | - | - | - | - | - | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Myanmar | Yangon | Mean | 0.09 | 0.12 | 0.07 | 0.02 | <0.01 | 0.04 | <0.01 | <0.01 | <0.01 | 0.02 | 0.10 | 0.19 | 0.04 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 0.09 | 0.12 | 0.14 | 0.05 | <0.01 | 0.08 | <0.01 | 0.02 | <0.01 | 0.04 | 0.10 | 0.19 | 0.19 |
| | | Min-2w | 0.09 | 0.12 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.10 | 0.19 | <0.01 |
| Republic of Korea | Kanghwa | Mean | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.02 | <0.01 | 0.02 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 |
| | | Min-d | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | Cheju (Kosan) | Mean | 0.01 | <0.01 | 0.02 | 0.04 | 0.04 | 0.02 | <0.01 | 0.05 | 0.05 | <0.01 | 0.06 | 0.06 | 0.03 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 0.01 | <0.01 | 0.03 | 0.04 | 0.05 | 0.02 | 0.02 | 0.05 | 0.05 | <0.01 | 0.07 | 0.07 | 0.07 |
| | | Min-d | <0.01 | <0.01 | 0.02 | 0.04 | 0.04 | 0.02 | <0.01 | 0.05 | 0.05 | <0.01 | 0.06 | 0.06 | <0.01 |
| | Imsil | Mean | <0.01 | <0.01 | 0.03 | 0.05 | 0.04 | 0.03 | 0.04 | 0.08 | 0.05 | <0.01 | 0.06 | 0.06 | 0.03 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | <0.01 | <0.01 | 0.04 | 0.05 | 0.05 | 0.04 | 0.07 | 0.08 | 0.05 | <0.01 | 0.06 | 0.06 | 0.08 |
| | | Min-d | <0.01 | <0.01 | 0.02 | 0.05 | 0.04 | 0.03 | <0.01 | 0.08 | 0.05 | <0.01 | 0.06 | 0.06 | <0.01 |
| Russia | Mondy | Mean | 0.02 | <0.01 | 0.02 | 0.06 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.02 | <0.01 | 0.03 | 0.06 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | 0.06 |
| | | Min-m | 0.02 | <0.01 | <0.01 | 0.06 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | Listvyanka | Mean | 0.04 | <0.01 | <0.01 | 0.03 | 0.01 | 0.08 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.05 | <0.01 | <0.01 | 0.06 | 0.02 | 0.15 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.15 |
| | | Min-w | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| | Irkutsk | Mean | 0.15 | 0.07 | <0.01 | <0.01 | 0.07 | 0.02 | 0.02 | 0.02 | 0.02 | 0.04 | 0.04 | 0.03 | 0.04 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.30 | 0.27 | <0.01 | <0.01 | 0.23 | 0.05 | 0.05 | 0.02 | 0.02 | 0.05 | 0.05 | 0.05 | 0.30 |
| | | Min-w | 0.04 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | 0.02 | 0.02 | 0.02 | <0.01 |
| | Primorskaya | Mean | <0.01 | <0.01 | 0.01 | 0.02 | 0.02 | <0.01 | <0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.01 | 0.01 | 0.01 | 0.03 | 0.03 | <0.01 | <0.01 | 0.02 | 0.02 | 0.04 | 0.02 | 0.02 | 0.04 |
| | | Min-2w | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 |
| Thailand | Bangkok | Mean | 0.06 | 0.04 | 0.03 | 0.42 | <0.01 | 0.03 | 0.02 | 0.02 | <0.01 | <0.01 | 0.08 | 0.11 | 0.07 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 0.10 | 0.08 | 0.05 | 1.12 | <0.01 | 0.05 | 0.02 | 0.02 | 0.01 | 0.01 | 0.09 | 0.13 | 1.12 |
| | | Min-10d | 0.04 | <0.01 | <0.01 | 0.05 | <0.01 | 0.02 | 0.02 | 0.01 | <0.01 | <0.01 | 0.07 | 0.09 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.01 | - | - | 0.03 | - | - | - | 0.04 | - | 0.03 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.01 | - | - | 0.03 | - | - | - | 0.04 | - | 0.04 |
| | | Min-2w | - | - | - | 0.01 | - | - | 0.03 | - | - | - | 0.04 | - | 0.01 |
| | Mae Hia | Mean | 0.01 | 0.06 | 0.02 | 0.07 | 0.02 | 0.02 | 0.01 | <0.01 | 0.14 | <0.01 | - | - | 0.04 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.02 | 0.10 | 0.03 | 0.13 | 0.04 | 0.03 | 0.02 | 0.02 | 0.16 | 0.02 | - | - | 0.16 |
| | | Min-10d | <0.01 | 0.03 | <0.01 | 0.02 | 0.01 | <0.01 | <0.01 | <0.01 | 0.12 | <0.01 | - | - | <0.01 |
| | Sakaerat | Mean | 0.09 | 0.03 | 0.07 | 0.04 | 0.03 | 0.09 | 0.03 | 0.06 | 0.04 | 0.03 | - | - | 0.05 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.13 | 0.07 | 0.08 | 0.05 | 0.05 | 0.18 | 0.07 | 0.09 | 0.08 | 0.05 | - | - | 0.18 |
| | | Min-10d | 0.07 | <0.01 | 0.04 | 0.03 | <0.01 | 0.04 | <0.01 | 0.02 | <0.01 | <0.01 | - | - | <0.01 |

**Table 4.19 Particulate matter component: $Mg^{2+}$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 0.43 | 0.62 | 0.37 | 0.40 | 0.29 | 0.52 | 0.20 | 0.26 | 0.23 | 0.24 | 0.60 | 0.28 | 0.38 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.57 | 1.34 | 0.62 | 0.47 | 0.50 | 1.40 | 0.30 | 0.33 | 0.24 | 0.50 | 2.00 | 0.36 | 2.00 |
| | | Min-w | 0.24 | 0.03 | 0.07 | 0.33 | 0.07 | 0.25 | 0.14 | 0.20 | 0.22 | 0.12 | 0.03 | 0.21 | 0.03 |
| | Hoa Binh | Mean | 0.19 | 0.09 | 0.16 | 0.13 | 0.15 | 0.28 | 0.12 | 0.09 | 0.13 | 0.11 | 0.14 | 0.12 | 0.14 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.30 | 0.17 | 0.33 | 0.22 | 0.28 | 0.44 | 0.17 | 0.15 | 0.24 | 0.18 | 0.26 | 0.19 | 0.44 |
| | | Min-w | <0.01 | 0.03 | 0.07 | 0.03 | 0.06 | 0.10 | 0.09 | 0.04 | 0.04 | 0.08 | 0.03 | 0.06 | <0.01 |
| | Can Tho | Mean | 0.49 | 0.69 | 0.63 | 0.68 | 0.61 | 0.10 | 0.11 | 0.18 | 0.08 | 0.18 | 0.52 | 0.58 | 0.40 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.81 | 0.90 | 0.91 | 0.81 | 0.76 | 0.15 | 0.19 | 0.45 | 0.12 | 0.32 | 0.70 | 0.76 | 0.91 |
| | | Min-w | 0.09 | 0.12 | 0.12 | 0.51 | 0.46 | 0.07 | 0.05 | 0.05 | 0.05 | 0.08 | 0.37 | 0.45 | 0.05 |
| | Ho Chi Minh | Mean | 0.55 | 0.51 | 0.48 | 0.36 | 0.50 | 0.40 | 0.34 | 0.27 | 0.17 | 0.48 | 0.62 | 0.60 | 0.44 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.72 | 0.61 | 0.63 | 0.52 | 0.67 | 0.55 | 0.41 | 0.64 | 0.22 | 0.67 | 0.75 | 0.70 | 0.75 |
| | | Min-w | 0.34 | 0.44 | 0.37 | 0.26 | 0.37 | 0.19 | 0.28 | 0.08 | 0.12 | 0.30 | 0.50 | 0.49 | 0.08 |
| | Yen Bai | Mean | 0.11 | 0.15 | 0.15 | 0.16 | 0.16 | 0.11 | 0.10 | 0.09 | 0.11 | 0.12 | 0.13 | 0.18 | 0.13 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.26 | 0.38 | 0.20 | 0.21 | 0.32 | 0.18 | 0.14 | 0.15 | 0.17 | 0.22 | 0.20 | 0.30 | 0.38 |
| | | Min-w | 0.02 | 0.02 | 0.06 | 0.14 | 0.08 | 0.08 | 0.08 | 0.06 | 0.05 | 0.08 | 0.06 | 0.08 | 0.02 |

Terms and abbreviations are given in Table 4.2.

**Table 4.20 Particulate matter component: $Ca^{2+}$**

| Unit : μg/m$^3$ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Cambodia | Phnom Penh | Mean | 1.10 | 1.05 | 1.08 | 1.38 | 1.03 | 1.33 | 1.31 | 1.29 | 0.98 | 1.02 | 1.29 | 1.27 | 1.17 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.35 | 1.09 | 1.23 | 1.41 | 1.32 | 1.49 | 1.35 | 1.40 | 1.30 | 1.62 | 1.38 | 1.31 | 1.62 |
| | | Min-2w | 0.85 | 1.00 | 0.94 | 1.36 | 0.66 | 1.17 | 1.27 | 1.18 | 0.65 | 0.24 | 1.20 | 1.23 | 0.24 |
| China | Hongwen | Mean | 1.48 | 1.53 | 2.19 | 1.50 | 1.80 | 1.05 | 0.64 | 1.31 | 2.34 | 2.28 | 2.31 | 2.61 | 1.80 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 1.88 | 1.53 | 2.70 | 1.50 | 1.80 | 1.05 | 0.64 | 1.31 | 2.34 | 2.68 | 2.31 | 2.61 | 2.70 |
| | | Min-m | 1.09 | 1.53 | 1.67 | 1.50 | 1.80 | 1.05 | 0.64 | 1.31 | 2.34 | 1.87 | 2.31 | 2.61 | 0.64 |
| Indonesia | Jakarta | Mean | 0.39 | 0.31 | 0.39 | 0.91 | 0.90 | 0.47 | 0.62 | 0.75 | 0.76 | 0.10 | 0.87 | 0.45 | 0.59 |
| | | % | 100 | 100 | 100 | 70 | 100 | 74 | 89 | 100 | 100 | 41 | 100 | 50 | 86 |
| | | Max-2w | 0.47 | 0.41 | 0.42 | 0.91 | 1.40 | 0.63 | 0.70 | 0.82 | 0.87 | 0.10 | 1.53 | 0.45 | 1.53 |
| | | Min-2w | 0.31 | 0.21 | 0.35 | 0.91 | 0.40 | 0.31 | 0.53 | 0.68 | 0.65 | 0.10 | 0.22 | 0.45 | 0.10 |
| | Serpong | Mean | 0.13 | 0.16 | 0.07 | 0.28 | 0.69 | 0.23 | 0.54 | 0.66 | 0.60 | 0.25 | 0.56 | 0.39 | 0.41 |
| | | % | 35 | 100 | 100 | 100 | 100 | 56 | 100 | 100 | 100 | 100 | 100 | 100 | 90 |
| | | Max-2w | 0.13 | 0.16 | 0.09 | 0.30 | 0.99 | 0.23 | 0.59 | 0.75 | 0.64 | 0.37 | 0.64 | 0.47 | 0.99 |
| | | Min-2w | 0.13 | 0.16 | 0.06 | 0.25 | 0.43 | 0.23 | 0.49 | 0.58 | 0.56 | 0.13 | 0.49 | 0.32 | 0.06 |
| | Bandung | Mean | 1.06 | 1.01 | 1.14 | 1.07 | 0.91 | 0.81 | 0.93 | 1.12 | 1.53 | 0.97 | 0.90 | 1.61 | 1.09 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 1.44 | 1.45 | 1.22 | 1.14 | 0.96 | 0.95 | 0.99 | 1.15 | 1.57 | 1.18 | 1.07 | 1.65 | 1.65 |
| | | Min-2w | 0.69 | 0.56 | 1.06 | 0.99 | 0.85 | 0.67 | 0.88 | 1.09 | 1.48 | 0.76 | 0.73 | 1.57 | 0.56 |
| Japan | Rishiri | Mean | 0.08 | 0.13 | 0.06 | 0.21 | 0.42 | 0.10 | 0.06 | 0.09 | 0.22 | 0.16 | 0.16 | 0.13 | 0.15 |
| | | % | 69 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 93 |
| | | Max-2w | 0.08 | 0.13 | 0.07 | 0.33 | 0.69 | 0.13 | 0.09 | 0.15 | 0.34 | 0.18 | 0.18 | 0.13 | 0.69 |
| | | Min-2w | 0.07 | 0.12 | 0.05 | 0.10 | 0.14 | 0.07 | 0.03 | 0.03 | 0.09 | 0.14 | 0.14 | 0.13 | 0.03 |
| | Ochiishi | Mean | 0.13 | 0.13 | 0.08 | 0.22 | 0.33 | 0.05 | 0.10 | 0.12 | 0.13 | 0.19 | 0.30 | 0.18 | 0.15 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 52 | 50 | 46 | 43 | 83 |
| | | Max-2w | 0.15 | 0.15 | 0.08 | 0.27 | 0.50 | 0.05 | 0.10 | 0.13 | 0.13 | 0.19 | 0.30 | 0.18 | 0.50 |
| | | Min-2w | 0.10 | 0.10 | 0.07 | 0.18 | 0.17 | 0.05 | 0.09 | 0.10 | 0.13 | 0.19 | 0.30 | 0.18 | 0.05 |
| | Tappi | Mean | 0.22 | 0.17 | 0.13 | 0.53 | 0.36 | 0.13 | 0.07 | 0.10 | 0.29 | 0.16 | 0.37 | 0.41 | 0.24 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.35 | 0.18 | 0.15 | 0.64 | 0.53 | 0.18 | 0.08 | 0.17 | 0.33 | 0.17 | 0.44 | 0.59 | 0.64 |
| | | Min-2w | 0.12 | 0.16 | 0.11 | 0.41 | 0.19 | 0.07 | 0.07 | 0.04 | 0.24 | 0.16 | 0.31 | 0.23 | 0.04 |
| | Sado-seki | Mean | 0.21 | 0.17 | 0.18 | 0.47 | 0.51 | 0.23 | 0.08 | 0.10 | 0.19 | 0.20 | 0.18 | 0.15 | 0.22 |
| | | % | 100 | 67 | 37 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 92 |
| | | Max-2w | 0.28 | 0.17 | 0.18 | 0.47 | 0.79 | 0.34 | 0.10 | 0.15 | 0.32 | 0.24 | 0.25 | 0.23 | 0.79 |
| | | Min-2w | 0.15 | 0.17 | 0.18 | 0.47 | 0.24 | 0.12 | 0.04 | 0.06 | 0.06 | 0.16 | 0.10 | 0.06 | 0.04 |
| | Happo | Mean | 0.03 | 0.09 | 0.11 | 0.25 | 0.16 | 0.05 | 0.03 | 0.02 | 0.05 | 0.02 | 0.05 | 0.02 | 0.07 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.04 | 0.13 | 0.16 | 0.28 | 0.16 | 0.06 | 0.04 | 0.03 | 0.09 | 0.02 | 0.05 | 0.03 | 0.28 |
| | | Min-2w | 0.03 | 0.05 | 0.06 | 0.23 | 0.16 | 0.03 | 0.01 | <0.01 | <0.01 | 0.02 | 0.05 | 0.01 | <0.01 |
| | Ijira | Mean | 0.06 | 0.08 | 0.10 | 0.19 | 0.38 | 0.13 | 0.09 | 0.08 | 0.10 | 0.07 | 0.07 | 0.07 | 0.11 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.08 | 0.10 | 0.12 | 0.20 | 0.52 | 0.13 | 0.13 | 0.11 | 0.12 | 0.08 | 0.09 | 0.09 | 0.52 |
| | | Min-2w | 0.05 | 0.05 | 0.09 | 0.18 | 0.24 | 0.12 | 0.07 | 0.04 | 0.09 | 0.07 | 0.04 | 0.05 | 0.04 |
| | Oki | Mean | - | - | - | - | - | - | - | - | - | - | 0.47 | 0.42 | 0.45 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.47 | 0.44 | 0.47 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.47 | 0.40 | 0.40 |
| | Banryu | Mean | - | - | - | - | - | - | - | - | - | - | 0.30 | 0.22 | 0.26 |
| | | % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 100 | 15 |
| | | Max-2w | - | - | - | - | - | - | - | - | - | - | 0.38 | 0.25 | 0.38 |
| | | Min-2w | - | - | - | - | - | - | - | - | - | - | 0.22 | 0.18 | 0.18 |
| | Yusuhara | Mean | 0.05 | 0.06 | 0.17 | 0.29 | 0.39 | 0.12 | 0.03 | 0.05 | 0.09 | 0.05 | 0.13 | 0.09 | 0.12 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.06 | 0.09 | 0.18 | 0.33 | 0.65 | 0.15 | 0.04 | 0.05 | 0.18 | 0.06 | 0.15 | 0.10 | 0.65 |
| | | Min-2w | 0.05 | 0.03 | 0.15 | 0.25 | 0.14 | 0.09 | 0.01 | 0.04 | <0.01 | 0.04 | 0.11 | 0.08 | <0.01 |
| | Hedo | Mean | 0.36 | 0.53 | 0.70 | 0.66 | 0.35 | 0.17 | 0.17 | 0.22 | 0.28 | 0.48 | 0.49 | 0.32 | 0.38 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.41 | 0.56 | 0.88 | 0.98 | 0.39 | 0.20 | 0.30 | 0.24 | 0.30 | 0.65 | 0.55 | 0.39 | 0.98 |
| | | Min-2w | 0.33 | 0.51 | 0.51 | 0.35 | 0.31 | 0.13 | 0.10 | 0.20 | 0.25 | 0.30 | 0.42 | 0.26 | 0.10 |
| | Ogasawara | Mean | 0.16 | 0.18 | 0.25 | 0.26 | 0.17 | 0.07 | 0.03 | 0.17 | 0.06 | 0.14 | 0.21 | 0.12 | 0.15 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.18 | 0.20 | 0.31 | 0.30 | 0.25 | 0.07 | 0.07 | 0.21 | 0.06 | 0.15 | 0.22 | 0.12 | 0.31 |
| | | Min-2w | 0.14 | 0.17 | 0.19 | 0.21 | 0.10 | 0.06 | <0.01 | 0.13 | 0.05 | 0.13 | 0.19 | 0.11 | <0.01 |
| | Tokyo | Mean | 0.37 | 0.42 | 0.33 | 0.53 | 0.67 | 0.49 | 0.44 | 0.35 | 0.35 | 0.28 | - | 0.48 | 0.43 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 92 |
| | | Max-2w | 0.56 | 0.43 | 0.37 | 0.67 | 0.76 | 0.57 | 0.58 | 0.44 | 0.39 | 0.32 | - | 0.51 | 0.76 |
| | | Min-2w | 0.23 | 0.40 | 0.29 | 0.38 | 0.58 | 0.40 | 0.34 | 0.27 | 0.31 | 0.24 | - | 0.45 | 0.23 |

**Table 4.20 Particulate matter component: $Ca^{2+}$ (continued)**

| Unit : μg/m³ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Malaysia | Petaling Jaya | Mean | 0.24 | - | 0.27 | 0.26 | - | 0.13 | 0.34 | 0.32 | 0.30 | 0.55 | 0.51 | 0.40 | 0.35 |
| | | % | 100 | 0 | 60 | 25 | 0 | 20 | 75 | 75 | 100 | 100 | 75 | 80 | 60 |
| | | Max-w | 0.44 | - | 0.60 | 0.26 | - | 0.13 | 0.44 | 0.44 | 0.61 | 0.74 | 0.64 | 0.60 | 0.74 |
| | | Min-w | <0.01 | - | <0.01 | 0.26 | - | 0.13 | 0.22 | 0.19 | 0.12 | 0.31 | 0.43 | 0.03 | <0.01 |
| | Tanah Rata | Mean | <0.01 | 0.05 | 0.06 | 0.01 | 0.01 | 0.08 | 0.23 | 0.02 | <0.01 | 0.05 | <0.01 | 0.05 | 0.05 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | <0.01 | 0.18 | 0.16 | 0.02 | 0.03 | 0.26 | 0.56 | 0.04 | 0.02 | 0.15 | <0.01 | 0.10 | 0.56 |
| | | Min-w | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | 0.04 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 |
| | Danum Valley | Mean | <0.01 | 0.04 | 0.04 | 0.02 | <0.01 | <0.01 | 0.03 | <0.01 | <0.01 | 0.01 | <0.01 | 0.02 | 0.02 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | <0.01 | 0.05 | 0.04 | 0.03 | 0.01 | <0.01 | 0.04 | <0.01 | 0.01 | 0.02 | <0.01 | 0.03 | 0.05 |
| | | Min-2w | <0.01 | 0.03 | 0.03 | 0.01 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Mongolia | Ulaanbaatar | Mean | 1.13 | 1.24 | 1.04 | 0.37 | 0.64 | 0.38 | 0.27 | 0.24 | 0.70 | 1.36 | 1.17 | 0.43 | 0.74 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 80 | 100 | 98 |
| | | Max-w | 3.01 | 2.19 | 1.91 | 0.92 | 1.68 | 0.73 | 0.45 | 0.39 | 1.41 | 2.51 | 2.47 | 0.90 | 3.01 |
| | | Min-w | 0.09 | 0.21 | 0.10 | 0.16 | 0.18 | 0.18 | 0.12 | 0.16 | 0.17 | 0.31 | 0.35 | 0.22 | 0.09 |
| | Terelj | Mean | - | - | - | - | - | 0.10 | 0.07 | 0.04 | 0.06 | 0.07 | 0.07 | 0.05 | 0.06 |
| | | % | 0 | 0 | 0 | 0 | 0 | 88 | 100 | 100 | 100 | 100 | 100 | 100 | 57 |
| | | Max-2w | - | - | - | - | - | 0.10 | 0.08 | 0.04 | 0.09 | 0.09 | 0.09 | 0.07 | 0.10 |
| | | Min-2w | - | - | - | - | - | 0.09 | 0.05 | 0.03 | 0.04 | 0.05 | 0.04 | 0.03 | 0.03 |
| Myanmar | Yangon | Mean | 2.24 | 1.17 | 0.74 | 0.23 | <0.01 | 0.14 | <0.01 | 0.08 | 0.22 | 0.05 | 0.58 | 0.99 | 0.40 |
| | | % | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 | 50 | 88 |
| | | Max-2w | 2.24 | 2.24 | 1.47 | 0.45 | <0.01 | 0.28 | <0.01 | 0.15 | 0.44 | 0.13 | 0.58 | 0.99 | 2.24 |
| | | Min-2w | 2.24 | 0.10 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.58 | 0.99 | <0.01 |
| Republic of Korea | Kanghwa | Mean | 0.05 | 0.07 | 0.05 | 0.02 | 0.04 | 0.12 | 0.05 | 0.12 | <0.01 | 0.04 | 0.02 | 0.02 | 0.05 |
| | | % | 16 | 14 | 19 | 17 | 13 | 13 | 10 | 13 | 9 | 17 | 17 | 13 | 14 |
| | | Max-d | 0.08 | 0.12 | 0.08 | 0.06 | 0.08 | 0.20 | 0.11 | 0.16 | 0.01 | 0.11 | 0.03 | 0.06 | 0.20 |
| | | Min-d | 0.02 | 0.03 | 0.01 | <0.01 | <0.01 | 0.06 | 0.01 | 0.07 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 |
| | Cheju (Kosan) | Mean | 0.11 | 0.02 | 0.04 | 0.03 | 0.13 | 0.02 | 0.09 | 0.07 | 0.04 | <0.01 | 0.08 | 0.07 | 0.05 |
| | | % | 6 | 14 | 19 | 17 | 10 | 17 | 16 | 16 | 17 | 16 | 17 | 16 | 15 |
| | | Max-d | 0.15 | 0.03 | 0.13 | 0.04 | 0.32 | 0.05 | 0.14 | 0.09 | 0.06 | 0.02 | 0.10 | 0.28 | 0.32 |
| | | Min-d | 0.07 | 0.02 | 0.02 | 0.03 | 0.04 | <0.01 | 0.02 | 0.05 | 0.02 | <0.01 | 0.08 | <0.01 | <0.01 |
| | Imsil | Mean | 0.03 | 0.04 | 0.11 | 0.07 | 0.06 | 0.05 | 0.16 | 0.13 | 0.04 | 0.03 | 0.08 | 0.17 | 0.08 |
| | | % | 13 | 11 | 10 | 13 | 16 | 10 | 13 | 3 | 13 | 16 | 17 | 16 | 13 |
| | | Max-d | 0.08 | 0.07 | 0.25 | 0.08 | 0.07 | 0.05 | 0.32 | 0.13 | 0.05 | 0.07 | 0.10 | 0.43 | 0.43 |
| | | Min-d | <0.01 | 0.02 | 0.04 | 0.05 | 0.05 | 0.04 | 0.05 | 0.13 | 0.03 | <0.01 | 0.07 | 0.01 | <0.01 |
| Russia | Mondy | Mean | 0.13 | <0.01 | 0.13 | 0.04 | 0.03 | 0.02 | 0.02 | 0.05 | 0.08 | 0.07 | 0.07 | 0.05 | 0.06 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-m | 0.14 | <0.01 | 0.17 | 0.04 | 0.04 | 0.05 | 0.02 | 0.05 | 0.11 | 0.07 | 0.10 | 0.06 | 0.17 |
| | | Min-m | 0.12 | <0.01 | 0.08 | 0.04 | 0.02 | <0.01 | 0.02 | 0.05 | 0.05 | 0.07 | 0.03 | 0.03 | <0.01 |
| | Listvyanka | Mean | 0.32 | <0.01 | <0.01 | 0.20 | 0.09 | 0.02 | 0.03 | 0.04 | 0.05 | 0.03 | 0.04 | 0.06 | 0.07 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 0.52 | <0.01 | <0.01 | 0.42 | 0.16 | 0.06 | 0.05 | 0.05 | 0.09 | 0.04 | 0.06 | 0.07 | 0.52 |
| | | Min-w | 0.04 | <0.01 | <0.01 | <0.01 | 0.04 | <0.01 | 0.01 | 0.04 | 0.03 | 0.02 | 0.02 | 0.05 | <0.01 |
| | Irkutsk | Mean | 0.78 | 0.12 | 0.02 | 0.02 | 0.26 | 0.12 | 0.14 | 0.10 | 0.12 | 0.33 | 0.30 | 0.30 | 0.23 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.01 | 0.48 | 0.03 | 0.03 | 0.67 | 0.30 | 0.32 | 0.12 | 0.23 | 0.48 | 0.36 | 0.40 | 1.01 |
| | | Min-w | 0.41 | <0.01 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | 0.09 | 0.04 | 0.19 | 0.20 | 0.14 | <0.01 |
| | Primorskaya | Mean | 0.06 | 0.07 | 0.10 | 0.11 | 0.15 | 0.03 | 0.02 | 0.09 | 0.09 | 0.17 | 0.12 | 0.05 | 0.09 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-2w | 0.09 | 0.12 | 0.14 | 0.17 | 0.21 | 0.04 | 0.02 | 0.13 | 0.11 | 0.30 | 0.17 | 0.08 | 0.30 |
| | | Min-2w | 0.04 | 0.03 | 0.07 | 0.04 | 0.08 | 0.03 | 0.02 | 0.05 | 0.07 | 0.04 | 0.07 | 0.02 | 0.02 |
| Thailand | Bangkok | Mean | 0.93 | 0.47 | 0.15 | 0.41 | <0.01 | 0.15 | 0.12 | 0.08 | 0.06 | 0.03 | 1.67 | 1.76 | 0.49 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-10d | 1.54 | 0.80 | 0.33 | 0.59 | <0.01 | 0.30 | 0.20 | 0.11 | 0.18 | 0.03 | 1.98 | 1.85 | 1.98 |
| | | Min-10d | 0.44 | 0.10 | <0.01 | 0.19 | <0.01 | 0.02 | 0.02 | 0.06 | <0.01 | 0.02 | 1.29 | 1.65 | <0.01 |
| | Khanchanaburi (Vachiralongkorn Dam) | Mean | - | - | - | 0.04 | - | - | <0.01 | - | - | - | 0.18 | - | 0.07 |
| | | % | 0 | 0 | 0 | 57 | 0 | 0 | 54 | 0 | 0 | 0 | 100 | 0 | 17 |
| | | Max-2w | - | - | - | 0.04 | - | - | <0.01 | - | - | - | 0.18 | - | 0.18 |
| | | Min-2w | - | - | - | 0.04 | - | - | <0.01 | - | - | - | 0.18 | - | <0.01 |
| | Mae Hia | Mean | 0.29 | 0.63 | 0.22 | 0.62 | 0.30 | 0.18 | 0.28 | 0.19 | <0.01 | <0.01 | - | - | 0.27 |
| | | % | 97 | 96 | 97 | 97 | 97 | 97 | 97 | 97 | 100 | 97 | 0 | 0 | 81 |
| | | Max-10d | 0.38 | 1.16 | 0.30 | 1.05 | 0.43 | 0.27 | 0.46 | 0.24 | <0.01 | <0.01 | - | - | 1.16 |
| | | Min-10d | 0.22 | 0.12 | 0.13 | 0.20 | 0.10 | 0.03 | 0.16 | 0.13 | <0.01 | <0.01 | - | - | <0.01 |
| | Sakaerat | Mean | 0.15 | 0.31 | 0.08 | 0.22 | 0.07 | 0.34 | 0.21 | 0.25 | 0.21 | 0.36 | - | - | 0.22 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 | 83 |
| | | Max-10d | 0.36 | 0.49 | 0.10 | 0.44 | 0.16 | 0.71 | 0.46 | 0.33 | 0.38 | 0.66 | - | - | 0.71 |
| | | Min-10d | 0.01 | 0.19 | 0.06 | 0.03 | <0.01 | 0.08 | 0.06 | 0.18 | <0.01 | <0.01 | - | - | <0.01 |

**Table 4.20 Particulate matter component: $Ca^{2+}$ (continued)**

| Unit : μg/m$^3$ | | | 2017 | | | | | | | | | | | | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Site | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | |
| Vietnam | Hanoi | Mean | 4.86 | 4.77 | 3.42 | 3.72 | 2.89 | 3.17 | 1.37 | 2.29 | 2.34 | 2.00 | 3.04 | 2.29 | 3.01 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 5.80 | 10.10 | 6.39 | 4.80 | 4.90 | 4.62 | 1.60 | 3.14 | 2.75 | 2.44 | 3.96 | 2.63 | 10.10 |
| | | Min-w | 3.72 | 0.13 | 0.78 | 2.26 | 0.58 | 1.05 | 0.94 | 1.50 | 1.91 | 1.39 | 2.05 | 2.01 | 0.13 |
| | Hoa Binh | Mean | 0.97 | 0.70 | 1.46 | 1.30 | 0.91 | 1.34 | 0.45 | 0.28 | 0.73 | 1.11 | 1.10 | 0.82 | 0.94 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.22 | 1.50 | 2.98 | 2.11 | 1.18 | 2.02 | 0.66 | 0.50 | 1.10 | 1.30 | 1.40 | 1.06 | 2.98 |
| | | Min-w | 0.10 | 0.25 | 0.64 | 0.24 | 0.55 | 0.50 | 0.36 | 0.15 | 0.14 | 0.76 | 0.76 | 0.52 | 0.10 |
| | Can Tho | Mean | 0.99 | 1.27 | 2.41 | 2.53 | 1.99 | 1.20 | 1.04 | 1.03 | 0.95 | 0.89 | 1.14 | 0.83 | 1.36 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 1.28 | 1.69 | 3.28 | 2.96 | 3.18 | 1.64 | 1.52 | 1.52 | 1.61 | 1.16 | 1.64 | 0.92 | 3.28 |
| | | Min-w | 0.65 | 0.75 | 1.65 | 2.15 | 1.22 | 0.84 | 0.56 | 0.64 | 0.55 | 0.69 | 0.75 | 0.77 | 0.55 |
| | Ho Chi Minh | Mean | 4.28 | 4.26 | 4.18 | 3.75 | 2.78 | 1.67 | 1.64 | 1.60 | 2.02 | 3.03 | 1.76 | 3.46 | 2.88 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 5.42 | 5.16 | 5.67 | 4.56 | 3.68 | 3.33 | 2.15 | 2.26 | 2.33 | 3.12 | 2.31 | 4.20 | 5.67 |
| | | Min-w | 1.72 | 3.27 | 3.14 | 3.22 | 2.37 | 0.89 | 1.32 | 0.60 | 1.78 | 2.94 | 1.19 | 2.37 | 0.60 |
| | Yen Bai | Mean | 1.45 | 1.63 | 2.04 | 2.25 | 2.21 | 2.28 | 2.27 | 3.00 | 3.00 | 2.90 | 2.98 | 2.83 | 2.42 |
| | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Max-w | 2.55 | 4.08 | 2.65 | 3.16 | 3.18 | 3.33 | 2.66 | 3.34 | 3.35 | 3.21 | 3.21 | 3.13 | 4.08 |
| | | Min-w | 0.33 | 0.16 | 1.09 | 1.22 | 1.38 | 1.26 | 1.98 | 2.51 | 2.54 | 2.74 | 2.67 | 2.57 | 0.16 |

Terms and abbreviations are given in Table 4.2.

**Table 4.21 Annual $SO_2$ concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 1.8 | 1.5 | 1.3 | 1.1 | 0.8 | 0.5 | 0.6 | 1.3 |
| China | Jinyunshan | | 10.0 | 11.0 | 16.3 | 15.8 | 17.8 | 17.2 | 12.2 | 13.3 | 12.5 | 12.9 | 9.3 | 9.8 | 8.6 | 7.5 | 5.3 | 3.3 | 3.6 |
| | Weishuiyuan | 6.2 | 5.1 | 4.6 | 3.8 | 8.9 | 11.7 | 15.4 | | | | | | | | | | | |
| | Hongwen | 5.9 | 8.5 | 10.2 | 10.0 | 7.2 | 8.2 | 9.4 | 10.9 | 9.1 | 5.2 | 4.9 | 5.8 | 7.2 | 5.6 | 6.3 | 2.4 | 3.3 | 3.6 |
| | Xiang Zhou | 7.9 | 10.0 | 9.4 | 10.1 | 8.2 | 6.3 | 8.2 | 6.3 | 6.6 | 5.9 | 5.9 | 5.6 | | | | | | |
| | Haibin - Park | | | | | | | | | | | | | 3.2 | 3.9 | 3.9 | 3.1 | 3.8 | 2.9 |
| Indonesia | Jakarta | | | | | | | | 11.0 | 7.4 | 8.3 | 6.3 | 5.0 | 5.7 | 5.3 | 5.6 | 5.4 | 2.5 | 1.7 |
| | Serpong | 2.2 | 0.9 | 1.0 | 1.7 | 1.0 | 1.4 | 0.5 | 1.5 | 1.6 | 1.1 | 0.8 | 1.4 | 0.9 | 0.8 | 0.7 | 1.5 | 0.7 | 0.8 |
| | Kototabang | | | | | | | | 3.3 | 6.3 | 7.9 | 11.7 | 2.2 | *** | 1.8 | 3.5 | 6.7 | 2.0 | 1.3 |
| | Bandung | | | | | | | | | 2.7 | 4.7 | 4.2 | 4.0 | 4.0 | 4.0 | 4.4 | 1.3 | 1.9 | 1.7 |
| Japan | Rishiri | <0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | <0.1 |
| | Ochiishi | | | | | | | | | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 |
| | Tappi | 0.3 | 0.5 | 0.3 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | *** | *** | 0.4 | 0.4 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 |
| | Sado-seki | 0.2 | 0.6 | 0.5 | 0.4 | 0.7 | 0.6 | 0.5 | 0.6 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 |
| | Happo | 0.2 | 0.9 | 0.5 | 0.4 | 0.7 | 0.7 | 0.6 | (0.8) | 0.6 | 0.4 | 0.8 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 |
| | Ijira | 0.1 | 0.9 | 0.5 | 0.4 | 0.6 | 0.4 | 0.2 | 0.4 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | <0.1 |
| | Oki | 0.3 | 0.6 | 0.4 | 0.4 | 0.7 | 0.7 | 0.7 | 0.9 | 0.8 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.4 | 0.3 | 0.4 |
| | Banryu | 0.5 | 1.0 | 0.9 | 1.0 | 0.9 | 1.0 | 0.6 | 1.1 | 1.0 | 0.6 | 0.6 | 0.5 | 0.6 | 0.5 | 0.4 | 0.3 | 0.3 | 0.3 |
| | Yusuhara | 0.6 | 1.1 | 0.8 | 0.9 | 1.0 | 1.1 | 0.9 | 1.2 | 1.0 | 0.9 | 1.6 | 0.9 | 0.9 | 0.9 | 1.0 | 0.6 | 0.6 | 0.6 |
| | Hedo | 0.2 | 0.3 | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 |
| | Ogasawara | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tokyo | | | | | | | | 2.2 | 2.2 | 2.0 | 1.8 | 1.6 | 1.4 | 1.6 | 1.5 | 1.3 | 1.3 | 1.4 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.4 | 0.4 | *** |
| Malaysia | Petaling Jaya | | 5.3 | 5.0 | 4.0 | 1.3 | 3.8 | 6.3 | 2.0 | 1.9 | 1.8 | 1.4 | 2.0 | 1.8 | 1.3 | 1.6 | 1.2 | 1.2 | 1.1 |
| | Tanah Rata | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 3.3 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 |
| | Danum Valley | | | | | | | 0.1 | 0.1 | <0.1 | 0.1 | <0.1 | <0.1 | 0.1 | 0.2 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | 1.5 | 1.7 | 1.0 | 1.7 | 2.9 | 4.3 | 4.8 | 4.3 | 1.8 | 4.3 | 9.1 | 6.1 | *** | *** | 8.9 | 9.8 | 10.0 | 11.5 |
| | Terelj | 0.4 | 0.5 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 1.4 | 0.5 | 0.7 | 0.6 | 0.7 | *** | *** | *** | *** | 0.6 | 0.2 |
| Myanmar | Yangon | | | | | | | | | | | | 1.6 | 2.9 | 1.3 | 1.2 | 0.5 | 0.4 | 0.5 |
| Philippines | Metro Manila | 4.8 | 4.2 | 4.3 | 4.4 | 3.4 | 3.1 | 2.1 | 2.7 | 1.2 | *** | 2.2 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.8 | 0.7 | 0.9 | 0.9 | 0.4 | 0.2 | 0.3 | 0.4 | 0.3 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | <0.1 | <0.1 | 0.4 | <0.1 | 1.1 | *** | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | *** |
| Republic | Kanghwa | | | 3.6 | 1.9 | 3.6 | 2.8 | 3.4 | 2.8 | 2.9 | 3.2 | 2.9 | 4.1 | 4.4 | 3.4 | 2.8 | 2.2 | 2.8 | 1.9 |
| of Korea | Cheju | | | 1.3 | 3.9 | 1.8 | 2.2 | 3.4 | 2.3 | 2.2 | 2.7 | 2.5 | 2.5 | 0.9 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 |
| | Imsil | | | 2.3 | 1.5 | 1.2 | 2.5 | 1.8 | 2.1 | 2.3 | 1.4 | 2.7 | 4.8 | 1.3 | 1.8 | 2.3 | 1.7 | 1.7 | 2.3 |
| Russia | Mondy | <0.1 | 0.2 | <0.1 | 0.2 | 0.2 | 1.2 | 0.7 | 0.4 | 0.3 | 0.1 | 0.6 | 0.1 | 0.6 | 0.1 | 0.1 | 0.1 | <0.1 | 0.2 |
| | Listvyanka | 1.0 | 2.1 | 1.1 | 1.0 | 0.7 | 6.0 | 3.5 | 1.1 | 1.2 | 4.0 | 4.5 | 2.8 | 5.2 | 2.6 | 1.1 | 2.8 | 4.1 | 2.9 |
| | Irkutsk | 3.4 | 3.0 | 0.7 | 1.0 | 1.4 | 5.1 | 4.0 | 2.4 | 2.2 | 4.6 | 7.3 | 5.6 | 7.2 | 4.2 | 1.6 | 3.5 | 5.5 | 4.6 |
| | Primorskaya | | | 0.5 | 0.4 | 0.5 | 1.6 | 1.2 | 0.7 | 0.9 | 1.0 | 1.7 | 1.2 | 1.2 | 0.7 | 0.4 | 0.7 | 0.8 | 0.4 |
| Thailand | Bangkok | 4.2 | 2.8 | 2.5 | 2.4 | 3.3 | 8.8 | 4.1 | 0.8 | 2.1 | 1.9 | 1.6 | 1.6 | 1.5 | 1.9 | 1.4 | 0.6 | 0.8 | 0.8 |
| | Samutprakarn | 4.1 | 4.7 | 4.4 | 5.5 | 5.9 | 6.6 | 6.5 | 5.8 | 4.8 | 4.9 | 4.6 | 2.6 | 2.5 | 3.0 | 3.7 | 3.0 | 2.0 | 1.5 |
| | Pathumthani | | | | 2.4 | 1.3 | 1.6 | 2.7 | 1.8 | 0.5 | 1.1 | 1.2 | 0.6 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | 1.0 | 0.5 | 1.4 | *** | 1.7 | 1.2 | 1.3 | 1.3 | 1.6 | 1.2 | 1.6 | 1.3 | 0.6 | 1.0 | 1.8 | 1.2 | 1.7 | 1.4 |
| | Mae Hia | | 0.5 | 0.5 | 0.3 | 0.5 | 0.4 | 0.8 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | <0.1 | <0.1 | 0.2 | 0.2 |
| | Chang Phueak | | | | 1.4 | 1.5 | 1.0 | 0.8 | 0.9 | 0.8 | 0.6 | 0.8 | 0.6 | 0.9 | 1.3 | 0.9 | 1.3 | 0.8 | 0.8 |
| | Si Phum | | | | | | | | | | | | | | 1.4 | 1.7 | 1.4 | 1.1 | 1.1 |
| | Sakaerat | | | | | | | 0.3 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.2 |
| | Nai Mueang | | | | | | | | | 2.7 | *** | 1.3 | 1.4 | 1.1 | 1.2 | 1.0 | 2.9 | 3.2 | 0.7 |
| Vietnam | Hanoi | 0.8 | 3.5 | 2.7 | 2.2 | 4.8 | 2.4 | 3.9 | 1.7 | 1.3 | 1.3 | 1.4 | 1.9 | 2.2 | 2.1 | 3.2 | 4.5 | 1.8 | 1.0 |
| | Hoa Binh | 0.9 | 2.6 | 2.4 | 1.3 | 2.1 | 2.7 | 2.0 | 1.2 | 1.0 | 0.9 | 0.7 | 1.2 | 1.2 | 1.1 | 2.8 | 3.6 | 1.3 | 0.6 |
| | Can Tho | | | | | | | | | | | | | | | 1.2 | 1.0 | 0.3 | 0.2 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1.6 | 1.5 | 0.5 | 0.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 4.2 | 1.5 | 0.8 |

Terms and abbreviations are given in Table 4.2.

**Table 4.22 Annual $HNO_3$ concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.3 | 0.3 | 0.3 | 0.5 | 0.4 | 0.5 | 0.4 | 0.5 |
| China | Hongwen | | | | | | | | 0.9 | 1.7 | 1.1 | 1.0 | 2.1 | *** | *** | *** | *** | 1.2 | 1.1 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 3.1 | 1.4 | 1.0 | 1.0 |
| | Serpong | | 0.4 | 1.3 | 0.7 | 0.6 | 0.5 | 0.2 | 0.4 | 0.2 | 0.3 | 0.3 | 0.8 | 0.9 | 0.6 | 0.9 | 1.1 | 0.8 | 0.8 |
| | Bandung | | | | | | | | | | | | | | | 0.7 | 0.5 | 0.5 | 0.4 |
| Japan | Rishiri | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ochiishi | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tappi | | | | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | <0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | <0.1 | <0.1 | 0.1 |
| | Sado-seki | | | | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 |
| | Happo | | | | 0.4 | 0.3 | 0.2 | 0.3 | 0.4 | 0.4 | <0.1 | <0.1 | <0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 |
| | Ijira | | | | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | Oki | | | 0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 |
| | Banryu | | | | 0.2 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 |
| | Yusuhara | | | | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 |
| | Hedo | | | | <0.1 | 0.1 | <0.1 | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.1 | <0.1 | <0.1 |
| | Ogasawara | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tokyo | | | | | | | | 1.1 | 1.0 | 0.8 | 0.8 | 0.6 | 0.6 | 0.8 | 0.8 | 0.7 | 0.6 | 0.7 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.3 | 0.2 | *** |
| Malaysia | Petaling Jaya | | 1.4 | 1.8 | 2.3 | 0.5 | 0.7 | 1.8 | 0.7 | 0.8 | 1.0 | 0.7 | 0.7 | 0.5 | 0.7 | 0.8 | 0.7 | 0.4 | 0.5 |
| | Tanah Rata | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | 0.2 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | 0.1 | <0.1 | <0.1 |
| | Danum Valley | | | | | | | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | 0.3 | <0.1 | <0.1 | <0.1 | <0.1 |
| Mongolia | Ulaanbaatar | 0.2 | 0.1 | <0.1 | 0.2 | <0.1 | <0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | *** | *** | *** | *** | 0.1 | <0.1 |
| | Terelj | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | 0.1 | *** | *** | *** | *** | <0.1 | <0.1 |
| Myanmar | Yangon | | | | | | | | | | | | 0.4 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 |
| Philippines | Metro Manila | 0.7 | 0.3 | 0.2 | 0.4 | 0.5 | 0.4 | 0.3 | 0.4 | 0.4 | *** | 0.2 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | <0.1 | <0.1 | 0.2 | <0.1 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | <0.1 | <0.1 | 0.3 | <0.1 | 0.4 | *** | 0.2 | <0.1 | 0.1 | <0.1 | <0.1 | *** |
| Republic | Kanghwa | | | | 0.2 | 0.3 | *** | 0.4 | 0.7 | 0.5 | 0.5 | 0.4 | *** | *** | 0.4 | 0.5 | 0.3 | 0.4 | 0.1 |
| of Korea | Cheju | | | | 0.2 | 0.9 | *** | 0.5 | *** | 0.7 | 0.6 | 0.5 | *** | *** | 0.4 | 0.8 | 0.5 | 0.6 | 0.3 |
| | Imsil | | 0.5 | *** | 1.7 | 0.4 | *** | 0.6 | 0.4 | 0.4 | 0.5 | 0.3 | *** | *** | 0.6 | 0.6 | 0.4 | 0.7 | 0.6 |
| Russia | Mondy | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 2.9 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Listvyanka | 0.2 | 0.2 | 0.4 | 0.1 | 0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 | 0.4 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 |
| | Irkutsk | <0.1 | 0.4 | 0.1 | 0.2 | <0.1 | 0.4 | <0.1 | 0.2 | 0.2 | 0.2 | 1.9 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Primorskaya | | 0.2 | 0.1 | <0.1 | <0.1 | <0.1 | 0.5 | <0.1 | 0.1 | 0.1 | 0.7 | <0.1 | 0.1 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 |
| Thailand | Bangkok | | | | 0.7 | 0.8 | 0.5 | 1.0 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 0.6 | 0.4 | 0.9 | 0.7 | 0.4 | 0.3 |
| | Pathumthani | | | | 0.6 | 1.3 | 0.3 | 0.6 | 0.8 | 0.3 | 0.7 | 0.9 | 0.3 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | 0.2 | *** | 0.6 | <0.1 | 0.2 | <0.1 | 0.2 | 0.5 | <0.1 | <0.1 | 0.3 | 0.1 | 0.2 | 0.3 | 1.7 | 0.2 |
| | Mae Hia | | 0.2 | 0.2 | 0.2 | 0.4 | 0.4 | 0.2 | 0.5 | 0.4 | 0.7 | 1.9 | 0.1 | 0.2 | 0.2 | <0.1 | <0.1 | 0.2 | 0.2 |
| | Sakaerat | | | | | | | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | <0.1 | 0.2 | <0.1 | 0.3 | 0.3 | 0.4 | 0.2 |
| Vietnam | Hanoi | 0.6 | 0.5 | 1.9 | 0.7 | 1.5 | 1.0 | 0.9 | 1.0 | 0.5 | 0.9 | 0.8 | 0.9 | 1.0 | 0.7 | 0.5 | 0.7 | 0.9 | 1.6 |
| | Hoa Binh | 0.5 | 0.2 | 1.8 | 0.4 | 0.5 | 0.8 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.5 | 0.7 | 0.9 |
| | Can Tho | | | | | | | | | | | | | | | 0.5 | 0.4 | 0.2 | <0.1 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 0.6 | 0.6 | 0.2 | 0.4 |
| | Yen Bai | | | | | | | | | | | | | | | | 0.7 | 0.6 | 1.3 |

Terms and abbreviations are given in Table 4.2.

**Table 4.23 Annual HCl concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.5 | 0.4 | 0.7 | 1.3 | 1.1 | 1.3 | 1.2 | 1.6 |
| China | Hongwen | | | | | | | | 1.5 | 1.2 | 1.5 | 14.5 | 13.3 | *** | *** | *** | *** | 1.8 | 1.5 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 3.2 | 1.9 | 0.9 | 1.1 |
| | Serpong | | 0.4 | 2.6 | 1.8 | 1.5 | 1.1 | 0.5 | 1.7 | 0.5 | 0.4 | 0.8 | 0.7 | 0.8 | 0.7 | 0.8 | 1.0 | 0.7 | 0.9 |
| | Bandung | | | | | | | | | | | | | | | 0.8 | 0.5 | 1.1 | 0.9 |
| Japan | Rishiri | | | 0.3 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 |
| | Ochiishi | | | | | | | | | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.5 | 0.4 | 0.8 | 0.4 | 0.4 |
| | Tappi | | | | 0.7 | 0.6 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 1.5 | 0.7 | 0.6 | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 |
| | Sado-seki | | | | 0.9 | 1.0 | 1.1 | 0.9 | 0.9 | 0.8 | 0.9 | 0.7 | 0.8 | 0.9 | 0.8 | 0.9 | 1.2 | 0.7 | 0.8 |
| | Happo | | | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | <0.1 | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | Ijira | | | | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 |
| | Oki | | | 0.2 | 0.3 | 0.5 | 0.9 | 0.9 | 1.1 | 0.9 | 0.8 | 0.8 | 1.0 | 0.9 | 1.0 | 0.9 | 0.9 | 0.8 | 0.8 |
| | Banryu | | | | 0.2 | 0.6 | 0.9 | 0.8 | 0.9 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 | 0.6 | 0.7 |
| | Yusuhara | | | | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 |
| | Hedo | | | | 0.9 | 1.0 | 0.9 | 0.9 | 1.0 | 0.9 | 0.9 | 0.5 | 0.4 | 0.6 | 1.0 | 1.1 | 1.1 | 1.0 | 0.9 |
| | Ogasawara | | | | 0.3 | 0.5 | 0.5 | 0.4 | 0.7 | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 | 0.5 | 0.4 | 0.4 |
| | Tokyo | | | | | | | | 1.0 | 0.8 | 0.8 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.8 | 0.7 | 0.7 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.3 | 0.2 | *** |
| Malaysia | Petaling Jaya | | 1.4 | *** | *** | 0.7 | 0.9 | 1.6 | 0.7 | 1.1 | 0.7 | 0.5 | 0.8 | 1.2 | 1.3 | 1.1 | 0.7 | 2.8 | 0.3 |
| | Tanah Rata | 0.1 | <0.1 | *** | *** | 0.3 | 0.1 | <0.1 | 0.1 | 0.4 | 0.1 | <0.1 | 0.2 | 0.4 | 0.3 | 0.3 | 0.4 | 0.7 | 0.2 |
| | Danum Valley | | | | | | | 0.2 | 0.2 | 0.3 | 0.5 | 0.3 | 0.2 | 0.5 | 1.0 | 0.4 | 0.3 | 0.3 | 0.1 |
| Mongolia | Ulaanbaatar | 0.3 | 0.1 | 0.4 | 1.0 | 0.9 | 0.7 | 1.0 | 0.9 | 0.7 | 0.7 | 1.7 | 1.1 | *** | *** | *** | *** | 11.3 | 1.7 |
| | Terelj | 0.1 | <0.1 | 0.3 | 0.7 | 0.6 | 0.4 | 0.4 | 0.5 | 0.4 | 0.3 | 0.5 | 0.5 | *** | *** | *** | *** | 4.3 | 0.5 |
| Myanmar | Yangon | | | | | | | | | | | | 1.5 | 1.5 | 0.6 | 0.7 | 0.7 | 0.2 | 0.4 |
| Philippines | Metro Manila | 5.4 | 0.3 | 0.9 | 1.2 | 1.0 | 0.9 | 0.5 | 0.7 | 0.7 | *** | 0.8 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 1.5 | 0.2 | 0.6 | 1.2 | 0.5 | 0.3 | 0.3 | 0.8 | 0.4 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.2 | <0.1 | 0.6 | 0.2 | 1.2 | *** | 0.2 | 0.2 | 0.2 | 0.7 | <0.1 | *** |
| Republic | Kanghwa | | | | 0.3 | 0.1 | *** | 0.2 | 0.2 | <0.1 | 0.1 | 0.2 | *** | *** | 0.3 | 0.2 | 0.1 | <0.1 | <0.1 |
| of Korea | Cheju | | | | 0.1 | 0.9 | *** | 0.2 | *** | 0.2 | 0.2 | 0.2 | *** | *** | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | Imsil | | 0.5 | *** | 0.2 | 2.0 | *** | 0.3 | 0.2 | 0.1 | 0.2 | 0.1 | *** | *** | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Russia | Mondy | <0.1 | <0.1 | <0.1 | 0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.5 | 0.4 | 0.7 | 0.7 | 0.8 | 1.9 | 1.6 | 2.7 |
| | Listvyanka | 0.3 | 0.2 | 0.4 | 0.3 | 0.2 | <0.1 | 0.2 | <0.1 | 0.1 | 0.2 | 0.6 | 1.8 | 9.8 | 2.1 | 2.6 | 7.4 | 9.0 | 6.0 |
| | Irkutsk | 0.3 | 0.4 | 0.3 | 0.4 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.5 | 1.4 | 2.6 | 1.7 | 1.4 | 7.0 | 3.2 | 4.7 |
| | Primorskaya | | 0.2 | 0.5 | 0.5 | 0.3 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.7 | 1.1 | 1.0 | 0.5 | 0.4 | 0.4 | 0.8 | 0.6 |
| Thailand | Bangkok | | | | 0.7 | 0.8 | 1.5 | 1.5 | 0.7 | 0.8 | 0.9 | 0.7 | 0.7 | 0.7 | 0.6 | 1.2 | 0.7 | 1.5 | 0.7 |
| | Pathumthani | | | | 0.5 | 0.8 | 0.6 | 1.1 | 1.2 | 0.4 | 0.9 | 0.7 | 0.5 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | 0.7 | *** | 0.5 | 0.1 | 0.3 | 0.2 | 0.3 | 0.2 | <0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 1.4 | 0.3 |
| | Mae Hia | | 0.9 | 0.4 | 0.2 | 0.3 | 0.4 | 0.5 | 0.2 | 0.2 | 0.3 | 0.4 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | Sakaerat | | | | | | | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.4 | 0.5 | 0.4 | 0.2 |
| Vietnam | Hanoi | 0.8 | 0.5 | 4.1 | 2.2 | 2.2 | 2.9 | 2.5 | 2.5 | 1.8 | 1.5 | 2.0 | 2.0 | 2.1 | 1.6 | 3.0 | 2.0 | 3.3 | 2.0 |
| | Hoa Binh | 0.1 | 0.2 | 4.4 | 3.3 | 1.5 | 2.3 | 1.5 | 2.1 | 1.8 | 1.2 | 1.5 | 1.6 | 1.7 | 1.6 | 3.2 | 1.8 | 2.4 | 1.6 |
| | Can Tho | | | | | | | | | | | | | | | 1.7 | 1.4 | 1.2 | 0.9 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1.6 | 1.1 | 1.5 | 1.3 |
| | Yen Bai | | | | | | | | | | | | | | | | 2.4 | 2.4 | 2.3 |

Terms and abbreviations are given in Table 4.2.

**Table 4.24 Annual $NH_3$ concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 14.3 | 11.5 | 9.9 | 9.4 | 6.9 | 7.3 | 6.8 | 7.5 |
| China | Hongwen | | | | | | | | 7.9 | 8.1 | 11.2 | 12.2 | 9.5 | *** | *** | *** | *** | 10.7 | 9.3 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 38.3 | 13.7 | 10.5 | 4.1 |
| | Serpong | | 4.6 | 5.1 | 12.9 | 10.2 | 11.2 | 6.2 | 8.5 | 6.3 | 5.9 | 5.4 | 11.0 | 16.1 | 11.7 | 11.8 | 18.3 | 11.1 | 5.8 |
| | Bandung | | | | | | | | | | | | | | | 8.4 | 9.4 | 6.6 | 8.6 |
| Japan | Rishiri | | | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 |
| | Ochiishi | | | | | | | | | 0.6 | 1.0 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 |
| | Tappi | | | | 0.6 | 0.5 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 |
| | Sado-seki | | | | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.6 | 0.7 |
| | Happo | | | | 0.5 | 0.3 | 0.6 | 0.4 | 0.3 | 0.4 | 0.2 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 |
| | Ijira | | | | 1.2 | 1.2 | 1.1 | 1.3 | 1.2 | 1.1 | 1.0 | 1.1 | 1.0 | 1.0 | 1.3 | 0.9 | 1.0 | 0.8 | 0.9 |
| | Oki | | | 1.1 | 0.6 | 0.8 | 0.8 | 0.7 | 0.8 | 1.0 | 1.0 | 0.8 | 0.7 | 0.5 | 0.6 | 0.6 | 0.7 | 0.9 | 0.6 |
| | Banryu | | | | 1.1 | 1.3 | 1.2 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 0.8 | 0.7 | 0.7 | 0.7 | 1.0 | 0.7 |
| | Yusuhara | | | | 0.7 | 0.5 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 |
| | Hedo | | | | 0.8 | 0.9 | 0.8 | 0.9 | 1.0 | 1.2 | 1.2 | 1.2 | 0.9 | 1.3 | 1.1 | 1.1 | 1.3 | 1.2 | 1.3 |
| | Ogasawara | | | | 0.2 | 0.5 | 0.9 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 0.5 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 |
| | Tokyo | | | | | | | | 6.1 | 5.2 | 5.0 | 4.9 | 4.4 | 3.9 | 4.6 | 4.6 | 4.2 | 4.2 | 4.2 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 2.6 | 2.7 | *** |
| Malaysia | Petaling Jaya | | 10.1 | *** | *** | 3.5 | 10.4 | 16.9 | 7.5 | 6.1 | 7.3 | 6.7 | 6.7 | 6.5 | 8.6 | 10.0 | 9.2 | 11.2 | 7.6 |
| | Tanah Rata | 0.5 | 0.2 | *** | 0.3 | 0.7 | 1.3 | 1.2 | 0.9 | 1.0 | 0.8 | 0.9 | 1.2 | 0.9 | 1.2 | 2.2 | 3.0 | 2.3 | 1.8 |
| | Danum Valley | | | | | | | 1.2 | 0.9 | 0.9 | 1.9 | 1.5 | 0.9 | 0.7 | 3.8 | 1.2 | 1.4 | 1.4 | 1.1 |
| Mongolia | Ulaanbaatar | 8.4 | 7.3 | 9.8 | 11.3 | 9.2 | 9.2 | 10.3 | 10.4 | 10.7 | 7.4 | 14.8 | 8.7 | *** | *** | *** | *** | *** | 9.7 |
| | Terelj | 1.0 | 0.7 | 1.5 | 1.7 | 1.3 | 1.4 | 1.6 | 1.3 | 1.2 | 1.9 | 1.4 | 1.5 | *** | *** | *** | *** | *** | 1.7 |
| Myanmar | Yangon | | | | | | | | | | | | 15.5 | 10.2 | 6.2 | 8.9 | 7.6 | 7.1 | 5.8 |
| Philippines | Metro Manila | <0.1 | 7.1 | 10.0 | 9.3 | 9.1 | 12.5 | 3.8 | 6.6 | 9.2 | *** | 7.5 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | <0.1 | 4.2 | 6.2 | 5.0 | 4.1 | 4.5 | 2.0 | 2.7 | 3.1 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.2 | 0.9 | 6.4 | 0.4 | 2.5 | *** | 1.0 | 1.1 | 2.2 | 1.9 | 1.9 | *** |
| Republic | Kanghwa | | | | 14.1 | 13.7 | *** | 4.8 | 9.7 | 3.4 | 3.2 | 4.6 | *** | *** | 7.4 | 3.7 | 4.3 | 0.8 | 0.4 |
| of Korea | Cheju | | | | 1.4 | 1.1 | *** | *** | *** | 3.7 | 4.9 | 7.0 | *** | *** | 3.2 | 6.9 | 7.5 | 4.0 | 7.0 |
| | Imsil | | 4.9 | *** | 4.6 | 6.0 | *** | 5.9 | 5.0 | 5.0 | 6.0 | 6.5 | *** | *** | 3.0 | 6.3 | 5.6 | 4.3 | 8.4 |
| Russia | Mondy | 0.6 | 0.2 | 0.7 | 0.7 | 0.5 | 0.8 | 1.9 | 0.8 | 0.7 | 0.4 | 0.4 | 0.4 | 0.7 | 0.6 | 0.4 | 0.8 | 1.5 | 1.0 |
| | Listvyanka | 1.1 | 0.2 | 0.8 | 1.7 | 1.6 | 0.8 | 4.4 | 2.5 | 2.7 | 2.4 | 2.8 | 0.8 | 0.6 | 1.3 | 2.4 | 2.8 | 3.9 | 2.9 |
| | Irkutsk | 1.8 | 0.5 | 1.3 | 2.2 | 4.4 | 1.8 | 3.7 | 3.8 | 3.3 | 2.9 | 2.2 | 1.7 | 1.4 | 1.5 | 4.8 | 2.8 | 3.0 | 2.3 |
| | Primorskaya | | | 12.0 | 10.8 | 7.8 | 1.2 | 2.7 | 3.6 | 2.9 | 1.8 | 2.2 | 4.2 | 1.3 | 1.1 | 1.3 | 1.4 | 2.5 | 0.8 |
| Thailand | Bangkok | | | | 5.8 | 10.2 | 7.8 | 10.1 | 10.2 | 8.2 | 8.7 | 7.9 | 8.8 | 8.3 | 8.7 | 14.6 | 9.2 | 9.7 | 6.4 |
| | Pathumthani | | | | 6.5 | 8.5 | 6.3 | 7.0 | 9.2 | 3.1 | 8.1 | 7.8 | 5.2 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | 6.5 | *** | 6.2 | 1.9 | 2.1 | 3.2 | 2.3 | 2.6 | 1.6 | 1.5 | 2.4 | 3.4 | 4.8 | 3.0 | 7.9 | 4.2 |
| | Mae Hia | | 6.5 | 5.0 | 6.9 | 4.9 | 3.0 | 3.2 | 4.7 | 3.8 | 5.8 | 9.0 | 5.3 | 4.4 | 3.5 | 1.5 | 0.9 | 5.0 | 4.6 |
| | Sakaerat | | | | | | | 2.8 | 2.4 | 2.6 | 2.3 | 2.0 | 1.8 | 3.3 | 2.9 | 3.5 | 3.9 | 4.6 | 3.5 |
| Vietnam | Hanoi | 9.6 | 5.8 | 4.1 | 5.4 | 13.9 | 4.0 | 2.8 | 4.1 | 5.0 | 4.8 | 5.7 | 6.4 | 4.8 | 1.4 | 1.6 | 2.6 | 4.3 | 3.9 |
| | Hoa Binh | 6.8 | 2.7 | 2.8 | 7.5 | 8.9 | 3.8 | 2.7 | 2.3 | 4.0 | 3.9 | 2.1 | 2.4 | 2.6 | 1.7 | 1.4 | 1.2 | 1.3 | 1.8 |
| | Can Tho | | | | | | | | | | | | | | | 2.6 | 2.5 | 3.3 | 3.4 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 3.0 | 2.8 | 4.3 | 5.6 |
| | Yen Bai | | | | | | | | | | | | | | | | 2.9 | 2.8 | 3.5 |

Terms and abbreviations are given in Table 4.2.

**Table 4.25 Annual NO concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| China | Jinyunshan | | | | | | 1.0 | 2.6 | 1.5 | 6.7 | 3.3 | 2.0 | 1.6 | 2.1 | 1.6 | 1.7 | 1.5 | 3.3 | 8.7 |
| | Weishuiyuan | | | | | | 5.1 | 9.8 | | | | | | | | | | | |
| Japan | Rishiri | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ochiishi | | | | | | | | | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Tappi | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | *** | *** | 0.2 | 0.1 | 0.1 | <0.1 | <0.1 | 0.2 | 0.1 |
| | Sado-seki | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Happo | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | (<0.1) | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ijira | 0.1 | 0.3 | 0.5 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.5 | 0.3 | 0.1 |
| | Oki | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | <0.1 |
| | Banryu | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | <0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| | Yusuhara | 0.2 | 0.1 | <0.1 | 0.1 | 0.2 | 0.3 | 0.1 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Hedo | <0.1 | 0.1 | 0.2 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | 0.2 | <0.1 | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| | Ogasawara | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | 8.4 | 10.9 | *** | *** |
| Malaysia | Tanah Rata | | | | | | | | 10.1 | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mongolia | Ulannbaatar | | | | | | | | | | | | | | | 21.8 | 27.8 | 22.7 | 19.4 |
| Philippines | Metro Manila | | | | | | | | | | | | | | | | 17.6 | 13.9 | *** |
| Thailand | Bangkok | | 25.0 | 21.6 | *** | 15.3 | 11.7 | 11.1 | 11.5 | 13.6 | 11.6 | 8.8 | 10.3 | 9.5 | 8.5 | 6.5 | 6.2 | 5.0 | 6.6 |
| | Samutprakarn | 23.0 | 18.9 | 18.0 | 14.5 | 15.5 | 14.4 | 16.4 | 16.7 | 15.3 | 15.2 | 13.3 | 15.1 | 17.1 | 12.6 | 11.6 | 9.5 | 8.5 | 7.3 |
| | Khanchanaburi | <0.1 | 1.2 | 0.3 | *** | 1.0 | 1.0 | 0.6 | 1.8 | 0.7 | 0.2 | 0.3 | 1.1 | 0.5 | 3.3 | 7.0 | 1.0 | 0.1 | 0.5 |
| | ChangPhueak | | | | 7.2 | 3.0 | 2.9 | 2.5 | 3.1 | 2.0 | 2.1 | 3.0 | 2.0 | 4.3 | 1.9 | 2.3 | 3.5 | 2.8 | 2.4 |
| | Si Phum | | | | | | | | | | | | | | 6.9 | 7.0 | 11.8 | 13.5 | 9.1 |
| | Nai Mueang | | | | | | | | | 5.9 | *** | 15.3 | 16.5 | 15.6 | 15.4 | 11.7 | 11.3 | 13.6 | 13.0 |

Terms and abbreviations are given in Table 4.2.

**Table 4.26 Annual $NO_2$ concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| China | Hongwen | | 11.3 | 12.6 | 13.6 | 13.8 | 16.4 | 23.8 | 22.9 | 19.9 | 18.8 | 21.1 | 20.2 | 20.0 | 19.5 | 18.6 | 14.8 | 16.1 | 14.7 |
| | Xiang Zhou | | 18.6 | 24.2 | 22.1 | 21.0 | 18.8 | 20.7 | 19.5 | 21.1 | 15.4 | 17.0 | 18.6 | | | | | | |
| | Haibin - Park | | | | | | | | | | | | | 13.8 | 17.6 | 18.7 | 15.6 | 16.9 | 15.9 |
| Indonesia | Jakarta | | | | | | | | 4.2 | 32.8 | 48.5 | 31.2 | *** | 16.3 | 26.5 | 25.9 | 25.7 | 26.5 | 28.4 |
| | Serpong | 6.3 | | | | | | | | | | | | | | | | | |
| | Kototabang | | | | | | | | 0.7 | 1.9 | 3.5 | 0.5 | *** | *** | 2.5 | 0.7 | 1.2 | 1.0 | 1.2 |
| | Bandung | | | | | | | | | 11.3 | 13.3 | 31.5 | 39.0 | 42.8 | 41.0 | 40.6 | 54.4 | 74.6 | 36.0 |
| Japan | Banryu | 3.8 | 3.9 | 3.7 | 3.8 | 3.5 | 3.4 | 2.5 | 3.3 | 3.4 | 2.8 | 2.6 | 2.5 | 1.9 | 1.7 | 1.8 | 1.6 | 1.8 | 2.0 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | 10.0 | 11.4 | *** | *** |
| Malaysia | Petaling Jaya | | 26.6 | 29.4 | 30.9 | | | | | | | | | | | | | | |
| Mongolia | Ulannbaatar | | | | | | | | | | | | | | | 26.9 | 30.3 | 35.9 | 42.9 |
| Philippines | Metro Manila | | | | | | | | | | | | | | | | 15.5 | 12.9 | *** |
| Republic | Kanghwa | | | | | | | | 5.3 | 6.9 | 7.1 | 6.4 | 5.4 | 5.0 | 5.7 | 5.9 | 7.4 | 6.8 | 5.7 |
| of Korea | Cheju | | | | | | | | 4.3 | 2.9 | 3.1 | 4.1 | 4.4 | 3.0 | 3.4 | 3.3 | 3.7 | 3.1 | 2.7 |
| | Imsil | | | | | | | | 4.2 | 4.1 | 4.5 | 5.1 | 5.0 | 4.6 | 5.1 | 4.0 | 4.4 | 4.6 | 4.0 |
| Thailand | Bangkok | | 25.3 | 28.5 | *** | 23.8 | 21.8 | 23.6 | 16.4 | 20.5 | 23.6 | 21.2 | 24.5 | 24.7 | 25.3 | 20.3 | 14.4 | 16.1 | 17.6 |
| | Samutprakarn | 18.4 | 21.0 | 15.2 | 17.6 | 13.8 | 16.9 | 19.3 | 19.5 | 16.4 | 19.0 | 15.5 | 21.5 | 17.1 | 15.1 | 12.4 | 10.5 | 13.4 | 15.6 |
| | ChangPhueak | | | | 14.9 | 10.9 | 7.6 | 8.3 | 9.7 | 8.5 | 8.8 | 9.5 | 9.6 | 11.2 | 12.3 | 11.2 | 10.2 | 9.3 | 8.4 |
| | Si Phum | | | | | | | | | | | | | | 16.1 | 14.9 | 18.1 | 18.9 | 14.5 |
| | Nai Mueang | | | | | | | | | 11.0 | *** | 17.9 | 17.6 | 18.7 | 19.4 | 15.6 | 15.0 | 17.7 | 22.7 |

Terms and abbreviations are given in Table 4.2.

**Table 4.27 Annual NOx concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| China | Jinyunshan (NOx*) | | | | | | 7.2 | 8.7 | 8.1 | 11.8 | 8.2 | 11.4 | 10.0 | 8.4 | 9.1 | 8.9 | 9.6 | 13.5 | 18.5 |
| | Weishuiyuan (NOx*) | | | | | | 14.7 | 26.8 | | | | | | | | | | | |
| Japan | Rishiri (NOx*) | 0.7 | 0.7 | 0.8 | 1.0 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 0.9 | 0.8 | 0.6 | 0.7 | 0.6 | 0.7 | 0.5 | 0.6 | 0.6 |
| | Ochiishi (NOx*) | | | | | | | | | 1.0 | 1.1 | 1.0 | 1.1 | 1.0 | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 |
| | Tappi (NOx*) | 0.9 | 1.2 | 1.3 | 1.4 | 1.5 | 1.4 | 1.2 | 1.3 | 1.6 | *** | *** | 1.1 | 1.2 | 1.4 | 1.5 | 1.4 | 1.4 | 1.3 |
| | Sado-seki (NOx*) | 0.9 | 1.2 | 1.6 | 1.9 | 1.7 | 1.3 | 1.3 | 1.2 | 1.1 | 0.9 | 0.8 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 | 0.7 | 0.7 |
| | Happo (NOx*) | 1.9 | 1.7 | 2.3 | 2.2 | 2.1 | 2.2 | 1.9 | (2.3) | 2.1 | 1.3 | 1.2 | 1.1 | 1.1 | 0.9 | 1.1 | 0.9 | 0.7 | 0.7 |
| | Ijira (NOx*) | 2.1 | 3.4 | 3.2 | 2.9 | 3.6 | 3.5 | 3.1 | 3.2 | 2.2 | 2.5 | 2.3 | 2.0 | 2.2 | 1.7 | 1.7 | 2.4 | 1.6 | 1.4 |
| | Oki (NOx*) | 1.2 | 1.3 | 1.6 | 1.3 | 1.5 | 1.6 | 1.5 | 1.5 | 1.5 | 1.3 | 1.3 | 1.3 | 1.0 | 1.1 | 1.3 | 1.1 | 1.0 | 1.0 |
| | Banryu | 3.9 | 4.3 | 4.0 | 4.3 | 3.7 | 4.0 | 2.8 | 3.5 | 3.6 | 3.0 | 2.8 | 2.5 | 2.0 | 1.9 | 2.0 | 1.8 | 1.9 | 2.1 |
| | Yusuhara (NOx*) | 1.9 | 1.8 | 1.7 | 1.7 | 1.4 | 1.8 | 1.5 | 1.3 | 1.3 | 1.1 | 1.8 | 1.3 | 1.4 | 1.4 | 1.2 | 1.3 | 1.3 | 1.5 |
| | Hedo (NOx*) | 0.6 | 0.9 | 0.9 | 0.8 | 0.9 | 0.7 | 0.8 | 0.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.5 | 0.9 | 0.7 | 0.7 | 0.6 | 0.7 |
| | Ogasawara (NOx*) | 0.3 | 0.7 | 0.5 | 0.5 | 0.4 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | 18.4 | 22.4 | *** | *** |
| Malaysia | Tanah Rata (NOx*) | | | | | | | | 12.2 | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mongolia | Ulannbaatar | | | | | | | | | | | | | | | 48.7 | 58.2 | 58.6 | 62.3 |
| Philippines | Metro Manila | | | | | | | | | | | | | | | | 33.2 | 26.9 | *** |
| Thailand | Bangkok | | 50.7 | 50.3 | 43.7 | 37.9 | 33.4 | 34.6 | 28.1 | 34.4 | 35.2 | 30.2 | 35.0 | 34.5 | 34.0 | 27.0 | 20.6 | 21.2 | 24.2 |
| | Samutprakarn | 40.4 | 38.9 | 32.7 | *** | 29.0 | 30.7 | 35.6 | 36.2 | 31.5 | 34.1 | 28.7 | 36.7 | 34.1 | 27.7 | 24.0 | 20.0 | 21.8 | 22.8 |
| | Khanchanaburi (NOx*) | 2.5 | 2.2 | 4.2 | *** | 3.4 | 5.5 | 2.8 | 3.0 | 1.2 | 1.4 | 3.1 | 4.1 | 2.0 | 4.7 | 11.6 | 3.0 | 2.7 | 1.4 |
| | Chang Phuseak | | | | 22.1 | 13.9 | 10.2 | 10.4 | 12.6 | 10.4 | 10.8 | 12.5 | 11.6 | 15.5 | 14.2 | 13.5 | 13.7 | 12.1 | 10.7 |
| | Si Phum | | | | | | | | | | | | | | 23.0 | 21.9 | 29.8 | 32.3 | 23.5 |
| | Nai Mueang | | | | | | | | | 16.9 | *** | 33.2 | 34.0 | 34.2 | 34.6 | 27.3 | 26.2 | 31.3 | 35.7 |

Terms and abbreviations are given in Table 4.2.

**Table 4.28 Annual $O_3$ concentration from 2000 to 2017**

unit: ppb

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indonesia | Bandung | | | | | | | | | | | | | | | | 26 | 10 | 11 |
| Japan | Rishiri | 39 | 39 | 41 | 43 | 43 | 42 | 43 | 46 | 42 | 42 | 40 | 37 | 34 | 37 | 39 | 40 | 39 | 37 |
| | Ochiishi | | | | | | | | | 38 | 37 | 38 | 35 | 39 | 39 | 42 | 40 | 38 | 42 |
| | Tappi | 47 | 46 | 46 | 45 | 47 | 51 | 51 | 54 | 60 | *** | *** | 38 | 41 | 40 | 39 | 38 | 41 | 45 |
| | Sado-seki | 44 | 41 | 43 | 49 | 49 | 48 | 48 | 48 | 47 | 49 | 53 | 49 | 46 | 46 | 47 | 45 | 45 | 45 |
| | Happo | 53 | 54 | 55 | 56 | 56 | 58 | 59 | (63) | 50 | 52 | 48 | 53 | 49 | 49 | 48 | 48 | 47 | 47 |
| | Ijira | 30 | 30 | 24 | 30 | 27 | 23 | 17 | 35 | 20 | 21 | 19 | 20 | 24 | 26 | 28 | 26 | 25 | 28 |
| | Oki | 45 | 44 | 40 | 39 | 45 | 45 | 44 | 45 | 45 | 46 | 45 | 46 | 46 | 48 | 47 | 47 | 46 | 47 |
| | Banryu | 36 | 36 | 37 | 36 | 37 | 37 | 34 | 34 | 35 | 36 | 35 | 33 | 33 | 33 | 33 | 33 | 33 | 35 |
| | Yusuhara | 39 | 29 | 29 | 33 | 39 | 43 | 42 | 40 | 40 | 41 | 36 | 33 | 34 | 39 | 40 | 40 | 37 | 41 |
| | Hedo | 41 | 41 | 42 | 39 | 32 | 35 | 40 | 38 | 39 | 39 | 38 | 33 | 35 | 38 | 40 | 39 | 36 | 36 |
| | Ogasawara | 22 | 27 | 29 | 30 | 30 | 33 | 31 | 32 | 28 | 30 | 38 | 29 | 32 | 37 | 33 | 35 | 29 | 36 |
| Malaysia | Tanah Rata | | | | | | | | 15 | *** | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| Mongolia | Ulannbaatar | | | | | | | | | | | | | | | 12 | 13 | 12 | 9 |
| Philippines | Metro Manila | | | | | | | | | | | | | | | | 7 | 10 | *** |
| Republic | Kanghwa | | | 42 | 43 | 40 | 41 | 27 | 43 | 41 | 43 | 43 | 39 | 44 | 46 | 50 | 47 | 45 | 43 |
| of Korea | Cheju | | | 41 | 28 | 38 | 40 | 35 | 38 | 42 | 44 | 42 | 35 | 39 | 41 | 45 | 46 | 39 | 47 |
| | Imsil | | | 31 | 22 | 24 | 30 | 30 | 30 | 20 | 33 | 30 | 30 | 33 | 31 | 31 | 36 | 36 | 29 |
| Russia | Mondy [1)] | | | 44 | 42 | 45 | 42 | 45 | 39 | 35 | 45 | 44 | 40 | 38 | 38 | 35 | 40 | 43 | 27 |
| | Listvyanka | | | | | | | | | | | | | | | 39 | 39 | 35 | 25 |
| | Irktusk | | | | | | | | | | | | | | | | | 30 | 14 |
| Thailand | Bangkok | | | | | | | | | 10 | 17 | 17 | 19 | 17 | 21 | 19 | 43 | 21 | 22 |
| | Samutprakarn | | 4 | 12 | 17 | 13 | 14 | 14 | 14 | 18 | 18 | 15 | 17 | 19 | 20 | 22 | 23 | 16 | 17 |
| | Khanchanaburi | 20 | 10 | 14 | *** | 15 | 17 | 10 | 7 | 16 | 14 | 23 | 12 | 16 | 13 | 22 | 20 | 19 | 18 |
| | ChangPhueak | | | | 13 | 22 | 20 | 19 | 23 | 22 | 26 | 24 | 25 | 21 | 21 | 20 | 22 | 25 | 22 |
| | Si Phum | | | | | | | | | | | | | | 22 | 19 | *** | *** | *** |
| | Nai Mueang | | | | | | | | | 22 | *** | 17 | *** | 19 | 22 | 22 | 21 | 22 | 26 |

Terms and abbreviations are given in Table 4.2.
1) $O_3$ at Mondy was monitored with Passive sampler from Nov. 2015 to Apr.2016 tentatively.

**Table 4.29 Annual $PM_{10}$ concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| China | Jinyunshan | | 96 | 73 | 70 | 64 | 60 | 78 | 65 | 50 | 40 | 51 | 45 | 43 | 64 | 57 | 48 | 56 | 50 |
| | Weishuiyuan | | 123 | 138 | 112 | 128 | 118 | 121 | | | | | | | | | | | |
| | Hongwen | | 61 | 62 | 68 | 64 | 66 | 97 | 71 | 59 | 60 | 63 | 61 | 59 | 58 | 54 | 43 | 42 | 43 |
| | Xiang Zhou | | 51 | 48 | 56 | 48 | 40 | 47 | 50 | 51 | 48 | 48 | 49 | | | | | | |
| | Haibin -Park | | | | | | | | | | | | | 44 | 54 | 46 | 50 | 41 | 42 |
| Japan | Rishiri | 16 | 18 | 18 | 16 | 17 | 14 | 15 | 14 | 16 | 16 | 18 | 15 | 13 | 12 | 26 | 19 | 16 | 17 |
| | Ochiishi | | | | | | | | | 30 | 24 | 22 | 23 | 20 | 16 | 26 | 22 | 18 | 16 |
| | Tappi | 64 | 19 | 26 | 16 | 20 | 19 | 18 | 17 | 22 | 16 | 28 | 18 | 17 | 18 | 20 | 20 | 18 | 16 |
| | Sado-seki | 24 | 25 | 27 | 22 | 28 | 24 | 24 | 22 | 23 | 22 | 21 | 21 | 19 | 20 | 23 | 24 | 20 | 21 |
| | Happo | 13 | 14 | 12 | 10 | 15 | 15 | 13 | 12 | 14 | 12 | 12 | 12 | 11 | 11 | 12 | 10 | 10 | 7 |
| | Ijira | 24 | 22 | 24 | 20 | 21 | 21 | 22 | 22 | 20 | 18 | 18 | 19 | 16 | 18 | 17 | 17 | 16 | 18 |
| | Oki | 26 | 29 | 31 | 23 | 27 | 28 | 30 | 29 | 26 | 26 | 29 | 25 | 23 | 27 | 31 | 32 | 29 | 28 |
| | Banryu | 29 | 31 | 35 | 25 | 29 | 29 | 31 | 31 | 27 | 26 | 28 | 24 | 22 | 25 | 25 | 24 | 22 | 24 |
| | Yusuhara | 15 | 22 | 22 | 18 | 20 | 20 | 20 | 19 | 18 | 18 | 18 | 16 | 15 | 17 | 15 | 16 | 14 | 14 |
| | Hedo | | 46 | 48 | 26 | 34 | 35 | 37 | 29 | 27 | 28 | 31 | 28 | 27 | 26 | 27 | 31 | 28 | 29 |
| | Ogasawara | 11 | 12 | 13 | 11 | 13 | 12 | 13 | 13 | 10 | 12 | 12 | 10 | 11 | 12 | 11 | 18 | 19 | 19 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | 72 | 72 | *** | *** |
| Malaysia | Petaling Jaya | 37 | *** | 39 | 41 | | | | | | | | | | | | | | |
| Mongolia | Ulannbaatar | | | | | | | | | | | | | | | 211 | 106 | 97 | 102 |
| Philippines | Metro Manila | | | | | | | | | | | | | | | | 33 | 29 | *** |
| Republic | Kanghwa | | | 53 | 56 | 54 | 58 | 46 | 52 | 48 | 51 | 51 | 44 | 45 | 48 | 49 | 52 | 51 | 49 |
| of Korea | Cheju | | | 43 | 41 | 36 | 39 | 51 | 54 | 50 | 43 | 47 | 42 | 37 | 45 | 47 | 45 | 42 | 37 |
| | Imsil | | | 57 | 42 | 44 | 54 | 57 | 43 | 59 | 34 | 40 | 38 | 36 | 39 | 44 | 43 | 42 | 39 |
| Thailand | Bangkok | 56 | 49 | *** | *** | 51 | 43 | 44 | 45 | 43 | 39 | 38 | 38 | 37 | 41 | 37 | 32 | 35 | 36 |
| | Samutprakarn | | | | | | | | | 45 | 43 | 38 | 54 | 39 | 44 | 41 | 35 | 38 | 38 |
| | Khanchanaburi | 38 | 21 | 79 | *** | 41 | 60 | 37 | 31 | 37 | 28 | 46 | 23 | 10 | 28 | 90 | 23 | 34 | 17 |
| | ChangPhueak | | | | 48 | 59 | 51 | 41 | 52 | 38 | 42 | 45 | 33 | 42 | 41 | 45 | 43 | 48 | 43 |
| | Si Phum | | | | | | | | | | | | | | 47 | 47 | 49 | 52 | 45 |
| | Nai Mueang | | | | | | | | | 47 | *** | 44 | *** | 54 | 59 | 51 | 45 | 55 | 54 |

Terms and abbreviations are given in Table 4.2.

**Table 4.30 Annual $PM_{2.5}$ concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | | | | | | | | 13 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | | | *** | 39 |
| Japan | Rishiri | | 9 | 8 | 10 | 8 | 8 | 8 | 8 | 9 | 8 | 9 | 8 | 8 | 7 | 8 | 8 | 7 | 8 |
| | Ochiishi | | | | | | | | | 16 | 12 | 12 | 10 | 9 | 7 | 7 | 9 | 8 | 7 |
| | Tappi | | | | | | | | | | | | | | | | 10 | 9 | 8 |
| | Sadoseki | | | | | | | | | | | | | | | 11 | 10 | 10 | 10 |
| | Happo | | | | | | | | | | | | | | | | 7 | 6 | 6 |
| | Ijira | | | | | | | | | | | | | | | | 11 | 9 | 11 |
| | Oki | | 12 | 14 | 12 | 13 | 15 | 15 | 15 | 14 | 12 | 12 | 14 | 13 | 15 | 13 | 13 | 12 | 11 |
| | Banryu | | | | | | | | | | | | | | | | 13 | 12 | 13 |
| | Yuahara | | | | | | | | | | | | | | | | 11 | 10 | 10 |
| | Hedo | | | | | | | | | | | | | | | | 10 | 10 | 11 |
| | Ogasawara | | | | | | | | | | | | | | | | 7 | 6 | 6 |
| Mongoloa | Ulaanbaatar | | | | | | | | | | | | | | | 50 | 50 | 53 | 48 |
| Myanmar | Mandalay | | | | | | | | | | | | | | | | 47 | 33 | 37 |
| Philippines | Metro Manila | | | | | | | | | | | | | | | | 22 | 20 | 18 |
| Republic | Kanghwa | | | | | | | | | | | | | | | | | 28 | 25 |
| of Korea | Cheju | | | | | | | | | | | | | | | | | 21 | 16 |
| Thailand | Bangkok | | | | | | | | | | | | | | | | 18 | 23 | 25 |
| | Samutprakarn | | | | | | | | | | | | | | | | | 28 | 24 |
| | Khanchanaburi | | | | | | | | | | | | | | | | 24 | *** | 7 |
| | ChangPhueak | | | | | | | | | | | | | | | | | 24 | 30 |
| | Si Phum | | | | | | | | | | | | | | 35 | 33 | 33 | 32 | 23 |
| Vietnam | Hoa Binh | | | | | | | | | | | | | | | | 40 | 49 | 37 |

Terms and abbreviations are given in Table 4.2.

**Table 4.31 Annual $SO_4^{2-}$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 2.85 | 2.95 | 2.63 | 2.91 | 2.11 | 2.20 | 1.54 | 2.11 |
| China | Hongwen | | | | | | | | 10.58 | 13.38 | 12.72 | 14.10 | 17.60 | *** | *** | *** | *** | 10.92 | 9.08 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 11.44 | 6.76 | 3.53 | 4.23 |
| | Serpong | | 1.8 | 1.5 | 0.53 | 0.82 | 1.50 | 0.56 | 0.50 | 0.71 | 0.79 | 0.50 | 0.65 | 4.03 | 3.54 | 3.69 | 5.16 | 3.41 | 4.43 |
| | Bandung | | | | | | | | | | | | | | | 6.93 | 2.69 | 2.73 | 2.28 |
| Japan | Rishiri | | | 1.8 | 2.55 | 2.40 | 2.61 | 2.39 | 2.44 | 2.94 | 2.50 | 2.74 | 2.71 | 2.32 | 2.72 | 2.21 | 2.52 | 2.05 | 2.13 |
| | Ochiishi | | | | | | | | | 2.73 | 2.61 | 2.31 | 2.13 | 1.95 | 2.19 | 2.52 | 2.05 | 1.98 | 2.38 |
| | Tappi | | | | 3.32 | 3.89 | 3.92 | 4.10 | 4.02 | 4.67 | 4.29 | 4.12 | 3.99 | 3.76 | 3.83 | 5.38 | 4.30 | 3.08 | 3.02 |
| | Sado-seki | | | | 3.11 | 3.55 | 4.08 | 3.07 | 3.64 | 4.17 | 3.58 | 3.20 | 3.50 | 3.53 | 3.71 | 3.54 | 4.03 | 2.88 | 2.82 |
| | Happo | | | | 2.11 | 2.30 | 2.59 | 2.79 | 2.58 | 2.52 | 0.59 | 0.86 | 1.02 | 2.36 | 2.50 | 2.49 | 2.16 | 1.80 | 1.57 |
| | Ijira | | | | 3.72 | 4.10 | 5.07 | 4.89 | 4.76 | 4.78 | 3.88 | 3.25 | 3.55 | 2.52 | 2.88 | 3.84 | 2.84 | 2.91 | 2.50 |
| | Oki | | | 4.4 | 3.91 | 3.94 | 6.29 | 5.73 | 5.21 | 4.54 | 4.29 | 4.43 | 4.76 | 4.90 | 5.56 | 5.25 | 4.69 | 4.84 | 4.31 |
| | Banryu | | | | 3.82 | 4.43 | 6.33 | 6.55 | 6.41 | 5.11 | 5.44 | 4.37 | 4.55 | 5.05 | 5.56 | 4.99 | 4.60 | 4.24 | 3.52 |
| | Yusuhara | | | | 4.09 | 5.16 | 6.15 | 5.81 | 6.44 | 4.54 | 5.16 | 4.46 | 4.03 | 4.44 | 5.28 | 4.72 | 3.75 | 3.29 | 3.16 |
| | Hedo | | | | 4.01 | 3.40 | 5.32 | 6.51 | 5.95 | 5.69 | 5.62 | 3.53 | 2.48 | 4.28 | 5.43 | 5.39 | 5.12 | 4.57 | 4.37 |
| | Ogasawara | | | | 1.26 | 1.36 | 0.87 | 1.65 | 3.91 | 2.72 | 2.64 | 2.17 | 2.46 | 2.41 | 3.10 | 2.58 | 2.69 | 1.93 | 1.94 |
| | Tokyo | | | | | | | | 5.36 | 5.15 | 4.62 | 4.28 | 4.06 | 3.14 | 4.38 | 4.11 | 3.79 | 3.16 | 3.08 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 4.75 | 3.77 | *** |
| Malaysia | Petaling Jaya | | 3.6 | 3.9 | 3.36 | 1.42 | 2.26 | 2.60 | 3.00 | 3.32 | 3.01 | 2.94 | 4.22 | 3.24 | 3.17 | 4.81 | 4.19 | 2.96 | 2.77 |
| | Tanah Rata | 1.2 | 0.7 | 0.5 | 0.50 | 0.81 | 1.07 | 1.38 | 1.37 | 1.59 | 1.39 | 0.95 | 1.18 | 1.52 | 1.48 | 2.59 | 3.29 | 2.01 | 1.28 |
| | Danum Valley | | | | | | | 0.69 | 0.76 | 1.12 | 3.64 | 1.73 | 0.86 | 0.38 | 0.78 | 1.11 | 1.80 | 1.10 | 0.75 |
| Mongolia | Ulaanbaatar | 2.1 | 2.5 | 1.8 | 3.59 | 3.63 | 5.10 | 5.68 | 4.20 | 1.33 | 2.24 | 4.70 | 4.11 | *** | *** | *** | *** | 2.10 | 2.23 |
| | Terelj | 1.1 | 1.5 | 0.7 | 0.78 | 1.24 | 0.85 | 1.40 | 1.41 | 1.42 | 1.07 | 0.61 | 1.06 | *** | *** | *** | *** | 1.70 | 0.11 |
| Myanmar | Yangon | | | | | | | | | | | | 3.77 | 3.59 | 1.40 | 1.56 | 0.90 | 0.54 | 1.70 |
| Philippines | Metro Manila | 2.0 | 1.9 | 2.3 | 3.74 | 3.19 | 3.31 | 2.63 | 3.15 | 2.37 | *** | 1.43 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.5 | 0.9 | 1.5 | 2.59 | 1.64 | 1.71 | 1.52 | 2.29 | 1.86 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.14 | 0.22 | 0.91 | 0.16 | 1.40 | *** | 0.15 | 0.17 | 0.38 | 0.27 | 0.30 | *** |
| Republic | Kanghwa | | 4.9 | 6.9 | 5.65 | 4.26 | 6.56 | 3.43 | 2.35 | 3.11 | 6.04 | 6.19 | *** | *** | 7.43 | 7.17 | 6.12 | 6.11 | 4.20 |
| of Korea | Cheju | | 2.7 | 6.7 | 6.99 | 8.90 | 7.11 | 8.05 | 6.75 | 5.51 | 4.68 | 3.82 | *** | *** | 4.37 | 7.81 | 5.62 | 4.75 | 2.01 |
| | Imsil | | 2.1 | 5.1 | 8.23 | 10.12 | 9.29 | 10.31 | 5.90 | 4.18 | 4.66 | 5.03 | *** | *** | 5.61 | 5.86 | 4.66 | 5.07 | 3.55 |
| Russia | Mondy | 0.5 | 0.8 | 0.5 | 0.99 | 0.66 | 0.34 | 0.49 | 0.22 | 0.38 | 0.39 | 0.14 | 0.19 | 0.22 | 0.22 | 0.05 | 0.29 | 0.45 | 0.58 |
| | Listvyanka | 1.4 | 2.5 | 1.7 | 2.75 | 1.79 | 0.79 | 1.16 | 1.57 | 1.02 | 1.58 | 0.89 | 1.00 | 1.09 | 0.67 | 1.00 | 0.86 | 0.88 | 0.85 |
| | Irkutsk | 2.4 | 3.8 | 3.9 | 2.51 | 1.70 | 2.67 | 2.13 | 2.91 | 2.55 | 2.36 | 2.29 | 2.28 | 3.07 | 1.71 | 2.14 | 2.18 | 2.03 | 1.85 |
| | Primorskaya | | 3.9 | 2.1 | 2.59 | 3.32 | 3.77 | 4.11 | 4.89 | 3.59 | 3.71 | 4.04 | 3.60 | 3.27 | 3.66 | 3.62 | 3.24 | 2.23 | 1.08 |
| Thailand | Bangkok | | | | 3.63 | 3.75 | 2.13 | 4.71 | 2.97 | 2.65 | 2.71 | 3.63 | 3.31 | 2.26 | 2.80 | 4.38 | 2.64 | 4.10 | 1.47 |
| | Pathumthani | | | | 2.34 | 3.46 | 1.39 | 3.14 | 4.69 | 1.41 | 3.12 | 3.78 | 1.64 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 5.59 | 0.15 | 2.74 | 3.24 | 2.54 | 1.32 | 0.29 | 2.08 | 2.34 | 1.40 | 3.19 | 1.97 | 15.58 | 1.82 |
| | Mae Hia | | 0.9 | 2.0 | 2.11 | 4.21 | 1.11 | 2.22 | 2.60 | 1.75 | 1.97 | 1.29 | 1.34 | 1.12 | 0.39 | 0.10 | 0.08 | 0.86 | 0.87 |
| | Sakaerat | | | | | | | 3.64 | 4.80 | 3.78 | 3.44 | 2.12 | 2.74 | 2.44 | 2.89 | 3.31 | 2.70 | 2.79 | 2.35 |
| Vietnam | Hanoi | 1.1 | 1.4 | 8.6 | 16.19 | 19.30 | 20.33 | 16.46 | 20.35 | 9.53 | 8.77 | 15.63 | 14.40 | 7.82 | 11.54 | 8.47 | 10.83 | 8.84 | 7.96 |
| | Hoa Binh | 2.3 | 2.6 | 4.2 | 2.34 | 2.13 | 12.41 | 7.80 | 8.38 | 4.51 | 2.49 | 2.26 | 3.81 | 1.59 | 2.58 | 4.95 | 6.38 | 5.78 | 3.24 |
| | Can Tho | | | | | | | | | | | | | | | 1.40 | 1.22 | 1.42 | 5.58 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 2.08 | 2.42 | 2.15 | 7.68 |
| | Yen Bai | | | | | | | | | | | | | | | | 8.68 | 6.49 | 6.61 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.32 Annual $NO_3^-$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 1.32 | 1.27 | 1.20 | 1.18 | 1.22 | 2.03 | 1.37 | 1.58 |
| China | Hongwen | | | | | | | | 5.81 | 8.10 | 7.98 | 11.66 | 11.66 | *** | *** | *** | *** | 7.62 | 8.26 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 4.67 | 2.37 | 1.34 | 1.36 |
| | Serpong | | 0.7 | 1.4 | 0.61 | 0.81 | 1.55 | 0.37 | 0.17 | 0.18 | 0.13 | 0.21 | 0.57 | 1.09 | 0.53 | 0.86 | 1.12 | 0.82 | 1.05 |
| | Bandung | | | | | | | | | | | | | | | 1.92 | 1.19 | 1.00 | 0.73 |
| Japan | Rishiri | | | 0.3 | 0.59 | 0.66 | 0.53 | 0.58 | 0.60 | 0.76 | 0.64 | 0.77 | 0.66 | 0.63 | 0.60 | 0.51 | 0.75 | 0.63 | 0.70 |
| | Ochiishi | | | | | | | | | 0.71 | 0.67 | 0.55 | 0.67 | 0.43 | 0.42 | 0.71 | 0.57 | 0.67 | 0.82 |
| | Tappi | | | | 1.24 | 1.13 | 0.92 | 1.17 | 1.18 | 1.23 | 1.29 | 1.24 | 1.27 | 0.98 | 1.04 | 1.45 | 1.29 | 1.23 | 1.27 |
| | Sado-seki | | | | 0.77 | 0.89 | 0.68 | 0.80 | 0.96 | 1.07 | 1.05 | 0.82 | 1.13 | 0.90 | 0.92 | 1.06 | 1.23 | 1.02 | 1.10 |
| | Happo | | | | 0.27 | 0.36 | 0.27 | 0.25 | 0.20 | 0.22 | 0.10 | 0.11 | 0.14 | 0.31 | 0.36 | 0.58 | 0.34 | 0.39 | 0.36 |
| | Ijira | | | | 0.41 | 0.49 | 0.48 | 0.54 | 0.49 | 0.39 | 0.40 | 0.40 | 0.47 | 0.25 | 0.30 | 0.42 | 0.39 | 0.46 | 0.41 |
| | Oki | | | 0.9 | 0.71 | 1.03 | 1.26 | 1.28 | 1.34 | 1.22 | 1.31 | 1.50 | 1.85 | 1.51 | 1.82 | 1.79 | 1.66 | 2.10 | 2.70 |
| | Banryu | | | | 0.69 | 1.09 | 1.43 | 1.54 | 1.57 | 1.35 | 1.43 | 1.53 | 1.68 | 1.51 | 1.65 | 1.45 | 1.47 | 1.67 | 2.13 |
| | Yusuhara | | | | 0.30 | 0.59 | 0.59 | 0.59 | 0.55 | 0.29 | 0.52 | 0.66 | 0.61 | 0.41 | 0.66 | 0.55 | 0.50 | 0.54 | 0.56 |
| | Hedo | | | | 1.50 | 1.16 | 1.11 | 1.65 | 1.48 | 1.52 | 1.63 | 1.09 | 0.80 | 1.27 | 1.62 | 1.72 | 1.87 | 1.59 | 1.75 |
| | Ogasawara | | | | 0.32 | 0.29 | 0.12 | 0.36 | 0.74 | 0.57 | 0.60 | 0.53 | 0.53 | 0.53 | 0.60 | 0.48 | 0.71 | 0.52 | 0.55 |
| | Tokyo | | | | | | | | 3.86 | 4.03 | 3.85 | 3.80 | 3.76 | 2.73 | 3.13 | 3.13 | 3.55 | 3.19 | 2.99 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.47 | 0.40 | *** |
| Malaysia | Petaling Jaya | | 0.6 | 0.2 | 0.10 | 0.56 | 0.97 | 0.81 | 1.18 | 1.17 | 1.22 | 1.25 | 1.14 | 1.23 | 1.65 | 1.53 | 1.70 | 1.46 | 1.29 |
| | Tanah Rata | 0.2 | <0.1 | 0.1 | 0.11 | 0.18 | 0.18 | 0.18 | 0.13 | 0.16 | 0.15 | 0.12 | 0.13 | 0.18 | 0.34 | 0.40 | 0.54 | 0.26 | 0.13 |
| | Danum Valley | | | | | | | 0.05 | 0.04 | 0.06 | 0.21 | 0.36 | 0.04 | 0.08 | 0.09 | 0.11 | 0.11 | 0.10 | 0.08 |
| Mongolia | Ulaanbaatar | 0.9 | 1.4 | 1.0 | 1.71 | 1.53 | 1.61 | 1.74 | 1.66 | 0.90 | 0.93 | 1.25 | 1.81 | *** | *** | *** | *** | 0.10 | 0.18 |
| | Terelj | 0.2 | 0.2 | 0.2 | 0.16 | 0.15 | 0.18 | 0.19 | 0.71 | 0.65 | 0.24 | 0.11 | 0.29 | *** | *** | *** | *** | <0.01 | 0.01 |
| Myanmar | Yangon | | | | | | | | | | | | 0.31 | 0.92 | 0.54 | 0.33 | 0.44 | 0.48 | 1.65 |
| Philippines | Metro Manila | 0.7 | 1.1 | 0.9 | 2.26 | 1.77 | 1.11 | 1.03 | 1.27 | 0.99 | *** | 0.85 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.2 | 0.8 | 0.5 | 1.18 | 0.64 | 0.42 | 0.29 | 0.39 | 0.27 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.02 | 0.07 | 1.15 | 0.12 | 0.78 | *** | 0.19 | 0.14 | 0.26 | 0.27 | 0.14 | *** |
| Republic | Kanghwa | | 0.5 | 2.3 | 4.19 | 1.12 | 1.85 | 2.03 | 1.03 | 1.92 | 2.38 | 3.50 | *** | *** | 3.51 | 2.54 | 3.40 | 3.25 | 2.82 |
| of Korea | Cheju | | <0.1 | 0.3 | 0.53 | 1.44 | 0.27 | 0.39 | 0.57 | 0.34 | 0.49 | 0.67 | *** | *** | 0.74 | 1.10 | 0.79 | 0.75 | 1.92 |
| | Imsil | | 0.3 | 0.6 | 0.51 | 1.23 | 1.56 | 3.99 | 3.05 | 2.86 | 2.67 | 3.82 | *** | *** | 2.95 | 2.82 | 1.93 | 1.17 | 2.72 |
| Russia | Mondy | <0.1 | 0.1 | 0.1 | 0.11 | 0.02 | 0.02 | 0.06 | 0.01 | 0.13 | 0.02 | 0.19 | 0.02 | 0.03 | 0.02 | <0.01 | 0.03 | 0.01 | 0.04 |
| | Listvyanka | 0.5 | 0.4 | 0.2 | 0.68 | 0.19 | 0.17 | 0.19 | 0.19 | 0.20 | 0.25 | 0.17 | 0.25 | 0.12 | 0.09 | 0.18 | 0.27 | 0.20 | 0.07 |
| | Irkutsk | 0.8 | 1.2 | 1.5 | 0.96 | 0.53 | 0.68 | 0.69 | 0.61 | 0.89 | 0.83 | 0.91 | 0.88 | 0.92 | 0.49 | 0.80 | 0.66 | 0.67 | 0.63 |
| | Primorskaya | | 1.8 | 0.3 | 0.39 | 0.57 | 1.24 | 1.18 | 1.04 | 1.03 | 1.10 | 0.79 | 0.27 | 0.68 | 1.17 | 1.37 | 1.15 | 0.77 | 0.53 |
| Thailand | Bangkok | | | | 1.51 | 1.93 | 2.83 | 1.60 | 1.51 | 1.44 | 1.62 | 1.86 | 2.00 | 1.91 | 1.41 | 2.77 | 2.20 | 1.98 | 1.28 |
| | Pathumthani | | | | 0.63 | 1.11 | 1.13 | 0.81 | 2.02 | 0.77 | 1.73 | 1.93 | 0.92 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 0.58 | 0.06 | 0.09 | 0.10 | 0.15 | 3.55 | 0.06 | 0.04 | 0.10 | 0.11 | 0.17 | 0.20 | 0.83 | 0.24 |
| | Mae Hia | | 0.7 | 0.2 | 0.28 | 0.47 | 0.38 | 0.67 | 0.62 | 0.36 | 0.66 | 10.25 | 0.24 | 0.31 | 0.30 | 0.11 | 0.13 | 0.18 | 0.18 |
| | Sakaerat | | | | | | | 0.52 | 0.48 | 0.41 | 0.34 | 0.18 | 0.31 | 0.28 | 0.41 | 0.58 | 0.32 | 0.30 | 0.27 |
| Vietnam | Hanoi | 0.3 | 0.3 | 1.9 | 5.33 | 8.74 | 10.52 | 5.34 | 6.21 | 2.89 | 3.52 | 7.81 | 6.82 | 5.57 | 6.73 | 5.86 | 7.26 | 6.58 | 11.14 |
| | Hoa Binh | 0.5 | 0.4 | 0.9 | 0.54 | 0.69 | 1.71 | 1.09 | 1.46 | 1.24 | 0.49 | 0.61 | 1.14 | 0.92 | 1.11 | 1.88 | 2.95 | 3.21 | 3.28 |
| | Can Tho | | | | | | | | | | | | | | | 0.67 | 0.55 | 0.66 | 2.19 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1.09 | 1.07 | 2.06 | 5.67 |
| | Yen Bai | | | | | | | | | | | | | | | | 3.19 | 4.36 | 8.00 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.33 Annual Cl⁻ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.20 | 0.24 | 0.24 | 0.40 | 0.26 | 0.54 | 0.56 | 0.32 |
| China | Hongwen | | | | | | | | 2.07 | 1.85 | 1.73 | 2.28 | 1.51 | *** | *** | *** | *** | 0.99 | 0.95 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 1.35 | 0.51 | 0.41 | 0.54 |
| | Serpong | | 0.1 | 1.5 | 1.24 | 0.79 | 1.07 | 0.21 | 0.46 | 0.10 | 0.09 | 0.25 | 0.10 | 0.16 | 0.20 | 0.18 | 0.28 | 0.29 | 0.23 |
| | Bandung | | | | | | | | | | | | | | | 0.31 | 0.27 | 0.20 | 0.57 |
| Japan | Rishiri | | | 2.4 | 2.04 | 2.73 | 2.35 | 2.03 | 2.25 | 2.20 | 2.42 | 2.79 | 2.31 | 1.94 | 2.00 | 2.95 | 3.57 | 2.21 | 2.66 |
| | Ochiishi | | | | | | | | | 4.44 | 6.88 | 4.34 | 3.28 | 3.06 | 4.58 | 4.12 | 4.46 | 3.89 | 3.81 |
| | Tappi | | | | 3.38 | 7.64 | 6.02 | 8.08 | 6.51 | 8.26 | 8.97 | 6.01 | 5.93 | 8.15 | 5.91 | 15.78 | 12.97 | 5.79 | 5.70 |
| | Sado-seki | | | | 3.08 | 3.88 | 3.08 | 3.56 | 3.30 | 4.61 | 3.38 | 3.78 | 3.06 | 3.02 | 3.43 | 3.00 | 4.39 | 3.77 | 3.52 |
| | Happo | | | | 0.02 | 0.03 | 0.02 | 0.03 | 0.02 | 0.01 | 0.02 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 |
| | Ijira | | | | 0.05 | 0.05 | 0.04 | 0.05 | 0.05 | 0.04 | 0.06 | 0.05 | 0.04 | 0.02 | 0.03 | 0.06 | 0.05 | 0.06 | 0.06 |
| | Oki | | | 1.4 | 1.30 | 2.12 | 2.55 | 2.42 | 2.36 | 2.71 | 3.69 | 4.54 | 4.29 | 4.20 | 4.98 | 4.96 | 4.58 | 5.25 | 10.45 |
| | Banryu | | | | 0.41 | 1.31 | 1.43 | 1.47 | 0.97 | 1.13 | 1.59 | 1.38 | 1.53 | 0.99 | 1.52 | 1.60 | 1.40 | 0.78 | 2.79 |
| | Yusuhara | | | | 0.03 | 0.07 | 0.07 | 0.08 | 0.04 | 0.03 | 0.21 | 0.10 | 0.08 | 0.17 | 0.06 | 0.06 | 0.07 | 0.07 | 0.06 |
| | Hedo | | | | 6.12 | 4.60 | 7.29 | 6.35 | 5.79 | 4.40 | 6.02 | 4.62 | 3.09 | 6.02 | 7.27 | 7.61 | 5.86 | 7.53 | 7.16 |
| | Ogasawara | | | | 2.86 | 1.66 | 0.94 | 2.69 | 3.82 | 3.04 | 3.93 | 3.44 | 3.79 | 3.55 | 3.51 | 3.50 | 4.32 | 3.83 | 3.71 |
| | Tokyo | | | | | | | | 0.62 | 0.63 | 0.68 | 0.66 | 0.70 | 0.49 | 0.59 | 0.53 | 0.53 | 0.57 | 0.43 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.06 | 0.06 | *** |
| Malaysia | Petaling Jaya | | <0.1 | <0.1 | 0.02 | 0.10 | 0.18 | 0.10 | 0.13 | 0.09 | 0.11 | 0.19 | 0.11 | 0.13 | 0.16 | 0.23 | 0.15 | 0.21 | 0.13 |
| | Tanah Rata | <0.1 | <0.1 | <0.1 | 0.08 | 0.03 | 0.03 | 0.04 | 0.03 | 0.02 | 0.03 | 0.05 | 0.03 | 0.03 | 0.07 | 0.10 | 0.11 | 0.09 | 0.04 |
| | Danum Valley | | | | | | | 0.04 | 0.02 | 0.04 | 0.15 | 0.33 | 0.04 | 0.02 | 0.11 | 0.13 | 0.11 | 0.07 | 0.08 |
| Mongolia | Ulaanbaatar | 0.5 | 0.7 | 0.4 | 0.82 | 1.02 | 1.06 | 1.25 | 0.87 | 0.47 | 1.84 | 1.06 | 1.18 | *** | *** | *** | *** | 0.08 | 0.20 |
| | Terelj | <0.1 | 0.2 | <0.1 | 0.20 | 0.18 | 0.30 | 0.19 | 0.36 | 0.24 | 0.22 | 0.18 | 0.23 | *** | *** | *** | *** | 0.02 | 0.03 |
| Myanmar | Yangon | | | | | | | | | | | | 0.59 | 0.56 | 0.21 | 0.27 | 0.63 | 0.57 | 0.13 |
| Philippines | Metro Manila | 2.6 | 0.5 | 0.5 | 0.86 | 0.77 | 0.39 | 0.62 | 0.62 | 0.59 | *** | 0.66 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 1.1 | 0.9 | 0.9 | 1.09 | 0.65 | 0.58 | 0.67 | 1.15 | 0.82 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.03 | 0.07 | 0.35 | 0.05 | 0.32 | *** | 0.05 | 0.04 | 0.10 | 0.08 | 0.04 | *** |
| Republic | Kanghwa | | 0.3 | 0.3 | 0.24 | 0.16 | 0.18 | 0.15 | 0.19 | 0.19 | 0.64 | 0.44 | *** | *** | 0.47 | 0.13 | 0.13 | 0.10 | 0.28 |
| of Korea | Cheju (Kosan) | | 0.3 | 0.3 | 0.41 | 0.53 | 0.14 | 0.13 | 0.30 | 0.32 | 0.29 | 0.46 | *** | *** | 1.12 | 0.72 | 0.37 | 0.60 | 0.54 |
| | Imsil | | 0.3 | 0.3 | 0.31 | 0.14 | 0.12 | 0.29 | 0.38 | 0.50 | 0.45 | 0.61 | *** | *** | 0.48 | 0.25 | 0.38 | 0.31 | 0.39 |
| Russia | Mondy | <0.1 | <0.1 | <0.1 | 0.12 | 0.02 | <0.01 | 0.03 | 0.01 | <0.01 | <0.01 | 0.33 | 0.04 | 0.24 | 0.14 | 0.04 | 0.05 | 0.01 | 0.03 |
| | Listvyanka | 0.4 | 0.8 | 0.3 | 0.13 | 0.26 | 0.03 | 0.08 | 0.12 | 0.11 | 0.11 | 0.11 | 0.04 | 0.26 | 0.06 | 0.09 | 0.12 | 0.06 | 0.05 |
| | Irkutsk | 0.1 | 0.4 | 0.4 | 0.24 | 0.15 | 0.12 | 0.19 | 0.30 | 0.32 | 0.40 | 0.31 | 0.43 | 0.46 | 0.24 | 0.26 | 0.17 | 0.23 | 0.19 |
| | Primorskaya | | 0.5 | 0.2 | 0.25 | 0.18 | 0.21 | 0.12 | 0.19 | 0.17 | 0.14 | 0.20 | 0.09 | 0.29 | 0.28 | 0.14 | 0.15 | 0.10 | 0.12 |
| Thailand | Bangkok | | | | 0.22 | 1.08 | 0.59 | 0.19 | 0.29 | 0.18 | 0.26 | 0.28 | 0.32 | 0.26 | 0.16 | 0.31 | 0.19 | 0.34 | 0.09 |
| | Pathumthani | | | | 0.07 | 0.11 | 0.31 | 0.09 | 0.39 | 0.07 | 0.20 | 0.14 | 0.15 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 0.06 | 0.02 | 0.08 | 0.02 | 0.06 | 0.04 | 0.10 | 0.05 | <0.01 | 0.05 | 0.04 | 0.08 | 0.26 | 0.22 |
| | Mae Hia | | 0.6 | 0.1 | 0.03 | 0.32 | 0.09 | 0.29 | 0.11 | 0.05 | 0.09 | 0.16 | 0.12 | 0.13 | 0.12 | 0.08 | 0.06 | 0.21 | 0.15 |
| | Sakaerat | | | | | | | 0.09 | 0.06 | 0.06 | 0.07 | 0.02 | 0.06 | 0.10 | 0.12 | 0.16 | 0.08 | 0.21 | 0.04 |
| Vietnam | Hanoi | 0.4 | 1.5 | 1.8 | 1.22 | 1.67 | 3.10 | 2.90 | 2.81 | 0.79 | 0.58 | 1.66 | 1.33 | 1.11 | 1.75 | 1.34 | 1.94 | 2.32 | 4.04 |
| | Hoa Binh | 0.3 | 0.1 | 1.7 | 1.17 | 0.94 | 1.41 | 0.65 | 0.58 | 0.64 | 0.11 | 0.35 | 0.27 | 0.43 | 0.59 | 1.18 | 0.79 | 1.18 | 1.04 |
| | Can Tho | | | | | | | | | | | | | | | 0.56 | 0.46 | 1.78 | 1.08 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 0.74 | 0.59 | 1.29 | 1.40 |
| | Yen Bai | | | | | | | | | | | | | | | | 1.01 | 1.25 | 3.58 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.34 Annual $NH_4^+$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.61 | 0.50 | 0.34 | 0.57 | 0.52 | 0.54 | 0.54 | 0.38 |
| China | Hongwen | | | | | | | | 3.66 | 5.55 | 5.48 | 6.72 | 5.85 | *** | *** | *** | *** | 3.68 | 2.83 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 0.57 | 0.71 | 0.40 | 0.32 |
| | Serpong | | 0.4 | 0.6 | 0.09 | 0.18 | 0.25 | 0.08 | 0.24 | 0.08 | 0.11 | 0.14 | 0.32 | 0.78 | 0.38 | 0.47 | 0.67 | 0.55 | 0.50 |
| | Bandung | | | | | | | | | | | | | | | 1.20 | 1.17 | 1.42 | 1.13 |
| Japan | Rishiri | | | 0.3 | 0.48 | 0.35 | 0.44 | 0.41 | 0.39 | 0.53 | 0.45 | 0.47 | 0.47 | 0.41 | 0.45 | 0.35 | 0.46 | 0.40 | 0.42 |
| | Ochiishi | | | | | | | | | 0.40 | 0.40 | 0.29 | 0.37 | 0.32 | 0.28 | 0.38 | 0.24 | 0.32 | 0.38 |
| | Tappi | | | | 0.60 | 0.67 | 0.57 | 0.63 | 0.64 | 0.77 | 0.66 | 0.68 | 0.64 | 0.53 | 0.58 | 0.69 | 0.46 | 0.48 | 0.49 |
| | Sado-seki | | | | 0.45 | 0.49 | 0.83 | 0.48 | 0.54 | 0.68 | 0.53 | 0.50 | 0.56 | 0.54 | 0.62 | 0.61 | 0.69 | 0.48 | 0.44 |
| | Happo | | | | 0.58 | 0.57 | 0.69 | 0.64 | 0.65 | 0.66 | 0.15 | 0.22 | 0.26 | 0.64 | 0.63 | 0.80 | 0.59 | 0.53 | 0.47 |
| | Ijira | | | | 1.24 | 1.17 | 1.45 | 1.39 | 1.32 | 1.36 | 1.06 | 0.87 | 0.95 | 0.69 | 0.81 | 1.11 | 0.76 | 0.82 | 0.68 |
| | Oki | | | 0.8 | 0.60 | 0.68 | 1.27 | 1.19 | 1.07 | 0.97 | 0.86 | 0.92 | 0.93 | 0.94 | 1.10 | 1.05 | 0.90 | 1.13 | 0.77 |
| | Banryu | | | | 0.62 | 0.97 | 1.43 | 1.51 | 1.60 | 1.32 | 1.30 | 1.02 | 1.06 | 1.24 | 1.40 | 1.22 | 1.11 | 1.17 | 0.93 |
| | Yusuhara | | | | 0.88 | 1.15 | 1.40 | 1.41 | 1.53 | 1.12 | 1.25 | 1.00 | 0.96 | 1.06 | 1.25 | 1.10 | 0.91 | 0.86 | 0.89 |
| | Hedo | | | | 0.56 | 0.46 | 0.67 | 0.80 | 0.88 | 0.98 | 0.86 | 0.42 | 0.43 | 0.71 | 0.69 | 0.61 | 0.66 | 0.51 | 0.53 |
| | Ogasawara | | | | 0.10 | 0.15 | 0.08 | 0.17 | 0.46 | 0.24 | 0.21 | 0.17 | 0.22 | 0.22 | 0.31 | 0.23 | 0.25 | 0.19 | 0.22 |
| | Tokyo | | | | | | | | 1.82 | 1.96 | 1.83 | 1.71 | 1.57 | 1.10 | 1.44 | 1.42 | 1.40 | 1.18 | 1.16 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 1.22 | 1.12 | *** |
| Malaysia | Petaling Jaya | | 0.9 | 1.3 | 1.01 | 0.30 | 0.59 | 0.76 | 0.76 | 0.82 | 0.73 | 0.80 | 1.12 | 0.75 | 0.94 | 1.37 | 1.18 | 0.92 | 0.74 |
| | Tanah Rata | 0.3 | 0.3 | 0.3 | 0.13 | 0.23 | 0.23 | 0.40 | 0.32 | 0.35 | 0.29 | 0.25 | 0.49 | 0.46 | 0.39 | 0.63 | 1.11 | 0.46 | 0.32 |
| | Danum Valley | | | | | | | 0.10 | 0.08 | 0.12 | 0.39 | 0.12 | 0.13 | 0.08 | 0.13 | 0.12 | 0.25 | 0.10 | 0.09 |
| Mongolia | Ulaanbaatar | 0.4 | 0.4 | 0.5 | 0.67 | 0.92 | 1.60 | 1.95 | 1.96 | 0.23 | 0.95 | 1.69 | 1.80 | *** | *** | *** | *** | 0.67 | 0.58 |
| | Terelj | 0.3 | 0.4 | 0.3 | 0.29 | 0.33 | 0.28 | 0.43 | 0.40 | 0.37 | 0.28 | 0.12 | 0.43 | *** | *** | *** | *** | 0.06 | 0.04 |
| Myanmar | Yangon | | | | | | | | | | | | 0.34 | 0.38 | 0.30 | 0.50 | 0.45 | 0.37 | 0.80 |
| Philippines | Metro Manila | <0.1 | 0.3 | 0.9 | 1.09 | 0.48 | 0.73 | 0.25 | 0.43 | 0.42 | *** | 0.14 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | <0.1 | 0.4 | 0.3 | 0.70 | 0.21 | 0.67 | 0.23 | 0.28 | 0.34 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.03 | 0.09 | 0.33 | 0.03 | 0.10 | *** | <0.01 | 0.01 | 0.10 | 0.05 | <0.01 | *** |
| Republic of Korea | Kanghwa | | 2.0 | 2.6 | 2.69 | 1.59 | 2.23 | 1.38 | 0.85 | 1.34 | 2.51 | 2.93 | *** | *** | 3.54 | 3.58 | 3.48 | 3.20 | 2.50 |
| | Cheju | | 0.7 | 2.0 | 2.44 | 2.98 | 2.05 | 2.39 | 2.15 | 1.61 | 1.54 | 1.32 | *** | *** | 1.80 | 2.83 | 2.30 | 1.86 | 1.19 |
| | Imsil | | 0.5 | 1.4 | 2.59 | 2.85 | 2.66 | 3.67 | 2.37 | 1.82 | 2.34 | 2.54 | *** | *** | 2.82 | 2.87 | 2.36 | 2.02 | 1.96 |
| Russia | Mondy | 0.1 | 0.2 | 0.2 | 0.36 | 0.17 | 0.12 | 0.09 | 0.02 | 0.09 | 0.07 | 0.01 | 0.02 | 0.04 | <0.01 | 0.02 | 0.03 | 0.09 | 0.12 |
| | Listvyanka | 0.8 | 1.2 | 0.8 | 0.92 | 0.63 | 0.37 | 0.27 | 0.33 | 0.21 | 0.24 | 0.15 | 0.22 | 0.22 | 0.10 | 0.35 | 0.20 | 0.21 | 0.32 |
| | Irkutsk | 1.0 | 1.6 | 1.5 | 0.76 | 0.59 | 0.69 | 0.46 | 0.93 | 0.80 | 0.66 | 0.49 | 0.62 | 0.80 | 0.40 | 0.55 | 0.70 | 0.93 | 0.57 |
| | Primorskaya | | 1.2 | 1.1 | 0.78 | 0.74 | 1.10 | 1.32 | 1.43 | 0.94 | 0.99 | 0.75 | 0.77 | 0.70 | 1.06 | 0.88 | 1.04 | 0.80 | 0.45 |
| Thailand | Bangkok | | | | 1.08 | 0.56 | 0.42 | 1.30 | 1.29 | 1.15 | 0.70 | 0.69 | 0.60 | 0.53 | 0.79 | 1.27 | 0.65 | 0.75 | 1.02 |
| | Pathumthani | | | | 0.46 | 0.73 | 0.38 | 0.86 | 1.37 | 0.71 | 1.50 | 0.84 | 0.26 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 1.41 | 0.04 | 0.65 | 0.91 | 1.10 | 0.83 | 0.18 | 0.46 | 0.07 | 0.30 | 0.67 | 0.60 | 2.73 | 0.58 |
| | Mae Hia | | 0.6 | 0.3 | 1.23 | 0.66 | 0.75 | 0.67 | 0.74 | 0.49 | 0.58 | 3.70 | 0.31 | 0.23 | 0.09 | 0.09 | 0.11 | 0.38 | 0.25 |
| | Sakaerat | | | | | | | 1.13 | 1.37 | 1.13 | 0.87 | 0.73 | 0.96 | 0.84 | 0.90 | 1.01 | 0.88 | 0.80 | 0.77 |
| Vietnam | Hanoi | 1.0 | 1.5 | 2.1 | 3.86 | 4.97 | 7.30 | 3.18 | 3.99 | 2.20 | 1.68 | 3.28 | 4.50 | 2.83 | 3.32 | 2.46 | 2.06 | 2.32 | 3.41 |
| | Hoa Binh | 0.8 | 0.8 | 2.1 | 6.25 | 1.46 | 4.27 | 2.29 | 2.24 | 0.84 | 0.90 | 0.64 | 1.55 | 0.66 | 0.90 | 1.76 | 1.99 | 1.90 | 1.03 |
| | Can Tho | | | | | | | | | | | | | | | 0.63 | 1.08 | 0.77 | 1.39 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1.00 | 1.35 | 1.44 | 1.23 |
| | Yen Bai | | | | | | | | | | | | | | | | 2.00 | 2.62 | 3.17 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.35 Annual $Na^+$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.53 | 0.63 | 0.57 | 0.67 | 0.59 | 0.81 | 0.64 | 0.63 |
| China | Hongwen | | | | | | | | 1.39 | 1.40 | 1.55 | 1.76 | 1.62 | *** | *** | *** | *** | 1.61 | 1.58 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 1.84 | 0.97 | 0.56 | 0.49 |
| | Serpong | | 0.4 | 1.0 | 0.47 | 0.63 | 0.22 | 0.32 | 0.11 | 0.06 | 0.10 | 0.09 | 0.16 | 0.45 | 0.37 | 0.40 | 0.69 | 0.36 | 0.32 |
| | Bandung | | | | | | | | | | | | | | | 0.57 | 0.64 | 0.41 | 0.49 |
| Japan | Rishiri | | | 1.7 | 1.65 | 2.02 | 1.76 | 1.62 | 1.78 | 1.82 | 1.91 | 2.14 | 1.84 | 1.58 | 1.64 | 2.13 | 2.44 | 1.65 | 1.88 |
| | Ochiishi | | | | | | | | | 3.09 | 4.37 | 2.87 | 2.45 | 2.15 | 3.00 | 2.72 | 2.86 | 2.56 | 2.64 |
| | Tappi | | | | 2.99 | 4.99 | 4.18 | 5.23 | 4.30 | 5.31 | 6.01 | 4.24 | 3.97 | 5.12 | 4.05 | 9.88 | 7.92 | 3.81 | 3.77 |
| | Sado-seki | | | | 2.39 | 2.92 | 2.22 | 2.52 | 2.53 | 3.32 | 2.56 | 2.67 | 2.43 | 2.38 | 2.56 | 2.34 | 3.17 | 2.68 | 2.57 |
| | Happo | | | | 0.09 | 0.14 | 0.08 | 0.08 | 0.08 | 0.10 | 0.03 | 0.03 | 0.05 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 |
| | Ijira | | | | 0.26 | 0.27 | 0.27 | 0.26 | 0.29 | 0.25 | 0.25 | 0.22 | 0.25 | 0.16 | 0.16 | 0.21 | 0.23 | 0.24 | 0.25 |
| | Oki | | | 2.3 | 2.00 | 1.59 | 2.38 | 2.26 | 2.21 | 2.26 | 2.75 | 3.35 | 3.28 | 3.25 | 3.80 | 3.74 | 3.40 | 3.89 | 6.68 |
| | Banryu | | | | 1.18 | 1.42 | 1.61 | 1.68 | 1.33 | 1.32 | 1.64 | 1.41 | 1.59 | 1.29 | 1.62 | 1.60 | 1.46 | 1.07 | 2.23 |
| | Yusuhara | | | | 0.34 | 0.44 | 0.43 | 0.45 | 0.43 | 0.26 | 0.54 | 0.41 | 0.42 | 0.39 | 0.45 | 0.34 | 0.30 | 0.30 | 0.28 |
| | Hedo | | | | 4.85 | 3.18 | 5.22 | 4.85 | 4.54 | 3.77 | 4.63 | 3.38 | 2.28 | 4.34 | 5.27 | 4.79 | 4.43 | 5.21 | 5.03 |
| | Ogasawara | | | | 1.86 | 1.24 | 0.68 | 1.78 | 2.95 | 2.38 | 2.80 | 2.38 | 2.61 | 2.45 | 2.65 | 2.54 | 3.06 | 2.54 | 2.50 |
| | Tokyo | | | | | | | | 0.99 | 0.80 | 0.94 | 0.91 | 0.89 | 0.71 | 0.87 | 0.77 | 0.87 | 0.86 | 0.76 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.28 | 0.25 | *** |
| Malaysia | Petaling Jaya | | 0.3 | 0.2 | 0.17 | 0.24 | 0.18 | 0.21 | 0.32 | 0.34 | 0.24 | 0.26 | 0.32 | 0.27 | 0.42 | 0.47 | 0.53 | 0.36 | 0.30 |
| | Tanah Rata | 0.1 | 0.1 | 0.1 | 0.09 | 0.08 | 0.09 | 0.13 | 0.14 | 0.13 | 0.10 | 0.10 | 0.12 | 0.12 | 0.16 | 0.21 | 0.24 | 0.20 | 0.08 |
| | Danum Valley | | | | | | | 0.13 | 0.13 | 0.16 | 0.59 | 0.72 | 0.17 | 0.05 | 0.16 | 0.32 | 0.35 | 0.25 | 0.18 |
| Mongolia | Ulaanbaatar | 0.3 | 0.3 | 0.2 | 0.60 | 0.49 | 0.47 | 0.38 | 0.32 | 0.09 | 0.08 | 0.21 | 0.20 | *** | *** | *** | *** | 0.20 | 0.31 |
| | Terelj | <0.1 | 0.1 | <0.1 | 0.09 | 0.17 | 0.14 | 0.11 | 0.12 | 0.08 | 0.11 | 0.02 | 0.09 | *** | *** | *** | *** | 0.03 | 0.03 |
| Myanmar | Yangon | | | | | | | | | | | | 0.59 | 0.74 | 0.21 | 0.34 | 0.12 | 0.31 | 0.19 |
| Philippines | Metro Manila | 1.3 | 1.1 | 0.3 | 0.92 | 0.89 | 0.62 | 0.61 | 0.79 | 0.97 | *** | 0.54 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.6 | 1.4 | 0.8 | 0.72 | 0.64 | 0.65 | 0.70 | 0.98 | 0.67 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.05 | 0.05 | 0.38 | 0.16 | 0.52 | *** | 0.07 | 0.10 | 0.31 | 0.58 | 0.24 | *** |
| Republic of Korea | Kanghwa | | 0.3 | 0.6 | 0.33 | 0.19 | 0.33 | 0.25 | 0.26 | 0.34 | 0.52 | 0.40 | *** | *** | 0.51 | 0.30 | 0.26 | 0.25 | 0.23 |
| | Cheju | | <0.1 | 0.4 | 0.52 | 0.72 | 0.35 | 0.40 | 0.39 | 0.41 | 0.51 | 0.45 | *** | *** | 0.64 | 0.57 | 0.28 | 0.39 | 0.38 |
| | Imsil | | 0.3 | 0.4 | 0.52 | 0.52 | 0.44 | 0.39 | 0.42 | 0.46 | 0.54 | 0.40 | *** | *** | 0.24 | 0.20 | 0.21 | 0.24 | 0.26 |
| Russia | Mondy | <0.1 | <0.1 | <0.1 | 0.04 | 0.04 | 0.02 | 0.04 | <0.01 | 0.02 | 0.03 | 0.36 | <0.01 | 0.08 | 0.06 | 0.01 | 0.06 | 0.02 | 0.16 |
| | Listvyanka | <0.1 | 0.2 | <0.1 | 0.18 | 0.20 | 0.05 | 0.06 | 0.07 | 0.12 | 0.16 | 0.08 | 0.04 | 0.24 | 0.05 | 0.06 | 0.06 | 0.13 | 0.24 |
| | Irkutsk | 0.1 | <0.1 | 0.1 | 0.19 | 0.13 | 0.21 | 0.17 | 0.12 | 0.23 | 0.50 | 0.26 | 0.28 | 0.28 | 0.14 | 0.16 | 0.13 | 0.14 | 0.45 |
| | Primorskaya | | 0.3 | 0.2 | 0.21 | 0.26 | 0.22 | 0.22 | 0.25 | 0.26 | 0.25 | 0.26 | 0.11 | 0.22 | 0.27 | 0.79 | 0.18 | 0.14 | 0.10 |
| Thailand | Bangkok | | | | 0.46 | 1.52 | 0.48 | 0.68 | 0.38 | 0.33 | 0.57 | 0.54 | 0.54 | 0.43 | 0.47 | 1.03 | 0.53 | 0.71 | 0.15 |
| | Pathumthani | | | | 0.23 | 0.54 | 0.27 | 0.34 | 0.40 | 0.27 | 0.38 | 0.30 | 0.22 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 0.38 | 0.01 | 0.17 | 0.12 | 0.17 | 0.09 | 0.06 | 0.09 | 0.07 | 0.13 | 0.25 | 0.19 | 1.49 | 0.20 |
| | Mae Hia | | 0.1 | 0.1 | 0.12 | 0.37 | 0.11 | 0.21 | 0.23 | 0.15 | 0.48 | 0.17 | 0.10 | 0.16 | 0.11 | 0.07 | 0.08 | 0.29 | 0.25 |
| | Sakaerat | | | | | | | 0.17 | 0.28 | 0.24 | 0.21 | 0.16 | 0.17 | 0.18 | 0.13 | 0.27 | 0.43 | 0.33 | 0.18 |
| Vietnam | Hanoi | 0.6 | 0.5 | 0.5 | 0.57 | 1.21 | 1.95 | 1.99 | 1.64 | 0.56 | 0.58 | 1.03 | 0.67 | 0.70 | 0.75 | 0.58 | 1.23 | 1.58 | 1.44 |
| | Hoa Binh | 0.3 | 0.2 | 0.5 | 0.12 | 0.61 | 0.92 | 0.52 | 0.25 | 0.24 | 0.13 | 0.28 | 0.23 | 0.31 | 0.44 | 0.26 | 0.78 | 1.21 | 0.54 |
| | Can Tho | | | | | | | | | | | | | | | 0.24 | 0.31 | 0.24 | 0.48 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 0.26 | 0.37 | 0.38 | 1.08 |
| | Yen Bai | | | | | | | | | | | | | | | | 0.83 | 1.18 | 0.88 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.36 Annual $K^+$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.63 | 0.59 | 0.46 | 0.73 | 0.67 | 0.75 | 0.50 | 0.56 |
| China | Hongwen | | | | | | | | 0.57 | 0.62 | 0.68 | 3.46 | 0.72 | *** | *** | *** | *** | 0.55 | 0.51 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 0.96 | 0.48 | 0.32 | 0.22 |
| | Serpong | | 0.4 | 0.5 | 0.28 | 0.15 | 0.25 | 0.11 | 0.05 | 0.07 | 0.08 | 0.14 | 0.37 | 0.45 | 0.37 | 0.40 | 0.45 | 0.39 | 0.28 |
| | Bandung | | | | | | | | | | | | | | | 0.55 | 0.74 | 0.48 | 0.47 |
| Japan | Rishiri | | | <0.1 | 0.13 | 0.14 | 0.13 | 0.15 | 0.13 | 0.16 | 0.14 | 0.15 | 0.14 | 0.10 | 0.10 | 0.15 | 0.16 | 0.12 | 0.13 |
| | Ochiishi | | | | | | | | | 0.16 | 0.18 | 0.13 | 0.12 | 0.10 | 0.12 | 0.13 | 0.15 | 0.14 | 0.11 |
| | Tappi | | | | 0.19 | 0.27 | 0.21 | 0.28 | 0.25 | 0.26 | 0.31 | 0.28 | 0.23 | 0.24 | 0.19 | 0.38 | 0.31 | 0.19 | 0.19 |
| | Sado-seki | | | | 0.11 | 0.17 | 0.14 | 0.15 | 0.16 | 0.19 | 0.18 | 0.17 | 0.17 | 0.14 | 0.15 | 0.16 | 0.18 | 0.14 | 0.14 |
| | Happo | | | | 0.05 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.02 | 0.01 | 0.02 | 0.04 | 0.04 | 0.05 | 0.03 | 0.03 | 0.03 |
| | Ijira | | | | 0.16 | 0.14 | 0.18 | 0.17 | 0.15 | 0.14 | 0.13 | 0.09 | 0.11 | 0.06 | 0.07 | 0.11 | 0.09 | 0.09 | 0.10 |
| | Oki | | | 0.2 | 0.19 | 0.22 | 0.26 | 0.23 | 0.21 | 0.18 | 0.20 | 0.22 | 0.24 | 0.22 | 0.24 | 0.24 | 0.20 | 0.54 | 0.29 |
| | Banryu | | | | 0.18 | 0.19 | 0.21 | 0.25 | 0.21 | 0.19 | 0.21 | 0.16 | 0.19 | 0.16 | 0.18 | 0.17 | 0.15 | 0.27 | 0.17 |
| | Yusuhara | | | | 0.11 | 0.18 | 0.21 | 0.21 | 0.18 | 0.11 | 0.16 | 0.12 | 0.15 | 0.09 | 0.12 | 0.13 | 0.09 | 0.08 | 0.07 |
| | Hedo | | | | 0.23 | 0.19 | 0.29 | 0.32 | 0.31 | 0.27 | 0.29 | 0.21 | 0.12 | 0.25 | 0.26 | 0.28 | 0.24 | 0.26 | 0.25 |
| | Ogasawara | | | | 0.10 | 0.07 | 0.03 | 0.08 | 0.16 | 0.16 | 0.16 | 0.13 | 0.13 | 0.12 | 0.13 | 0.12 | 0.18 | 0.11 | 0.12 |
| | Tokyo | | | | | | | | 0.20 | 0.19 | 0.21 | 0.18 | 0.17 | 0.12 | 0.16 | 0.16 | 0.16 | 0.13 | 0.13 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.36 | 0.36 | *** |
| Malaysia | Petaling Jaya | | 0.3 | 0.4 | 0.25 | 0.24 | 0.23 | 0.19 | 0.25 | 0.23 | 0.23 | 0.27 | 0.34 | 0.27 | 0.37 | 0.45 | 0.41 | 0.24 | 0.28 |
| | Tanah Rata | 0.1 | 0.1 | 0.3 | 0.07 | 0.09 | 0.21 | 0.10 | 0.08 | 0.09 | 0.08 | 0.08 | 0.12 | 0.11 | 0.13 | 0.18 | 0.22 | 0.12 | 0.08 |
| | Danum Valley | | | | | | | 0.09 | 0.09 | 0.12 | 0.43 | 0.29 | 0.16 | 0.06 | 0.14 | 0.20 | 0.21 | 0.17 | 0.15 |
| Mongolia | Ulaanbaatar | 0.2 | 0.3 | 0.2 | 0.53 | 0.42 | 0.61 | 0.60 | 0.25 | 0.12 | 0.16 | 0.22 | 0.29 | *** | *** | *** | *** | 0.08 | 0.15 |
| | Terelj | <0.1 | 0.2 | 0.2 | 0.24 | 0.24 | 0.20 | 0.13 | 0.14 | 0.09 | 0.16 | 0.04 | 0.08 | *** | *** | *** | *** | 0.03 | 0.03 |
| Myanmar | Yangon | | | | | | | | | | | | 1.24 | 0.76 | 0.24 | 0.55 | 0.94 | 0.40 | 0.47 |
| Philippines | Metro Manila | 14.3 | 1.0 | 0.3 | 0.74 | 0.33 | 0.26 | 0.46 | 0.41 | 0.43 | *** | 0.22 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.4 | 1.0 | 0.2 | 0.26 | 0.17 | 0.22 | 0.22 | 0.28 | 0.17 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.03 | 0.06 | 0.39 | 0.14 | 0.15 | *** | 0.01 | 0.01 | 0.07 | 0.06 | 0.10 | *** |
| Republic of Korea | Kanghwa | | 0.5 | 0.5 | 0.61 | 0.27 | 0.48 | 0.33 | 0.30 | 0.25 | 0.49 | 0.20 | *** | *** | 0.29 | 0.29 | 0.21 | 0.20 | 0.17 |
| | Cheju | | 0.2 | 0.4 | 1.29 | 0.72 | 0.45 | 0.46 | 0.40 | 0.33 | 0.21 | 0.12 | *** | *** | 0.15 | 0.25 | 0.11 | 0.15 | 0.10 |
| | Imsil | | 0.3 | 0.5 | 1.17 | 0.84 | 0.55 | 0.50 | 0.32 | 0.37 | 0.35 | 0.25 | *** | *** | 0.16 | 0.16 | 0.13 | 0.15 | 0.15 |
| Russia | Mondy | 0.1 | <0.1 | <0.1 | 0.08 | 0.05 | 0.02 | 0.04 | 0.01 | 0.02 | 0.02 | 0.04 | 0.02 | 0.08 | 0.08 | 0.01 | 0.03 | 0.03 | 0.08 |
| | Listvyanka | 0.3 | 0.2 | <0.1 | 0.23 | 0.15 | 0.09 | 0.05 | 0.06 | 0.09 | 0.11 | 0.07 | 0.06 | 0.28 | 0.06 | 0.05 | 0.05 | 0.07 | 0.28 |
| | Irkutsk | 0.5 | 0.2 | 0.1 | 0.21 | 0.09 | 0.18 | 0.10 | 0.11 | 0.21 | 0.16 | 0.13 | 0.25 | 0.32 | 0.15 | 0.16 | 0.09 | 0.15 | 0.53 |
| | Primorskaya | | 0.5 | 0.2 | 0.38 | 0.35 | 0.28 | 0.37 | 0.44 | 0.37 | 0.37 | 0.44 | 0.27 | 0.30 | 0.40 | 0.20 | 0.23 | 0.19 | 0.14 |
| Thailand | Bangkok | | | | 0.59 | 0.98 | 0.28 | 0.65 | 0.43 | 0.36 | 0.43 | 0.39 | 0.41 | 0.37 | 0.47 | 0.85 | 0.49 | 0.87 | 0.21 |
| | Pathumthani | | | | 0.49 | 0.61 | 0.47 | 0.48 | 1.82 | 0.26 | 0.54 | 0.47 | 0.24 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 0.88 | 0.99 | 0.34 | 0.16 | 0.19 | 0.27 | 0.06 | 0.13 | 0.06 | 0.19 | 0.43 | 0.27 | 1.78 | 6.90 |
| | Mae Hia | | 0.5 | 0.5 | 0.37 | 0.42 | 0.32 | 0.86 | 0.58 | 0.37 | 0.47 | 0.42 | 0.27 | 0.21 | 0.17 | 0.05 | 0.07 | 0.26 | 0.19 |
| | Sakaerat | | | | | | | 0.25 | 0.37 | 0.34 | 0.31 | 0.18 | 0.64 | 0.51 | 0.16 | 0.33 | 0.30 | 0.25 | 0.22 |
| Vietnam | Hanoi | 0.1 | 0.2 | 0.8 | 0.82 | 1.90 | 2.61 | 1.70 | 2.04 | 1.00 | 0.79 | 1.15 | 0.85 | 1.36 | 2.34 | 0.64 | 0.98 | 1.09 | 0.96 |
| | Hoa Binh | 0.3 | 0.4 | 1.2 | 0.39 | 0.61 | 2.37 | 1.19 | 1.41 | 0.94 | 0.70 | 0.65 | 0.32 | 0.56 | 1.30 | 0.83 | 0.70 | 0.90 | 0.31 |
| | Can Tho | | | | | | | | | | | | | | | 0.89 | 0.19 | 0.30 | 0.29 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 0.53 | 0.34 | 0.58 | 0.66 |
| | Yen Bai | | | | | | | | | | | | | | | | 1.11 | 0.94 | 0.91 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.37 Annual $Mg^{2+}$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.12 | 0.14 | 0.11 | 0.14 | 0.13 | 0.17 | 0.12 | 0.16 |
| China | Hongwen | | | | | | | | 0.28 | 0.31 | 0.33 | 0.48 | 0.31 | *** | *** | *** | *** | 0.25 | 0.30 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 0.34 | 0.16 | 0.09 | 0.07 |
| | Serpong | | 0.2 | <0.1 | 0.04 | 0.12 | 0.08 | 0.04 | 0.05 | 0.03 | 0.02 | 0.02 | 0.05 | 0.09 | 0.08 | 0.09 | 0.07 | 0.06 | 0.05 |
| | Bandung | | | | | | | | | | | | | | | 0.14 | 0.21 | 0.17 | 0.15 |
| Japan | Rishiri | | | 0.2 | 0.20 | 0.24 | 0.21 | 0.20 | 0.22 | 0.24 | 0.24 | 0.26 | 0.22 | 0.19 | 0.19 | 0.25 | 0.29 | 0.19 | 0.23 |
| | Ochiishi | | | | | | | | | 0.44 | 0.56 | 0.34 | 0.30 | 0.25 | 0.35 | 0.33 | 0.34 | 0.28 | 0.30 |
| | Tappi | | | | 0.39 | 0.61 | 0.49 | 0.63 | 0.52 | 0.56 | 0.68 | 0.48 | 0.46 | 0.60 | 0.49 | 1.11 | 0.90 | 0.43 | 0.44 |
| | Sado-seki | | | | 0.30 | 0.36 | 0.31 | 0.28 | 0.31 | 0.39 | 0.31 | 0.32 | 0.30 | 0.29 | 0.31 | 0.29 | 0.38 | 0.32 | 0.32 |
| | Happo | | | | 0.02 | 0.03 | 0.02 | 0.02 | 0.03 | 0.03 | <0.01 | <0.01 | 0.01 | 0.02 | 0.03 | 0.03 | 0.02 | 0.02 | 0.01 |
| | Ijira | | | | 0.05 | 0.04 | 0.04 | 0.04 | 0.05 | 0.04 | 0.04 | 0.04 | 0.04 | 0.02 | 0.02 | 0.04 | 0.03 | 0.03 | 0.03 |
| | Oki | | | 0.2 | 0.23 | 0.27 | 0.31 | 0.30 | 0.29 | 0.28 | 0.34 | 0.44 | 0.36 | 0.39 | 0.46 | 0.44 | 0.40 | 0.47 | 0.79 |
| | Banryu | | | | 0.15 | 0.19 | 0.23 | 0.26 | 0.22 | 0.17 | 0.20 | 0.20 | 0.21 | 0.17 | 0.22 | 0.22 | 0.20 | 0.14 | 0.28 |
| | Yusuhara | | | | 0.07 | 0.08 | 0.08 | 0.09 | 0.09 | 0.05 | 0.08 | 0.08 | 0.07 | 0.06 | 0.08 | 0.06 | 0.05 | 0.05 | 0.04 |
| | Hedo | | | | 0.61 | 0.38 | 0.67 | 0.60 | 0.58 | 0.47 | 0.58 | 0.44 | 0.29 | 0.53 | 0.63 | 0.67 | 0.55 | 0.65 | 0.65 |
| | Ogasawara | | | | 0.25 | 0.14 | 0.08 | 0.22 | 0.37 | 0.33 | 0.36 | 0.30 | 0.32 | 0.31 | 0.33 | 0.31 | 0.36 | 0.31 | 0.31 |
| | Tokyo | | | | | | | | 0.15 | 0.12 | 0.13 | 0.12 | 0.13 | 0.11 | 0.14 | 0.13 | 0.13 | 0.12 | 0.12 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.05 | 0.05 | *** |
| Malaysia | Petaling Jaya | | <0.1 | <0.1 | 0.02 | 0.03 | 0.03 | 0.03 | 0.09 | 0.05 | 0.03 | 0.05 | 0.04 | 0.03 | 0.07 | 0.08 | 0.08 | 0.04 | 0.04 |
| | Tanah Rata | <0.1 | <0.1 | <0.1 | 0.01 | 0.01 | 0.01 | 0.02 | 0.04 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.03 | 0.04 | 0.04 | 0.02 | <0.01 |
| | Danum Valley | | | | | | | 0.01 | 0.04 | 0.05 | 0.07 | 0.10 | 0.02 | <0.01 | 0.01 | 0.04 | 0.05 | 0.03 | 0.02 |
| Mongolia | Ulaanbaatar | 0.1 | 0.3 | 0.1 | 0.40 | 0.33 | 0.35 | 0.26 | 0.19 | 0.11 | 0.04 | 0.18 | 0.38 | *** | *** | *** | *** | 0.04 | 0.05 |
| | Terelj | <0.1 | <0.1 | <0.1 | 0.04 | 0.06 | 0.06 | 0.06 | 0.02 | 0.02 | 0.04 | 0.04 | 0.05 | *** | *** | *** | *** | 0.01 | <0.01 |
| Myanmar | Yangon | | | | | | | | | | | | 0.18 | 0.13 | 0.04 | 0.09 | 0.15 | 0.20 | 0.04 |
| Philippines | Metro Manila | 2.7 | <0.1 | <0.1 | 0.15 | 0.10 | 0.11 | 0.24 | 0.14 | 0.17 | *** | 0.10 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 0.1 | <0.1 | 0.1 | 0.10 | 0.07 | 0.06 | 0.09 | 0.14 | 0.11 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.01 | <0.01 | 0.07 | <0.01 | 0.06 | *** | 0.03 | 0.04 | 0.03 | 0.04 | 0.04 | *** |
| Republic | Kanghwa | | <0.1 | <0.1 | 0.07 | 0.01 | 0.01 | 0.01 | <0.01 | 0.01 | 0.03 | 0.04 | *** | *** | 0.08 | 0.02 | <0.01 | <0.01 | <0.01 |
| of Korea | Cheju | | <0.1 | <0.1 | 0.05 | 0.04 | 0.01 | 0.02 | 0.09 | 0.02 | <0.01 | 0.04 | *** | *** | 0.04 | 0.04 | 0.03 | 0.07 | 0.03 |
| | Imsil | | <0.1 | <0.1 | 0.06 | 0.05 | 0.03 | 0.04 | 0.03 | 0.01 | 0.02 | 0.05 | *** | *** | 0.03 | 0.03 | 0.03 | 0.08 | 0.03 |
| Russia | Mondy | <0.1 | <0.1 | <0.1 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | 0.01 |
| | Listvyanka | <0.1 | <0.1 | <0.1 | 0.04 | 0.04 | 0.02 | 0.02 | 0.03 | 0.02 | 0.03 | 0.02 | 0.02 | 0.01 | <0.01 | <0.01 | <0.01 | 0.04 | 0.02 |
| | Irkutsk | 0.1 | <0.1 | <0.1 | 0.08 | 0.06 | 0.07 | 0.08 | 0.09 | 0.13 | 0.08 | 0.08 | 0.09 | 0.06 | 0.04 | 0.05 | 0.04 | 0.06 | 0.04 |
| | Primorskaya | | <0.1 | <0.1 | 0.03 | 0.19 | 0.08 | 0.07 | 0.07 | 0.08 | 0.07 | 0.08 | 0.07 | 0.06 | 0.08 | 0.20 | 0.05 | 0.07 | 0.01 |
| Thailand | Bangkok | | | | 0.12 | 0.50 | 0.10 | 0.13 | 0.09 | 0.08 | 0.09 | 0.14 | 0.09 | 0.07 | 0.11 | 0.20 | 0.13 | 0.12 | 0.07 |
| | Pathumthani | | | | 0.05 | 0.80 | 0.05 | 0.05 | 0.08 | 0.06 | 0.07 | 0.05 | 0.04 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | <0.1 | *** | 0.14 | <0.01 | 0.04 | 0.04 | 0.10 | 0.03 | <0.01 | 0.03 | 0.03 | 0.03 | 0.06 | 0.05 | 0.41 | 0.03 |
| | Mae Hia | | <0.1 | <0.1 | 0.32 | 0.03 | 0.02 | 0.22 | 0.07 | 0.04 | 0.04 | 0.04 | 0.02 | 0.03 | 0.03 | 0.01 | 0.02 | 0.04 | 0.04 |
| | Sakaerat | | | | | | | 0.05 | 0.06 | 0.05 | 0.04 | 0.02 | 0.01 | 0.01 | <0.01 | 0.02 | 0.03 | 0.22 | 0.05 |
| Vietnam | Hanoi | 0.1 | 0.2 | 0.4 | 0.16 | 0.51 | 0.67 | 0.52 | 0.44 | 0.18 | 0.32 | 0.48 | 0.35 | 0.41 | 0.46 | 0.41 | 0.57 | 0.50 | 0.38 |
| | Hoa Binh | 0.1 | <0.1 | 0.2 | 0.04 | 0.66 | 0.49 | 0.13 | 0.15 | 0.09 | 0.11 | 0.11 | 0.08 | 0.14 | 0.28 | 0.19 | 0.21 | 0.25 | 0.14 |
| | Can Tho | | | | | | | | | | | | | | | 0.15 | 0.20 | 0.22 | 0.40 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 0.23 | 0.46 | 0.72 | 0.44 |
| | Yen Bai | | | | | | | | | | | | | | | | 0.19 | 2.26 | 0.13 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.38 Annual $Ca^{2+}$ in PM concentration from 2000 to 2017**

unit: μg/m$^3$

| Country | Site | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cambodia | Phnom Penh | | | | | | | | | | | 0.87 | 0.82 | 0.76 | 0.87 | 0.71 | 1.32 | 1.07 | 1.17 |
| China | Hongwen | | | | | | | | 2.84 | 2.79 | 2.73 | 9.44 | 1.59 | *** | *** | *** | *** | 1.56 | 1.80 |
| Indonesia | Jakarta | | | | | | | | | | | | | | | 3.18 | 1.14 | 0.83 | 0.59 |
| | Serpong | | 0.4 | 0.3 | 0.22 | 0.61 | 0.28 | 0.36 | 0.26 | 0.13 | 0.07 | 0.09 | 0.18 | 0.59 | 0.51 | 0.54 | 0.68 | 0.43 | 0.41 |
| | Bandung | | | | | | | | | | | | | | | 1.32 | 1.61 | 1.28 | 1.09 |
| Japan | Rishiri | | | <0.1 | 0.13 | 0.16 | 0.14 | 0.13 | 0.14 | 0.17 | 0.16 | 0.18 | 0.13 | 0.13 | 0.14 | 0.13 | 0.18 | 0.12 | 0.15 |
| | Ochiishi | | | | | | | | | 0.15 | 0.24 | 0.14 | 0.14 | 0.10 | 0.17 | 0.24 | 0.14 | 0.12 | 0.15 |
| | Tappi | | | | 0.22 | 0.38 | 0.27 | 0.35 | 0.30 | 0.30 | 0.39 | 0.36 | 0.29 | 0.27 | 0.26 | 0.45 | 0.41 | 0.24 | 0.24 |
| | Sado-seki | | | | 0.16 | 0.31 | 0.22 | 0.23 | 0.25 | 0.29 | 0.25 | 0.24 | 0.25 | 0.19 | 0.25 | 0.25 | 0.31 | 0.23 | 0.22 |
| | Happo | | | | 0.06 | 0.16 | 0.15 | 0.17 | 0.14 | 0.12 | 0.07 | 0.05 | 0.04 | 0.11 | 0.19 | 0.18 | 0.13 | 0.10 | 0.07 |
| | Ijira | | | | 0.12 | 0.16 | 0.16 | 0.18 | 0.17 | 0.13 | 0.14 | 0.15 | 0.17 | 0.08 | 0.09 | 0.13 | 0.11 | 0.12 | 0.11 |
| | Oki | | | 0.2 | 0.19 | 0.28 | 0.33 | 0.29 | 0.28 | 0.22 | 0.30 | 0.47 | 0.38 | 0.25 | 0.30 | 0.30 | 0.28 | 0.35 | 0.45 |
| | Banryu | | | | 0.17 | 0.22 | 0.27 | 0.31 | 0.30 | 0.22 | 0.29 | 0.44 | 0.26 | 0.20 | 0.25 | 0.21 | 0.21 | 0.23 | 0.26 |
| | Yusuhara | | | | 0.16 | 0.27 | 0.25 | 0.27 | 0.28 | 0.14 | 0.36 | 0.33 | 0.21 | 0.15 | 0.26 | 0.19 | 0.12 | 0.12 | 0.12 |
| | Hedo | | | | 0.32 | 0.36 | 0.37 | 0.48 | 0.43 | 0.34 | 0.43 | 0.48 | 0.18 | 0.32 | 0.42 | 0.41 | 0.40 | 0.38 | 0.38 |
| | Ogasawara | | | | 0.11 | 0.10 | 0.04 | 0.13 | 0.22 | 0.16 | 0.20 | 0.23 | 0.17 | 0.15 | 0.16 | 0.14 | 0.29 | 0.14 | 0.15 |
| | Tokyo | | | | | | | | 0.56 | 0.52 | 0.51 | 0.59 | 0.49 | 0.36 | 0.52 | 0.49 | 0.45 | 0.40 | 0.43 |
| Lao PDR | Vientiane | | | | | | | | | | | | | | | | 0.22 | 0.22 | *** |
| Malaysia | Petaling Jaya | | 0.5 | 0.2 | 0.07 | 0.76 | 0.20 | 0.39 | 0.68 | 0.47 | 0.34 | 0.46 | 0.37 | 0.38 | 0.47 | 0.81 | 0.81 | 0.44 | 0.35 |
| | Tanah Rata | <0.1 | 0.2 | <0.1 | 0.02 | 0.18 | 0.06 | 0.07 | 0.10 | 0.08 | 0.07 | 0.07 | 0.07 | 0.09 | 0.28 | 0.42 | 0.18 | 0.12 | 0.05 |
| | Danum Valley | | | | | | | 0.02 | 0.03 | 0.02 | 0.04 | 0.07 | 0.02 | 0.02 | 0.04 | 0.07 | 0.04 | 0.03 | 0.02 |
| Mongolia | Ulaanbaatar | 3.6 | 4.4 | 3.6 | 6.76 | 4.76 | 4.86 | 4.64 | 3.69 | 3.38 | 1.43 | 1.45 | 3.35 | *** | *** | *** | *** | 0.55 | 0.74 |
| | Terelj | 0.3 | 0.4 | 0.3 | 0.26 | 0.30 | 0.27 | 0.30 | 0.43 | 0.42 | 0.32 | 0.16 | 0.32 | *** | *** | *** | *** | 0.40 | 0.06 |
| Myanmar | Yangon | | | | | | | | | | | | 1.82 | 1.03 | 0.29 | 0.51 | 3.11 | 1.69 | 0.40 |
| Philippines | Metro Manila | 0.4 | 0.8 | 0.6 | 1.37 | 1.00 | 0.75 | 1.09 | 1.18 | 0.87 | *** | 0.66 | *** | *** | *** | *** | *** | *** | *** |
| | Los Banos | 1.0 | 0.6 | 1.8 | 0.69 | 0.38 | 0.14 | 0.13 | 0.23 | 0.27 | *** | *** | *** | *** | *** | *** | *** | *** | *** |
| | Mt. Sto. Tomas | | | | | | | 0.02 | 0.07 | 0.77 | 0.22 | 0.50 | *** | 0.35 | 0.29 | 0.39 | 0.48 | 0.18 | *** |
| Republic of Korea | Kanghwa | | 0.2 | 0.2 | 0.34 | 0.09 | 0.10 | 0.04 | 0.05 | 0.07 | 0.17 | 0.07 | *** | *** | 0.14 | 0.11 | 0.02 | 0.03 | 0.05 |
| | Cheju | | <0.1 | 0.2 | 0.25 | 0.20 | 0.08 | 0.05 | 0.09 | 0.11 | 0.08 | 0.07 | *** | *** | 0.09 | 0.10 | 0.08 | 0.12 | 0.05 |
| | Imsil | | <0.1 | 0.3 | 0.42 | 0.13 | 0.11 | 0.12 | 0.28 | 0.11 | 0.08 | 0.09 | *** | *** | 0.08 | 0.07 | 0.09 | 0.14 | 0.08 |
| Russia | Mondy | 0.1 | <0.1 | <0.1 | 0.08 | 0.08 | 0.03 | 0.07 | 0.03 | 0.05 | 0.05 | 0.04 | 0.04 | 0.05 | <0.01 | <0.01 | 0.03 | 0.08 | 0.06 |
| | Listvyanka | 0.5 | 0.3 | 0.1 | 0.26 | 0.19 | 0.07 | 0.13 | 0.22 | 0.15 | 0.19 | 0.12 | 0.10 | 0.14 | 0.06 | 0.08 | 0.15 | 0.21 | 0.07 |
| | Irkutsk | 0.6 | 0.5 | 0.5 | 0.45 | 0.29 | 0.46 | 0.47 | 0.62 | 0.82 | 0.49 | 0.59 | 0.35 | 0.49 | 0.36 | 0.42 | 0.44 | 0.38 | 0.23 |
| | Primorskaya | | 0.6 | 0.2 | 0.23 | 0.25 | 0.36 | 0.38 | 0.40 | 0.45 | 0.37 | 0.41 | 0.28 | 0.41 | 0.35 | 0.35 | 0.44 | 0.34 | 0.09 |
| Thailand | Bangkok | | | | 1.17 | 0.92 | 1.20 | 1.39 | 1.07 | 0.80 | 0.88 | 0.94 | 1.03 | 0.74 | 1.29 | 2.09 | 0.97 | 1.01 | 0.49 |
| | Pathumthani | | | | 0.77 | 0.80 | 0.47 | 0.65 | 0.93 | 0.36 | 0.90 | 0.98 | 0.50 | *** | *** | *** | *** | *** | *** |
| | Khanchanaburi | | | 0.1 | *** | 0.65 | 0.06 | 0.18 | 0.12 | 0.22 | 0.12 | 0.04 | 0.12 | 0.28 | 0.12 | 0.23 | 0.14 | 1.65 | 0.07 |
| | Mae Hia | | 0.5 | 0.4 | 1.17 | 0.34 | 0.31 | 0.61 | 0.57 | 0.44 | 0.72 | 0.53 | 0.22 | 0.47 | 0.46 | 0.12 | 0.15 | 0.42 | 0.27 |
| | Sakaerat | | | | | | | 0.17 | 0.23 | 0.28 | 0.22 | 0.09 | 0.16 | 0.14 | 0.11 | 0.16 | 0.22 | 0.31 | 0.22 |
| Vietnam | Hanoi | 2.0 | 2.3 | 3.2 | 4.43 | 7.58 | 8.47 | 8.97 | 7.59 | 2.83 | 2.87 | 7.75 | 8.67 | 4.07 | 6.23 | 4.11 | 5.99 | 4.76 | 3.01 |
| | Hoa Binh | 1.2 | 0.8 | 1.5 | 0.95 | 3.25 | 4.51 | 2.39 | 2.19 | 1.27 | 1.27 | 1.24 | 1.62 | 1.50 | 3.12 | 1.62 | 1.84 | 2.04 | 0.94 |
| | Can Tho | | | | | | | | | | | | | | | 1.52 | 1.53 | 1.74 | 1.36 |
| | Ho Chi Minh | | | | | | | | | | | | | | | 1.18 | 1.05 | 1.78 | 2.88 |
| | Yen Bai | | | | | | | | | | | | | | | | 4.08 | 0.17 | 2.42 |

The reporting limits for the components in the particulate matters were changed from 0.1 μg/m$^3$ to 0.01 μg/m$^3$ in 2003.
Terms and abbreviations are given in Table 4.2.

**Table 4.39 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Rishiri** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.19 | 0.03 | 0.03 | 0.01 | 0.05 | 0.03 | 0.76 | 0.07 | 0.86 | 0.04 | 0.09 | 0.03 |
| Feb | 0.14 | 0.04 | 0.06 | 0.01 | 0.06 | 0.05 | 1.73 | 0.10 | 1.75 | 0.06 | 0.21 | 0.06 |
| Mar | 0.06 | 0.04 | 0.07 | 0.06 | 0.08 | 0.04 | 1.16 | 0.13 | 1.25 | 0.05 | 0.14 | 0.04 |
| Apr | 0.04 | 0.07 | 0.33 | 0.10 | 0.10 | 0.13 | 2.59 | 0.18 | 2.75 | 0.11 | 0.32 | 0.11 |
| May | 0.02 | 0.04 | 0.48 | 0.08 | 0.06 | 0.08 | 1.53 | 0.07 | 1.69 | 0.05 | 0.20 | 0.15 |
| June | 0.01 | 0.06 | 0.48 | 0.10 | 0.08 | 0.05 | 1.25 | 0.09 | 1.72 | 0.07 | 0.19 | 0.07 |
| July | 0.01 | 0.10 | 0.74 | 0.07 | 0.08 | 0.03 | 0.25 | 0.09 | 0.63 | 0.03 | 0.07 | 0.02 |
| Aug | 0.01 | 0.06 | 0.35 | 0.10 | 0.06 | 0.03 | 0.75 | 0.08 | 0.91 | 0.04 | 0.10 | 0.03 |
| Sept | 0.04 | 0.05 | 0.48 | 0.09 | 0.06 | 0.05 | 3.23 | 0.06 | 3.07 | 0.09 | 0.37 | 0.12 |
| Oct | 0.03 | 0.07 | 0.18 | 0.05 | 0.05 | 0.06 | 2.20 | 0.08 | 2.13 | 0.12 | 0.27 | 0.09 |
| Nov | 0.09 | 0.08 | 0.40 | 0.06 | 0.06 | 0.07 | 4.09 | 0.11 | 3.96 | 0.19 | 0.46 | 0.16 |
| Dec | 0.15 | 0.03 | 0.04 | 0.04 | 0.03 | 0.02 | 1.69 | 0.05 | 1.71 | 0.06 | 0.19 | 0.06 |
| **Annual** | 0.78 | 0.66 | 3.63 | 0.77 | 0.78 | 0.64 | 21.23 | 1.11 | 22.43 | 0.91 | 2.62 | 0.95 |

**Table 4.40 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Ochiishi** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.20 | 0.13 | 0.05 | 0.01 | 0.08 | 0.05 | 1.61 | 0.12 | 1.46 | 0.03 | 0.14 | 0.04 |
| Feb | 0.18 | 0.10 | 0.08 | 0.01 | 0.06 | 0.06 | 2.34 | 0.11 | 2.39 | 0.06 | 0.24 | 0.06 |
| Mar | 0.08 | 0.10 | 0.07 | 0.05 | 0.09 | 0.06 | 1.65 | 0.13 | 1.77 | 0.05 | 0.18 | 0.04 |
| Apr | 0.27 | 0.21 | 0.49 | 0.13 | 0.15 | 0.18 | 4.50 | 0.22 | 4.46 | 0.13 | 0.50 | 0.15 |
| May | 0.23 | 0.21 | 0.60 | 0.19 | 0.11 | 0.19 | 1.27 | 0.13 | 1.57 | 0.04 | 0.18 | 0.11 |
| June | 0.26 | 0.36 | 0.70 | 0.22 | 0.10 | 0.07 | 0.73 | 0.10 | 1.11 | 0.02 | 0.12 | 0.03 |
| July | 0.41 | 0.56 | 0.90 | 0.28 | 0.15 | 0.06 | 0.17 | 0.16 | 0.51 | 0.02 | 0.06 | 0.03 |
| Aug | 0.30 | 0.12 | 1.06 | 0.14 | 0.08 | 0.06 | 1.09 | 0.05 | 1.31 | 0.03 | 0.14 | 0.03 |
| Sept | 0.41 | 0.05 | 0.40 | 0.15 | 0.04 | 0.04 | 1.66 | 0.03 | 1.68 | 0.04 | 0.18 | 0.04 |
| Oct | 0.15 | 0.05 | 0.38 | 0.05 | 0.03 | 0.04 | 1.46 | 0.04 | 1.39 | 0.03 | 0.15 | 0.04 |
| Nov | 0.18 | 0.09 | 0.17 | 0.05 | 0.03 | 0.02 | 3.33 | 0.05 | 2.98 | 0.07 | 0.33 | 0.08 |
| Dec | 0.25 | 0.05 | 0.06 | 0.05 | 0.02 | 0.02 | 1.21 | 0.04 | 1.14 | 0.03 | 0.13 | 0.03 |
| **Annual** | 2.91 | 2.02 | 4.98 | 1.31 | 0.94 | 0.85 | 21.02 | 1.18 | 21.77 | 0.55 | 2.34 | 0.69 |

**Table 4.41 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Tappi** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.77 | 0.35 | 0.12 | 0.01 | 0.68 | 0.75 | 69.33 | 0.88 | 64.18 | 1.57 | 6.94 | 1.65 |
| Feb | 0.82 | 0.32 | 0.29 | 0.01 | 0.72 | 0.95 | 59.95 | 1.11 | 57.22 | 1.46 | 6.12 | 1.56 |
| Mar | 0.68 | 0.40 | 0.38 | 0.10 | 0.67 | 0.78 | 44.50 | 0.97 | 42.56 | 1.08 | 4.62 | 1.20 |
| Apr | 1.00 | 0.56 | 1.05 | 0.18 | 0.58 | 0.82 | 62.28 | 0.90 | 58.67 | 1.48 | 6.27 | 1.57 |
| May | 1.63 | 1.27 | 1.29 | 0.25 | 0.84 | 0.92 | 24.37 | 1.51 | 26.72 | 0.95 | 2.82 | 0.90 |
| June | 2.14 | 1.66 | 1.39 | 0.34 | 0.83 | 1.72 | 58.22 | 1.45 | 57.62 | 2.08 | 6.56 | 2.68 |
| July | 1.47 | 2.10 | 1.85 | 0.18 | 0.65 | 1.22 | 22.23 | 1.04 | 24.15 | 0.70 | 2.80 | 1.57 |
| Aug | 0.67 | 0.54 | 1.43 | - | 1.38 | 1.75 | 14.53 | 1.94 | 27.55 | 1.19 | 2.93 | 1.13 |
| Sept | 0.91 | 0.88 | 1.08 | - | 1.19 | 0.57 | 1.83 | 1.27 | 12.96 | 0.68 | 1.33 | 0.59 |
| Oct | 0.58 | 0.48 | 0.75 | - | 0.77 | 0.56 | 13.04 | 0.75 | 18.75 | 0.62 | 2.04 | 0.71 |
| Nov | 0.96 | 0.54 | 0.69 | 0.01 | 0.83 | 1.44 | 98.11 | 1.00 | 96.37 | 2.37 | 10.84 | 3.24 |
| Dec | 0.71 | 0.46 | 0.29 | 0.03 | 0.88 | 1.98 | 56.96 | 1.37 | 61.64 | 2.82 | 6.77 | 2.41 |
| **Annual** | 12.32 | 9.55 | 10.62 | 1.12 | 10.03 | 13.47 | 525.34 | 14.19 | 548.39 | 17.01 | 60.04 | 19.22 |

*1 $NO_2$ = NOx*- NO

**Table 4.42 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Sado-seki** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.85 | 0.26 | 0.17 | 0.01 | 0.45 | 0.44 | 51.39 | 0.57 | 48.26 | 1.19 | 6.02 | 1.52 |
| Feb | 0.32 | 0.24 | 0.06 | 0.01 | 0.24 | 0.22 | 28.32 | 0.31 | 26.29 | 0.64 | 3.01 | 0.88 |
| Mar | 0.28 | 0.19 | 0.06 | 0.12 | 0.22 | 0.20 | 4.56 | 0.36 | 5.18 | 0.25 | 0.57 | 0.21 |
| Apr | 0.32 | 1.13 | 0.62 | 0.13 | 0.61 | 0.96 | 36.14 | 0.82 | 37.86 | 1.22 | 4.23 | 2.46 |
| May | 0.21 | 1.43 | 0.81 | 0.12 | 0.63 | 0.68 | 8.23 | 0.65 | 11.77 | 0.44 | 1.49 | 1.70 |
| June | 0.04 | 1.37 | 1.03 | 0.10 | 0.57 | 0.53 | 8.17 | 0.48 | 13.72 | 0.59 | 1.62 | 0.90 |
| July | 0.17 | 1.47 | 0.91 | 0.13 | 0.46 | 0.21 | 0.90 | 0.45 | 5.27 | 0.28 | 0.74 | 0.26 |
| Aug | 0.03 | 0.51 | 0.31 | 0.00 | 0.20 | 0.21 | 4.51 | 0.14 | 6.49 | 0.18 | 0.83 | 0.20 |
| Sept | 0.10 | 0.43 | 0.47 | - | 0.56 | 0.50 | 9.56 | 0.44 | 12.99 | 0.39 | 1.74 | 0.72 |
| Oct | 0.05 | 0.31 | 0.22 | - | 0.19 | 0.27 | 32.55 | 0.20 | 30.73 | 0.93 | 3.60 | 1.05 |
| Nov | 0.39 | 0.49 | 0.18 | - | 0.31 | 0.36 | 52.67 | 0.36 | 50.07 | 1.28 | 5.38 | 1.52 |
| Dec | 0.41 | 0.30 | 0.17 | - | 0.24 | 0.23 | 27.39 | 0.27 | 25.91 | 0.62 | 2.80 | 0.94 |
| **Annual** | 3.17 | 8.12 | 5.02 | 0.63 | 4.69 | 4.82 | 264.41 | 5.06 | 274.55 | 8.00 | 32.02 | 12.35 |

**Table 4.43 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Happo** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.14 | 0.55 | 0.04 | 0.01 | 0.38 | 0.07 | 0.00 | 0.44 | 1.37 | 0.18 | 0.18 | 0.34 |
| Feb | 0.08 | 0.67 | 0.05 | 0.01 | 0.49 | 0.24 | 0.50 | 0.67 | 1.95 | 0.30 | 0.31 | 0.75 |
| Mar | 0.11 | 1.29 | 0.10 | 0.07 | 0.63 | 0.51 | 0.17 | 1.21 | 0.73 | 0.34 | 0.15 | 0.51 |
| Apr | 0.22 | 1.35 | 0.79 | 0.14 | 0.40 | 0.56 | 0.38 | 0.68 | 0.76 | 0.27 | 0.28 | 1.39 |
| May | 0.26 | 1.46 | 0.96 | 0.15 | 0.31 | 0.08 | 0.00 | 0.40 | 0.37 | 0.10 | 0.11 | 0.42 |
| June | 0.17 | 1.16 | 0.76 | 0.15 | 0.17 | 0.04 | 0.00 | 0.29 | 0.11 | 0.05 | 0.03 | 0.07 |
| July | 0.10 | 0.60 | 0.54 | 0.08 | 0.17 | 0.02 | 0.01 | 0.27 | 0.11 | 0.04 | 0.02 | 0.03 |
| Aug | 0.07 | 0.43 | 0.67 | 0.06 | 0.13 | 0.01 | 0.01 | 0.17 | 0.14 | 0.03 | 0.02 | 0.03 |
| Sept | 0.07 | 0.55 | 0.54 | 0.07 | 0.12 | 0.05 | 0.13 | 0.16 | 0.47 | 0.04 | 0.05 | 0.07 |
| Oct | 0.08 | 0.20 | 0.28 | 0.03 | 0.06 | 0.03 | 0.18 | 0.07 | 0.31 | 0.03 | 0.03 | 0.07 |
| Nov | 0.05 | 0.29 | 0.08 | 0.03 | 0.09 | 0.06 | 0.22 | 0.09 | 0.69 | 0.06 | 0.07 | 0.18 |
| Dec | 0.05 | 0.45 | 0.03 | 0.03 | 0.15 | 0.03 | 0.01 | 0.17 | 0.46 | 0.05 | 0.06 | 0.08 |
| **Annual** | 1.39 | 9.00 | 4.82 | 0.83 | 3.11 | 1.69 | 1.28 | 4.62 | 7.47 | 1.50 | 1.31 | 3.94 |

**Table 4.44 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Ijira** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.05 | 0.03 | 0.10 | 0.01 | 0.03 | 0.01 | 0.04 | 0.06 | 0.13 | 0.02 | 0.01 | 0.02 |
| Feb | 0.05 | 0.04 | 0.10 | 0.02 | 0.04 | 0.02 | 0.05 | 0.07 | 0.17 | 0.03 | 0.01 | 0.03 |
| Mar | 0.09 | 0.05 | 0.10 | 0.15 | 0.06 | 0.02 | 0.07 | 0.10 | 0.21 | 0.03 | 0.02 | 0.04 |
| Apr | 0.10 | 0.05 | 0.10 | 0.18 | 0.06 | 0.02 | 0.07 | 0.10 | 0.22 | 0.03 | 0.02 | 0.04 |
| May | 0.13 | 0.05 | 0.09 | 0.26 | 0.06 | 0.02 | 0.06 | 0.10 | 0.19 | 0.03 | 0.01 | 0.04 |
| June | 0.08 | 0.05 | 0.11 | 0.29 | 0.06 | 0.02 | 0.06 | 0.10 | 0.19 | 0.03 | 0.02 | 0.04 |
| July | 0.06 | 0.03 | 0.11 | 0.17 | 0.03 | 0.01 | 0.04 | 0.06 | 0.12 | 0.02 | 0.01 | 0.02 |
| Aug | 0.04 | 0.03 | 0.12 | 0.10 | 0.04 | 0.01 | 0.05 | 0.07 | 0.16 | 0.02 | 0.01 | 0.03 |
| Sept | 0.04 | 0.04 | 0.12 | 0.09 | 0.05 | 0.02 | 0.06 | 0.09 | 0.19 | 0.03 | 0.01 | 0.04 |
| Oct | 0.03 | 0.03 | 0.10 | 0.03 | 0.04 | 0.01 | 0.05 | 0.06 | 0.16 | 0.02 | 0.01 | 0.03 |
| Nov | 0.06 | 0.03 | 0.11 | 0.04 | 0.03 | 0.01 | 0.04 | 0.06 | 0.13 | 0.02 | 0.01 | 0.03 |
| Dec | 0.09 | 0.03 | 0.12 | 0.04 | 0.03 | 0.01 | 0.04 | 0.06 | 0.14 | 0.02 | 0.01 | 0.03 |
| **Annual** | 0.82 | 0.46 | 1.28 | 1.37 | 0.55 | 0.20 | 0.65 | 0.92 | 2.00 | 0.30 | 0.16 | 0.40 |

*1 $NO_2$ = NOx*- NO

**Table 4.45 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Oki** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 1.17 | - | - | 0.02 | - | - | - | - | - | - | - | - |
| Feb | 0.78 | - | - | 0.02 | - | - | - | - | - | - | - | - |
| Mar | 0.73 | - | - | 0.18 | - | - | - | - | - | - | - | - |
| Apr | 0.90 | - | - | 0.20 | - | - | - | - | - | - | - | - |
| May | 1.04 | - | - | 0.18 | - | - | - | - | - | - | - | - |
| June | 0.45 | - | - | 0.17 | - | - | - | - | - | - | - | - |
| July | 1.16 | - | - | 0.14 | - | - | - | - | - | - | - | - |
| Aug | 0.59 | - | - | 0.13 | - | - | - | - | - | - | - | - |
| Sept | 0.44 | - | - | 0.10 | - | - | - | - | - | - | - | - |
| Oct | 0.27 | - | - | 0.04 | - | - | - | - | - | - | - | - |
| Nov | 0.83 | 1.23 | 0.41 | 0.06 | 1.12 | 2.18 | 86.69 | 1.63 | 88.34 | 2.45 | 9.92 | 3.64 |
| Dec | 0.66 | 1.15 | 0.38 | 0.04 | 1.13 | 2.37 | 134.34 | 1.91 | 128.87 | 2.90 | 14.51 | 4.39 |
| **Annual** | 9.00 | 2.38 | 0.79 | 1.28 | 2.25 | 4.55 | 221.03 | 3.54 | 217.20 | 5.35 | 24.43 | 8.03 |

**Table 4.46 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Banryu** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.54 | - | - | 0.04 | - | - | - | - | - | - | - | - |
| Feb | 0.42 | - | - | 0.05 | - | - | - | - | - | - | - | - |
| Mar | 0.29 | - | - | 0.30 | - | - | - | - | - | - | - | - |
| Apr | 0.18 | - | - | 0.28 | - | - | - | - | - | - | - | - |
| May | 0.23 | - | - | 0.32 | - | - | - | - | - | - | - | - |
| June | 0.18 | - | - | 0.39 | - | - | - | - | - | - | - | - |
| July | 0.13 | - | - | 0.42 | - | - | - | - | - | - | - | - |
| Aug | 0.14 | - | - | 0.37 | - | - | - | - | - | - | - | - |
| Sept | 0.13 | - | - | 0.25 | - | - | - | - | - | - | - | - |
| Oct | 0.48 | 0.02 | 0.03 | 0.10 | 0.01 | 0.01 | 0.13 | 0.02 | 0.20 | 0.01 | 0.02 | 0.01 |
| Nov | 0.26 | 0.44 | 0.58 | 0.13 | 0.36 | 0.45 | 6.69 | 0.51 | 8.46 | 0.34 | 1.03 | 0.62 |
| Dec | 0.30 | 0.37 | 0.35 | 0.13 | 0.39 | 0.62 | 7.55 | 0.73 | 8.89 | 0.40 | 1.04 | 0.58 |
| **Annual** | 3.28 | 0.83 | 0.96 | 2.78 | 0.76 | 1.08 | 14.36 | 1.26 | 17.55 | 0.74 | 2.10 | 1.21 |

**Table 4.47 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Yusuhara** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 1.04 | 0.55 | 0.21 | 0.04 | 0.38 | 0.27 | 0.32 | 0.67 | 1.90 | 0.19 | 0.20 | 0.18 |
| Feb | 1.00 | 0.56 | 0.27 | 0.05 | 0.41 | 0.29 | 0.39 | 0.70 | 1.79 | 0.23 | 0.17 | 0.14 |
| Mar | 0.88 | 0.80 | 0.53 | 0.26 | 0.46 | 0.30 | 0.10 | 0.84 | 1.20 | 0.23 | 0.19 | 0.36 |
| Apr | 0.65 | 0.84 | 0.84 | 0.22 | 0.26 | 0.14 | 0.03 | 0.37 | 0.83 | 0.19 | 0.21 | 0.50 |
| May | 0.55 | 0.85 | 0.94 | 0.20 | 0.25 | 0.08 | 0.01 | 0.28 | 0.60 | 0.12 | 0.19 | 0.57 |
| June | 0.43 | 0.96 | 0.99 | 0.23 | 0.32 | 0.02 | 0.01 | 0.49 | 0.39 | 0.10 | 0.07 | 0.14 |
| July | 0.79 | 0.38 | 0.71 | 0.07 | 0.22 | 0.00 | 0.01 | 0.32 | 0.33 | 0.05 | 0.04 | 0.04 |
| Aug | 1.29 | 0.73 | 0.94 | - | 0.42 | 0.02 | 0.03 | 0.59 | 0.54 | 0.11 | 0.07 | 0.07 |
| Sept | 0.47 | 0.63 | 0.72 | 0.09 | 0.29 | 0.04 | 0.04 | 0.40 | 0.70 | 0.11 | 0.10 | 0.10 |
| Oct | 0.69 | 0.28 | 0.52 | 0.03 | 0.23 | 0.08 | 0.49 | 0.26 | 1.87 | 0.20 | 0.20 | 0.17 |
| Nov | 1.24 | 0.33 | 0.41 | 0.07 | 0.26 | 0.18 | 0.36 | 0.38 | 1.51 | 0.19 | 0.20 | 0.24 |
| Dec | 1.28 | 0.53 | 0.23 | 0.08 | 0.34 | 0.32 | 0.43 | 0.62 | 1.58 | 0.17 | 0.21 | 0.28 |
| **Annual** | 10.30 | 7.46 | 7.30 | 1.34 | 3.84 | 1.74 | 2.22 | 5.93 | 13.25 | 1.88 | 1.84 | 2.78 |

*1 $NO_2$ = NOx*- NO

**Table 4.48 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Hedo** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.20 | 0.27 | 0.41 | 0.01 | 0.54 | 0.50 | 27.49 | 0.51 | 28.58 | 0.77 | 3.51 | 1.00 |
| Feb | 0.22 | 0.55 | 0.72 | 0.02 | 0.74 | 0.71 | 32.09 | 0.75 | 34.78 | 1.06 | 4.29 | 1.53 |
| Mar | 0.28 | 0.73 | 1.20 | 0.12 | 0.67 | 0.82 | 20.75 | 0.71 | 24.86 | 0.82 | 3.09 | 1.59 |
| Apr | 0.31 | 0.62 | 1.71 | 0.12 | 0.60 | 0.83 | 14.72 | 0.59 | 18.32 | 0.68 | 2.40 | 1.86 |
| May | 0.50 | 0.51 | 2.10 | 0.04 | 0.53 | 0.50 | 10.91 | 0.35 | 16.44 | 0.64 | 2.11 | 1.08 |
| June | 0.23 | 0.29 | 1.60 | 0.08 | 0.32 | 0.26 | 12.80 | 0.30 | 14.74 | 0.59 | 1.85 | 0.51 |
| July | 0.10 | 0.12 | 1.02 | 0.10 | 0.15 | 0.13 | 2.80 | 0.16 | 3.37 | 0.10 | 0.41 | 0.13 |
| Aug | 0.22 | 0.25 | 1.51 | 0.08 | 0.50 | 0.46 | 13.57 | 0.46 | 16.72 | 0.44 | 2.02 | 0.54 |
| Sept | 0.10 | 0.19 | 0.97 | 0.10 | 0.25 | 0.35 | 25.73 | 0.20 | 25.82 | 0.64 | 3.07 | 0.74 |
| Oct | 0.40 | 0.14 | 0.51 | 0.02 | 0.20 | 0.27 | 121.58 | 0.09 | 108.50 | 2.41 | 13.32 | 2.94 |
| Nov | 0.18 | 0.25 | 0.39 | 0.04 | 0.48 | 0.66 | 38.86 | 0.39 | 39.17 | 1.03 | 4.69 | 1.62 |
| Dec | 0.21 | 0.25 | 0.16 | 0.06 | 0.45 | 0.61 | 34.30 | 0.50 | 34.24 | 0.86 | 4.10 | 1.23 |
| **Annual** | 2.96 | 4.15 | 12.31 | 0.80 | 5.45 | 6.11 | 355.60 | 4.99 | 365.55 | 10.05 | 44.87 | 14.77 |

**Table 4.49 Monthly and annual dry deposition amounts of gaseous and particulate substances**

**Site: Ogasawara** **Country: Japan**

| | Gases | | | | Particulate matter components | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $SO_2$ | $HNO_3$ | $NH_3$ | $NO_2$ *1 | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Mg^{2+}$ | $Ca^{2+}$ |
| 2017 | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.07 | 0.03 | 0.18 | 0.02 | 0.09 | 0.08 | 5.11 | 0.10 | 5.27 | 0.13 | 0.60 | 0.15 |
| Feb | 0.03 | 0.03 | 0.19 | 0.01 | 0.08 | 0.07 | 3.82 | 0.09 | 3.88 | 0.10 | 0.45 | 0.12 |
| Mar | 0.05 | 0.08 | 0.48 | 0.11 | 0.18 | 0.14 | 5.47 | 0.16 | 6.04 | 0.18 | 0.73 | 0.26 |
| Apr | 0.04 | 0.05 | 0.38 | 0.03 | 0.13 | 0.11 | 4.29 | 0.09 | 4.80 | 0.14 | 0.59 | 0.31 |
| May | 0.02 | 0.06 | 0.43 | 0.01 | 0.12 | 0.08 | 3.59 | 0.08 | 4.15 | 0.14 | 0.50 | 0.18 |
| June | 0.02 | 0.02 | 0.37 | 0.04 | 0.08 | 0.03 | 2.16 | 0.06 | 2.63 | 0.09 | 0.31 | 0.08 |
| July | 0.03 | 0.01 | 0.36 | 0.01 | 0.03 | 0.02 | 2.85 | 0.03 | 2.78 | 0.08 | 0.33 | 0.02 |
| Aug | 0.00 | 0.05 | 0.67 | - | 0.10 | 0.03 | 4.80 | 0.07 | 5.03 | 0.14 | 0.61 | 0.16 |
| Sept | 0.00 | 0.00 | 0.53 | 0.01 | 0.02 | 0.01 | 2.76 | 0.02 | 2.66 | 0.07 | 0.31 | 0.07 |
| Oct | 0.03 | 0.02 | 0.35 | 0.01 | 0.03 | 0.05 | 7.18 | 0.03 | 6.44 | 0.16 | 0.74 | 0.16 |
| Nov | 0.04 | 0.04 | 0.26 | 0.01 | 0.08 | 0.11 | 8.63 | 0.09 | 8.29 | 0.21 | 0.96 | 0.23 |
| Dec | 0.06 | 0.03 | 0.21 | 0.02 | 0.07 | 0.08 | 4.67 | 0.07 | 4.93 | 0.12 | 0.56 | 0.14 |
| **Annual** | 0.38 | 0.43 | 4.41 | 0.27 | 1.01 | 0.81 | 55.32 | 0.88 | 56.91 | 1.54 | 6.70 | 1.88 |

*1 $NO_2$ = NOx*- NO

**Table 4.50 Conversion ratios from ppb to μg/m$^3$ (20°C, 1 atm)**

| Species | $SO_2$ | $HNO_3$ | HCl | $NH_3$ | NO | $NO_2$ | $O_3$ |
|---|---|---|---|---|---|---|---|
| Ratio | x 2.66 | x 2.62 | x 1.52 | x 0.71 | x 1.25 | x 1.91 | x 2.00 |

**Table 4.51 Reporting limits for summarizing air concentration data**

| Species | Reporting limit |
|---|---|
| $SO_2$ | 0.1 ppb |
| $HNO_3$ | 0.1 ppb |
| HCl | 0.1 ppb |
| $NH_3$ | 0.1 ppb |
| NO, $NO_2$, $NO_x$ | 0.1 ppb |
| $O_3$ | 1 ppb |
| PM | 1 μg/m$^3$ |
| Particulate matter components | 0.01 μg/m$^3$ |

# CHAPTER 5

## Soil and Vegetation Monitoring

# 5. Soil and Vegetation Monitoring

## 5.1 Method

The basic survey was principally carried out for the initial objectives (namely, establishment of baseline data and early detection of possible impact) in the participating countries in accordance with the Technical Manual on Soil and Vegetation Monitoring in East Asia. General items are described in the Table 5.1 but actual implementation of item sets was dependent on respective site.

**Table 5.1 Basic survey for soil and forest**

| Item | Parameters |
|---|---|
| Soil | - pH($H_2O$), pH(KCl), Exchangeable base cations (Na, K, Ca, and Mg), Exchangeable acidity, Effective cation exchange capacity (ECEC), Carbonate content (if pH > 7)<br>- Exchangeable Al and H, Total C content, Total N content (optional)<br>- Available P, Sulfate (voluntary)<br>- Physical properties (Fine earth bulk density, and Penetration resistance) (optional) |
| Forest | - General description of the forest (Description of trees, and Understory vegetation)<br>- Observation of tree decline<br>- Photographic record of tree decline, Estimation of decline causes (optional) |

### 5.1.1 Field Operation

Basically, two forest areas, whose soils have different sensitivities to acid deposition, are recommended to be selected in an area. Several plots (at least two) of areas from 5 m x 5 m to 10 m x 10 m should be chosen randomly at each forest area (each soil type). Five subplots with 1 m x 1 m square of each are set up for soil sampling at the center and along the diagonal lines of the plot (Figure 5.1).

Three coaxial round plots are established for general description of trees with areas of 1000, 400 and 200 square meters respectively (Figure 5.2). Observation of tree decline is carried out basically for selected twenty dominant trees in four directions. The Sub-Manual on Forest Vegetation Monitoring, which was endorsed in 2006, recommended that the observation should be done at least once a year to detect possible effects of meteorological events. Decline symptoms of the observation trees were recorded according to the decline scale shown in Table 5.2.

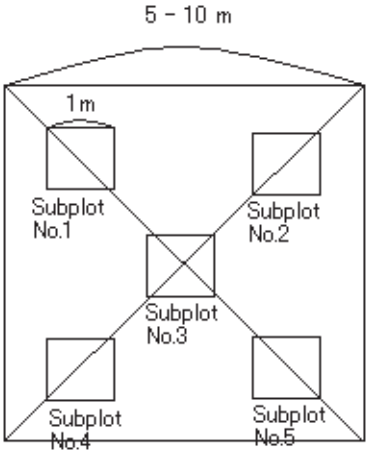



**Figure 5.1 Plot for soil sampling**

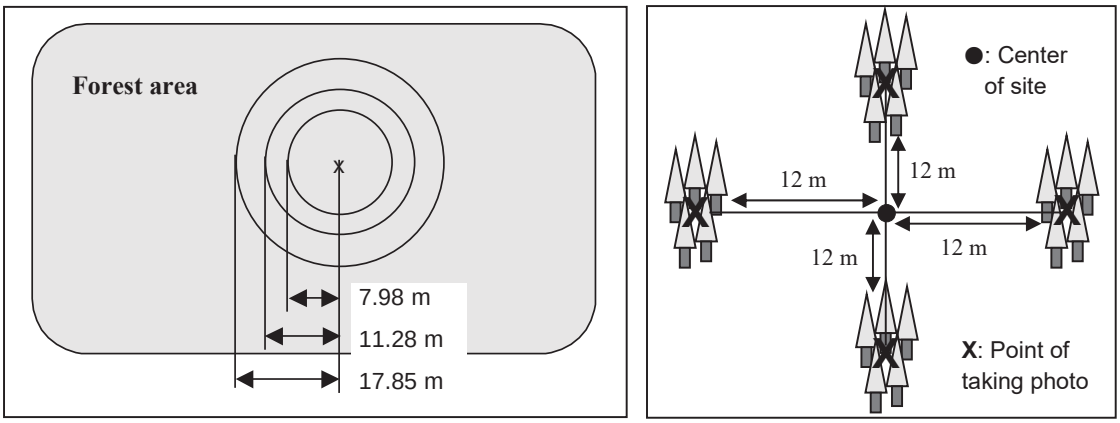



**Figure 5.2 Plots for description of trees (Left) and selection of observation trees (Right)**

**Table 5.2 Observation items and decline scale**

| Items | Decline scale and observations |
|---|---|
| Vitality of tree | 0. No damage, 1. Slightly damaged, 2. Evidently damaged, 3. Severely damaged, 4. Dead |
| Form of tree | 0. Normal, 1. Some branches lacking, 2. Evidently wanting, 3. Severely wanting, 4. Dead or almost dead |
| Branch growth | 0. Normal growth, 1. Somewhat reduced, 2. Short and slender, 3. Extremely short |
| Dieback of stem | 0. Not found, 1. Slightly dieback, 2. Evidently dieback, 3. Severe dieback if found, 4. Completely dead |
| Defoliation of crown[*1] | 0. Not defoliated (0–10%), 1.Slightly defoliated (>10–25%), 2. Moderately defoliated (>25–60%), 3.Severely defoliated (>60%), 4. Dead |
| Deformation of leaves | 0. Normal, 1. Slightly deformed, 2. Evidently deformed, 3. Completely deformed |
| Size of leaves | 0. Normal, 1. Somewhat small, 2. Evidently small, 3. Very small |
| Discoloration of leaves[*1] | 0. None (0–10%), 1. Slight (>10–25%), 2. Moderate (>25–60%), 3. Severe (>60%) |
| Injury of leaves | 0. No symptoms, 1. Slightly injured, 2. Evidently injured, 3. Severely injured |

[*1.] Definition of the scale was updated in the Sub-Manual on Forest Vegetation Monitoring (2006).

### 5.1.2 Laboratory Operation

Analytical methods recommended in the Manual are presented in Table 5.3.

**Table 5.3 Analytical equipment and methods for soil monitoring**

| Parameters | Equipment/methods |
|---|---|
| ***Chemical Properties of Soil*** | |
| a) Moisture Content | Drying oven, Balance |
| b) pH($H_2O$) and pH(KCl) | Glass electrode |
| c) Exchangeable Base Cations (Ca, Mg, K and Na) | AAS, ICP-AES or ICP-MS ($CH_3COONH_4$-Extraction) |
| d) Exchangeable Acidity | Titration (KCl-Extraction) |
| e) Exchangeable Al , H | ibid. |
| f) Effective Cation Exchange Capacity (ECEC) | Calculation (as sum of exchangeable cations) |
| g) Carbonate Content (for calcareous soil) | Volumetric calcimeter |
| h) Total Carbon Content | Titration (Walkley-Black method) or CN-analyzer |
| i) Total Nitrogen Content | Titration (Kjeldahl method) or CN-analyzer |
| j) Available Phosphate | Spectrophotometry (Bray-1 test) |
| k) Sulfate | Turbidimetry, IC, ICP-AES or ICP-MS |
| ***Physical Properties of Soil*** | |
| a) Fine Earth Bulk Density | Metal sampling cylinder, Drying oven, Balance |
| b) Penetration Resistance (in the fieldwork) | Pocket penetrometer |

### 5.1.3 Monitoring Sites

Soil and vegetation monitoring data of 7 areas of 3 countries were submitted this year. The list of monitoring site and reported items in 2017 were shown in Table 5.4.1 Observation of the tree decline was conducted in 5 plots. The survey on soil monitoring were carried out in Mongolia. The number of soil and vegetation plots in each monitoring site were shown in Table 5.4.2 with the number of survey until 2017.

**Table 5.4.1 Outline of the Monitoring Sites in 2017**

| Country | Nearest deposition monitoring site | Site: Name of forests EANET site code | Soil type | Items[*1] |
|---|---|---|---|---|
| **China** | **Jinyunshan (Chongqing)** | **Jinyunshan CNS004** | **Acidi-Udic Argosols** | **$F_1$** |
| | **Jiwozi (Xi'an)** | **Dabagou CNS007** | **Brown soil** | **$F_1$** |
| | **Xiaoping (Xiamen)** | **Xiaoping CNS009** | **Red soil** | **$F_1$** |
| **Japan** | **Ijira** | **Ijira JPS006** | **Dystric Cambisols** | **$F_1$** |
| | | **Yamato JPS106** | **Andosols** | **$F_1$** |
| | **Banryu** | **Banryu-2 JPS008** | **Cambisols** | **$F_1$** |
| | | **Iwami "rinku" Factory Park JPS108** | **Acrisols** | **$F_1$** |
| **Mongolia** | **Ulaanbaatar** | **Bogdkhan Mountain MNS001** | **Brown soil** | **S** |
| | **Terelj** | **Terelj Mountain MNS002** | **Brown soil** | **S** |

[*1] S, Soil chemical analysis; $F_1$, Observation of tree decline; $F_2$, Description of trees and understory vegetation survey

## Table 5.4.2 Site location and number of plots and surveys conducted until 2017

| Country | Area (Nearest deposition monitoring site) | Soil and vegetation monitoring site | EANET site code | Number of plots | | Start year | Latest year | Number of surveys until 2017 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Forest plot | Soil plot | | | Tree decline | Forest survey | Understory survey | Soil survey |
| China | Jinyunshan (Chongqing) | Jinyunshan | CNS004 | 2 | 2 | 2000 | **2017** | **12** | 5 | 5 | 6 |
| | Jiwozi (Xi'an) | Dabagou | CNS007 | 1 | 2 | 2001 | **2017** | **12** | 5 | 5 | 6 |
| | Xiaoping (Xiamen) | Xiaoping | CNS009 | 1 | 1 | 2000 | **2017** | **11** | 5 | 4 | 5 |
| | Zhuxiandong (Zhuhai) | Zhuxiandong | CNS011 | 3 | 3 | 2001 | 2016 | 7 | 7 | 7 | 6 |
| Indonesia | EMC | Bogor Research Forest (Dramaga Experimental Forest) | IDS002 | 1 | 1 | 2001 | 2015 | 7 | 1 | 1 | 4 |
| Japan | Ijira | Ijira | JPS006 | 1 | 2 | 2000 | **2017** | **15** | 4 | 4 | 4 |
| | | Yamato | JPS106 | 1 | 2 | 2003 | **2017** | **15** | 3 | 3 | 3 |
| | Banryu | Banryu-2 | JPS008 | 1 | 2 | 2000 | **2017** | **16** | 4 | 4 | 4 |
| | | Iwami "rinku" Factory Park | JPS108 | 1 | 2 | 2001 | **2017** | **16** | 4 | 4 | 4 |
| Malaysia | Petaling Jaya | Pasoh Reserve Forest 1 | MYS001 | 0 | 1 | 2000 | 2014 | | | | 2 |
| | | Pasoh Reserve Forest 2 | MYS101 | 0 | 1 | 2000 | 2014 | | | | 1 |
| | (Bintulu) | UPMKB Rehabilitated Forest Planted in 1991 | MYS005 | 0 | 2 | 2009 | 2012 | | | | 2 |
| | | UPMKB Rehabilitated Forest Planted in 2008 | MYS105 | 0 | 2 | 2009 | 2012 | | | | 2 |
| Mongolia | Ulaanbaatar | Bogdkhan Mountain | MNS001 | 1 | 2 | 2005 | **2017** | 1 | 1 | 0 | **2** |
| | Terelj | Terelj Mountain | MNS002 | 0 | 2 | 2014 | **2017** | | | | **2** |
| Philippines | Los Banos | Mt. Makiling | PHS002 | 1 | 2 | 2000 | 2008 | 2 | 3 | 3 | 3 |
| | | UP Quezon, Land Grant | PHS102 | 1 | 2 | 2000 | 2008 | 3 | 2 | 3 | 4 |
| | Metro Manila | La Mesa Watershed | PHS001 | 1 | 2 | 2007 | 2010 | 2 | 2 | 2 | 2 |
| | Mt. Sto Tomas | Boneco Long Term Ecological Research Site | PHS003 | 1 | 2 | 2008 | 2008 | 1 | 1 | 1 | 1 |
| Republic of Korea | Imsil | Mt. Naejang | KRS003 | 1 | 2 | 2001 | 2004 | 2 | 2 | 2 | 2 |
| Russia | Irkutsk | Irkutsk | RUS003 | 1 | 1 | 2001 | 2013 | 2 | 2 | 2 | 2 |
| | Listvyanka | Bolshie Koty | RUS002 | 1 | 2 | 2000 | 2013 | 1 | 1 | 1 | 2 |
| | | Pereemnaya river catchment | RUS102 | 1 | 2 | 2005 | 2005 | 1 | 1 | 1 | 1 |
| | Mondy | Ilchir Lake | RUS001 | 0 | 2 | 1999 | 1999 | | | | 1 |
| | | Okinskoe Lake | RUS101 | 0 | 1 | 1999 | 1999 | | | | 1 |
| | | Solar Observatory | RUS201 | 1 | 2 | 1999 | 2014 | 1 | 1 | 1 | 2 |
| | Primorskaya | Primorskaya | RUS004 | 1 | 1 | 2006 | 2013 | 1 | 1 | 1 | 2 |
| Thailand | Vachiralongkorn Dam (old name: Kao Lam Dam) | Vachiralongkorn Dam | THS004 | 1 | 2 | 2000 | 2012 | 2 | 4 | 3 | 6 |
| | | Vachiralongkorn Puye | THS104 | 1 | 1 | 2002 | 2012 | 2 | 5 | 4 | 4 |
| Vietnam | Hoa Binh | Cave of Heaven | VNS002 | 0 | 2 | 1999 | 1999 | | | | 1 |
| | | Thang Ranh | VNS102 | 0 | 2 | 1999 | 1999 | | | | 1 |

Bold letters indicate soil and/or vegetation monitoring was conducted in 2017.

## 5.2 Results of Monitoring

Results of basic survey for soil and forest were reported in the following tables:

Table 5.5: Soil chemical analysis

Table 5.5.1: Bogdkhan Monuntain (Mongolia) MNS001

Table 5.5.2: Terelj mountain (Mongolia) MNS002

Table 5.6: Observation of tree decline

Table 5.6.1: Chongqing (China) CNS004

Table 5.6.2: Chongqing (China) CNS004

Table 5.6.3: Jiwozi (China) CNS007

Table 5.6.4: Xiaoping (China) CNS009

Table 5.6.5: Ijira-1 (Japan) JPS006

Table 5.6.6: Lake Ijira-2 (Japan) JPS106

Table 5.6.7: Banryu-1 (Japan) JPS008

Table 5.6.8: Lake Banryu-2 (Japan) JPS108

**Table 5.5.1 Soil chemical analysis: Bogdkhan Monuntain (Mongolia) MNS001**
Soil analysis date: 16th July 2018
Name of analysis laboratory: Central Laboratory of Environment and Metrology

**1st analysis**

| Location | Soil type | Plot No. | Subplot No.*1 | Layer analyzed | Repeat analysis | pH | | Exchangeable base cations (B) | | | | Ex-acidity | Ex-acid cations | | ECEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Ca | Mg | K | Na | (A) | Al | H | (A) + (B) |
| | | | | (cm) | | $H_2O$ | KCl | ($cmol_c\ kg^{-1}$) | | | | | | | |
| Bogdkhan Monuntain | Brown soil | 1 | 1 | 0-10 | 1 | 5.0 | 4.5 | - *1 | - | - | - | - | - | - | - |
| | | | 2 | | 1 | 5.2 | 4.4 | | | | | | | | |
| | | | 3 | | 1 | 5.3 | 4.7 | | | | | | | | |
| | | | 4 | | 1 | 5.7 | 4.9 | | | | | | | | |
| | | | 5 | | 1 | 5.7 | 5.0 | | | | | | | | |
| | | | 1 | 10-20 | 1 | 5.5 | 4.9 | | | | | | | | |
| | | | 2 | | 1 | 6.0 | 4.8 | | | | | | | | |
| | | | 3 | | 1 | 5.4 | 4.7 | | | | | | | | |
| | | | 4 | | 1 | 5.8 | 4.5 | | | | | | | | |
| | | | 5 | | 1 | 5.6 | 4.7 | | | | | | | | |
| Bogdkhan Monuntain | Brown soil | 2 | 1 | 0-10 | 1 | 6.1 | 5.7 | - | - | - | - | - | - | - | - |
| | | | 2 | | 1 | 6.2 | 5.8 | | | | | | | | |
| | | | 3 | | 1 | 6.0 | 4.5 | | | | | | | | |
| | | | 4 | | 1 | 5.9 | 4.8 | | | | | | | | |
| | | | 5 | | 1 | 5.8 | 4.7 | | | | | | | | |
| | | | 1 | 10-20 | 1 | 6.1 | 5.1 | | | | | | | | |
| | | | 2 | | 1 | 6.0 | 4.7 | | | | | | | | |
| | | | 3 | | 1 | 5.8 | 4.5 | | | | | | | | |
| | | | 4 | | 1 | 5.3 | 4.4 | | | | | | | | |
| | | | 5 | | 1 | 5.9 | 4.1 | | | | | | | | |

*1: Exchangeable base cations and exchangeable acid cations were not submitted. Although Cd, Pb, Cr, Zn, Cu, Co, Sr and Hg concentrations were submitted to network center, the concentrations of heavy metals were not included in data report according to EANET technical manual.

**Table 5.5.2 Soil chemical analysis: Terelj mountain (Mongolia) MNS002**
Soil analysis date: 16th July 2018
Name of analysis laboratory: Central Laboratory of Environment and Metrology

**1st analysis**

| Location | Soil type | Plot No. | Subplot No.*1 | Layer analyzed | Repeat analysis | pH | | Exchangeable base cations (B) | | | | Ex-acidity | Ex-acid cations | | ECEC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Ca | Mg | K | Na | (A) | Al | H | (A) + (B) |
| | | | | (cm) | | $H_2O$ | KCl | ($cmol_c\ kg^{-1}$) | | | | | | | |
| Terelj Mountain | Brown soil | 1 | 1 | 0-10 | 1 | 5.9 | 4.3 | - *1 | - | - | - | - | - | - | - |
| | | | 2 | | 1 | 6.0 | 4.3 | | | | | | | | |
| | | | 3 | | 1 | 6.0 | 4.4 | | | | | | | | |
| | | | 4 | | 1 | 5.8 | 4.9 | | | | | | | | |
| | | | 5 | | 1 | 5.8 | 4.2 | | | | | | | | |
| | | | 1 | 10-20 | 1 | 6.2 | 5.2 | | | | | | | | |
| | | | 2 | | 1 | 6.1 | 4.4 | | | | | | | | |
| | | | 3 | | 1 | 5.3 | 4.2 | | | | | | | | |
| | | | 4 | | 1 | 5.1 | 4.4 | | | | | | | | |
| | | | 5 | | 1 | 5.5 | 4.8 | | | | | | | | |
| Terelj Mountain | Brown soil | 2 | 1 | 0-10 | 1 | 6.0 | 4.7 | - | - | - | - | - | - | - | - |
| | | | 2 | | 1 | 5.4 | 4.5 | | | | | | | | |
| | | | 3 | | 1 | 5.7 | 4.7 | | | | | | | | |
| | | | 4 | | 1 | 5.6 | 4.9 | | | | | | | | |
| | | | 5 | | 1 | 5.7 | 4.8 | | | | | | | | |
| | | | 1 | 10-20 | 1 | 5.2 | 4.5 | | | | | | | | |
| | | | 2 | | 1 | 5.7 | 4.5 | | | | | | | | |
| | | | 3 | | 1 | 5.0 | 4.6 | | | | | | | | |
| | | | 4 | | 1 | 5.5 | 4.7 | | | | | | | | |
| | | | 5 | | 1 | 6.0 | 4.8 | | | | | | | | |

*1: Exchangeable base cations and exchangeable acid cations were not submitted. Although Cd, Pb, Cr, Zn, Cu, Co, Sr and Hg concentrations were submitted to network center, the concentrations of heavy metals were not included in data report according to EANET technical manual.

**Table 5.6.1 Observation of tree decline: Chongqing (China) CNS004**
Plot name: Jinyunshan-1
Date: 20 October 2017
Surveyor: Lixianyuan

| Individual No. | 1 (3) | 2 (2) | 3 (58) | 4 (101) | 5 (105) | 6 (70) | 7 (102) | 8 (72) | 9 (103) | 10 (104) |
|---|---|---|---|---|---|---|---|---|---|---|
| Direction (E, W, S, or N) | E | E | E | S | S | W | S | W | N | N |
| Plant Name | *Cunninghamia lanceolata* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Symplocos setchuenensis* |
| Relative height | | | | | | | Null | | | |
| Tree height (m) | 19.0 | 10.5 | 7.6 | 14.1 | 13.6 | 9.0 | | 1.9 | 12.9 | 12.7 |
| DBH (cm) | 19.6 | 15.1 | 12.6 | 14.3 | 15.0 | 10.1 | | 12.7 | 12.9 | 1.7 |
| Vitality of tree | | | | | | | Dead in 2016 | | | |
| Form of tree | 1 | | | | | | | | | |
| Branch growth | | | | | | | | | | |
| Dieback of stem | | | | | | | | | | |
| Defoliation of crown | | | | | | | | | | |
| Deformation of leaves | 1 | | | | | | | | | |
| Size of leaves | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | |
| Injury of leaves | | | | | | | | | | |
| Damage class*1 | | | | | | | | | | |

Estimated cause of decline:
Note: *1. Damage class will be decided based on combination of defoliation and discoloration classes

**Table 5.6.2 Observation of tree decline: Chongqing (China) CNS004**
Plot name: Jinyunshan-2
Date: 20 October 2017
Surveyor: Lixianyuan

| Individual No. | 1 (67) | 2 (68) | 3 (74) | 4 (76) | 6 (41) | 8 (71) | 9 (70) | 10 (69) |
|---|---|---|---|---|---|---|---|---|
| Direction (E, W, S, or N) | E | E | S | S | W | N | N | N |
| Plant Name | *Symplocos setchuenensis* | *Symplocos setchuenensis* | *Adinandra bockiana* | *Symplocos setchuenensis* | *Adinandra bockiana* | *Symplocos lancifolia* | *Elaeocarpus japonecus* | *Michilus pingii* |
| Relative height | | | Dead | | | | | Null |
| Tree height (m) | 11.5 | 10.5 | | 17.4 | 20.5 | 15.1 | 18.6 | |
| DBH (cm) | 12.6 | 15.7 | | 25.7 | 21.4 | 17.0 | 40.1 | |
| Vitality of tree | | | | | | | | Dead in 2015 |
| Form of tree | | | | 1 | | | | |
| Branch growth | | | | | | | | |
| Dieback of stem | | | | | | | | |
| Defoliation of crown | | | | | | | | |
| Deformation of leaves | | | | | | | | |
| Size of leaves | | | | | | | | |
| Discoloration of leaves | | | | | | | | |
| Injury of leaves | | | | | | 1 | | |
| Damage class*1 | | | | | | | | |

Estimated cause of decline:
Note: *1. Damage class will be decided based on combination of defoliation and discoloration classes

**Table 5.6.3 Observation of tree decline: Jiwozi (China) CNS007**

Plot name: Dabagou
Date: 29 September 2017
Surveyor:ZhuJian

| Individual No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction (E, W, S, or N) | E | E | E | E | E | S | S | S | S | S | W | W | W | W | W | N | N | N | N | N |
| Plant Name | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* | *Pinus armandi Fanch* |
| Relative height | | | | | | | | | | | | | | | | | | | | |
| Tree height (m) | 17.1 | 14.4 | 12.1 | 14.8 | 12.0 | 12.0 | 9.8 | 9.0 | 1.9 | 14.7 | 14.6 | 12.6 | 1.9 | 15.4 | 11.2 | 13.2 | 11.9 | 13.7 | 11.3 | 8.7 |
| DBH (cm) | 25.9 | 25.8 | 17.0 | 21.6 | 24.8 | 17.8 | 12.7 | 19.0 | 15.9 | 19.2 | 28.7 | 24.1 | 15.1 | 24.1 | 16.5 | 24.3 | 16.3 | 24.3 | 15.9 | 9.2 |
| Vitality of tree | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Form of tree | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Branch growth | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Dieback of stem | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Defoliation of crown | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Deformation of leaves | | | | | | | | | | | | | | | | | | | | |
| Size of leaves | | | | | | | | | | | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | | | | | | | | | | | |
| Injury of leaves | | | | | | | | | | | | | | | | | | | | |
| Damage class*1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Estimated cause of decline: unspecified
Note: *1. Damage class was decided based on combination of defoliation and discoloration classes.

**Table 5.6.4 Observation of tree decline: Xiaoping (China) CNS009**

Plot name: XPZ-01
Date: 7 November 2017
Surveyor: Zhang Yashuang

| Individual No. | 120 | 210 | 211 | 116 | 203 | 225 | 227 | 301 | 220 | 221 | 337 | 334 | 333 | 313 | 314 | 310 | 309 | 308 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction (E, W, S, or N) | E | E | E | E | S | S | S | S | W | W | W | W | W | N | N | N | N | N |
| Plant Name | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* | *Michelia.Maccturei Dandy* |
| Relative height | | | | | | | | | | | | | | | | | | |
| Tree height (m) | 16.8 | 17.3 | 18.5 | 17.5 | 16.5 | 17.5 | 18.5 | 17.9 | 17.9 | 18.5 | 17.9 | 17.8 | 18.8 | 16.8 | 17.1 | 17.2 | 17.0 | 19.4 |
| DBH (cm) | 17.4 | 2.9 | 19.7 | 2.0 | 21.7 | 24.7 | 21.5 | 2.3 | 18.3 | 22.7 | 2.5 | 2.4 | 18.9 | 21.7 | 2.6 | 2.4 | 21.6 | 29.9 |
| Vitality of tree | | | | | | | | | | | | | | | | | | |
| Form of tree | | | | | | | | | | | | | | | | | | |
| Branch growth | | | | | | | | | | | | | | | | | | |
| Dieback of stem | | | | | | | | | | | | | | | | | | |
| Defoliation of crown | | | | | | | | | | | | | | | | | | |
| Deformation of leaves | | | | | | | | | | | | | | | | | | |
| Size of leaves | | | | | | | | | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | | | | | | | | | |
| Injury of leaves | | | | | | | | | | | | | | | | | | |
| Damage class*1 | | | | | | | | | | | | | | | | | | |

Estimated cause of decline:
Note: *1. Damage class was decided based on combination of defoliation and discoloration classes.

**Table 5.6.5 Observation of tree decline: Ijira-1 (Japan) JPS006**
Plot name: Ijira, Ijira
Date: 26 September 2017
Surveyor: Yoshizumi Hisada

| Individual No. | 1 | 2 | 3-2 | 4 | 5-2 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction (E, W, S, or N) | N | N | N | N | N | E | E | E | E | E | S | S | S | S | S | W | W | W | W | W |
| Plant Name | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Cryptomeria japonica* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* |
| Relative height | | − | | − | | | + | | | | | − | − | + | | | | − | − | − |
| Tree height (m) | 15.4 | 14.6 | 15.9 | 13.1 | 16.4 | 17.3 | 18.3 | 17.4 | 16.5 | 16.2 | 17.3 | 15.3 | 14.9 | 18.4 | 17.3 | 13.7 | 15.3 | 12.6 | 13.6 | 13.8 |
| DBH (cm) | 21.8 | 16.3 | 18.2 | 15.3 | 18.3 | 25.0 | 28.0 | 22.9 | 18.1 | 19.3 | 15.8 | 16.3 | 16.4 | 21.4 | 19.8 | 22.4 | 17.5 | 11.4 | 12.2 | 18.5 |
| Vitality of tree | | | | | | | | | | | | | | | | | | 1 | 1 | 1 |
| Form of tree | | 1 | | 1 | 1 | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| Branch growth | | | | | | | | | | | | | | | | | | | | |
| Dieback of stem | | | | 1 | | | | 1 | | 1 | | 1 | | | | | | | | |
| Defoliation of crown | | | | | | | | | | | | | | | | | | | | |
| Deformation of leaves | | | | | | | | | | | | | | | | | | | | |
| Size of leaves | | | | | | | | | | | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | | | | | | | | | | | |
| Injury of leaves | | | | | | | | | | | | | | | | | | | | |
| Damage class | | | | | | | | | | | | | | | | | | | | |

Estimated cause of decline: No.2, 4, 5-2, 8, 10, 11, 12, 13, 14, 15 and 17, bent stem; No. 18, 19 and 20, suppression by other surrounding trees.
+ :Significantly taller taller than other trees. - : Significantly shorter than other trees.

**Table 5.6.6 Observation of tree decline: Lake Ijira-2 (Japan) JPS106**
Plot name: Yamato, Ijira
Date: 25 September 2017
Surveyor: Yoshizumi Hisada

| Individual No. | 1 | 2 | 3 | 4 | 5 | 6 | 7-2 | 8 | 9-2 | 10 | 11-2 | 12-3 | 13-2 | 14-2 | 15 | 16 | 17 | 18-2 | 19-2 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | N | N | N | N | N | E | E | E | E | E | S | S | S | S | S | W | W | W | W | W |
| Plant Name | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* | *Chamaecyparis obtusa* |
| Relative height | | | | | | | | | | | − | | | | | | | | | − |
| Tree height (m) | 30.0 | 29.6 | 31.2 | 30.0 | 31.2 | 31.7 | 30.1 | 32.7 | 31.6 | 31.6 | 28.7 | 28.2 | 31.2 | 30.4 | 30.1 | 30.2 | 29.4 | 32.1 | 30.6 | 25.5 |
| DBH (cm) | 39.8 | 39.4 | 44.4 | 44.0 | 42.6 | 45.2 | 41.3 | 37.4 | 41.5 | 39.5 | 34.4 | 32.3 | 46.5 | 35.6 | 42.9 | 33.4 | 34.7 | 46.9 | 45.6 | 34.4 |
| Vitality of tree | | | | | | | | | | | | | | | | | | | | 1 |
| Form of tree | | | | | | 1 | | 1 | | | | 1 | | | | 1 | 1 | 1 | | 1 |
| Branch growth | | | | | | | | | | | | | | | | | | | | |
| Dieback of stem | | | | 1 | | | | | | | 1 | | | | | | | | | |
| Defoliation of crown | | | | | | | | | | | | | | | | | | | | |
| Deformation of leaves | | | | | | | | | | | | | | | | | | | | |
| Size of leaves | | | | | | | | | | | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | | | | | | | | | | | |
| Injury of leaves | | | | | | | | | | | | | | | | | | | | |
| Damage class | | | | | | | | | | | | | | | | | | | | |

Estimated cause of decline: No. 6, 8, 12-3, 16, 17 and 20, bent stem.
+ :Significantly taller taller than other trees. - : Significantly shorter than other trees.

**Table 5.6.7 Observation of tree decline: Banryu-1 (Japan) JPS008**
Plot name: Banryu-2, Banryu
Date: 30 September, 4, 5 October 2017
Surveyor: Ryoji Yanai

| Individual No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction (E, W, S, or N) | N | N | N | E | E | E | S | N | W | W | W | W | W | W |
| Plant Name | *Castanopsis cuspidata* var. *sieboldii* | *Machilus Thunbergii* | *Symplocos lucida* | *Machilus Thunbergii* | *Styrax japonicus* | *Machilus Thunbergii* | *Clethra barbinervis* | *Quercus serrata* | *Machilus Thunbergii* | *Machilus Thunbergii* | *Acanthopanax sciadophylloides* | *Symplocos lucida* | *Symplocos lucida* | *Ilex integra* |
| Relative height | + | + | + | + | Null | + | Null | + | + | + | Null | + | + | + |
| Tree height (m) | 14.9 | 14.8 | 14.5 | 12.8 | | 14.8 | | 14.8 | 16.4 | 15.0 | | 15.0 | 15.3 | 15.6 |
| DBH (cm) | 30.9 | 29.5 | 12.7 | 29.8 | | 24.3 | | 24.5 | 25.9 | 22.4 | | 17.0 | 21.7 | 34.8 |
| Vitality of tree | | | | | | | | | | | | | | |
| Form of tree | | | | | Dead in 2016 | | Dead in 2011 | | | | Dead in 2008 | | | |
| Branch growth | | | | | | | | | | | | | | |
| Dieback of stem | | | | | | | | | | | | | 1 | |
| Defoliation of crown | | | | | | | | | | | | | | |
| Deformation of leaves | | | | | | | | | | | | | | |
| Size of leaves | | | | | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | | | | | |
| Injury of leaves | | | | | | | | | | | | | | |
| Damage class | | | | | | | | | | | | | | |

Estimated cause of decline: 8 by specific disease for Fagaceae tree species.
+ :Significantly taller taller than other trees. - : Significantly shorter than other trees.

**Table 5.6.8 Observation of tree decline: Lake Banryu-2 (Japan) JPS108**
Plot name: Iwami "rinku" Factory Park, Banryu
Date: 30 September, 4 October 2017
Surveyor: Ryoji Yanai

| Individual No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direction | N | N | N | E | E | E | E | E | S | S | S | S | W | W | W | W | W |
| Plant Name | *Machilus Thunbergii* | *Machilus Thunbergii* | *Ilex micrococca* | *Quercus serrata* | *Castanopsis cuspidata* var. *sieboldii* | *Castanopsis cuspidata* var. *sieboldii* | *Castanopsis cuspidata* var. *sieboldii* | *Castanopsis cuspidata* var. *sieboldii* | *Castanopsis cuspidata* var. *sieboldii* | *Quercus serrata* | *Machilus Thunbergii* | *Quercus serrata* | *Machilus Thunbergii* | *Machilus Thunbergii* | *Machilus Thunbergii* | *Castanea crenata* | *Machilus Thunbergii* |
| Relative height | | | + | | + | | | | | Null | − | Null | | | | | − |
| Tree height (m) | 16.0 | 16.5 | 19.0 | 20.0 | 18.0 | 17.5 | 19.2 | 18.6 | 18.5 | | 13.5 | | 19.0 | 20.2 | 16.5 | 12.8 | 15.5 |
| DBH (cm) | 26.2 | 30.6 | 30.7 | 32.4 | 30.3 | 27.5 | 33.9 | 39.5 | 35.0 | | 27.1 | | 23.2 | 22.9 | 30.3 | 35.5 | 28.8 |
| Vitality of tree | | | | | | | | | | | | | | | | 4 | |
| Form of tree | | | | | 1 | 1 | | | 1 | Dead in 2006 | | Dead in 2008 | | | | 3 | |
| Branch growth | | | | | 1 | 1 | | | 1 | | | | | | | 3 | |
| Dieback of stem | | | | | 1 | 1 | | | 1 | | | | | | | 3 | |
| Defoliation of crown | | | | | | | | | | | | | | | | 2 | |
| Deformation of leaves | | | | | | | | | | | | | | | | | |
| Size of leaves | | | | | | | | | | | | | | | | | |
| Discoloration of leaves | | | | | | | | | | | | | | | | 2 | |
| Injury of leaves | | | | | | | | | | | | | | | | 2 | |
| Damage class | | | | | | | | | | | | | | | | 3 | |

Estimated cause of decline: 4, 16, by specific disease for Fagaceae tree species (infection of *Raffaelea quercivora* through the beetle, *Platypus quercivorus* )
+ :Significantly taller taller than other trees. - : Significantly shorter than other trees.

# CHAPTER 6

## Inland Aquatic Environment Monitoring

# 6. Inland Aquatic Environment Monitoring

## 6.1 Method

There were evidences over Northern Europe and North America that the lake water pH levels decreased in the 1970's compared to the levels in the 1930's and the damages noted as a results of this decrease, including decline of fish population. The cause of this pH decline is believed to be the deposition of acidic substances into lakes in excess amounts of their neutralization or buffering capacity. In general, inland bodies of water with low alkalinity and low electric conductivities are prone to be sensitive to acidification by acid deposition. Therefore it is important to conduct continuous monitoring of water bodies and aquatic fauna and so on.

Items specified in the technical manual (2000) include water temperature, pH, electric conductivity (EC), alkalinity and concentration of $SO_4^{2-}$, $NO_3^-$, $Cl^-$, $NH_4^+$, $Na^+$, $K^+$, $Ca^{2+}$, and $Mg^{2+}$ of targeted lakes/rivers at least four times a year (seasonally), and transparency, water color, DOC (if impossible, COD), $NO_2^-$, $PO_4^{3-}$ more than once a year while some other optional items are specified to be monitored. In near future, it is expected that some additional items (*i.e.* Chlorophyll a, T-P, T-N, DO) will be adopted as mandatory parameters according to the new manual (2010) at each laboratory.

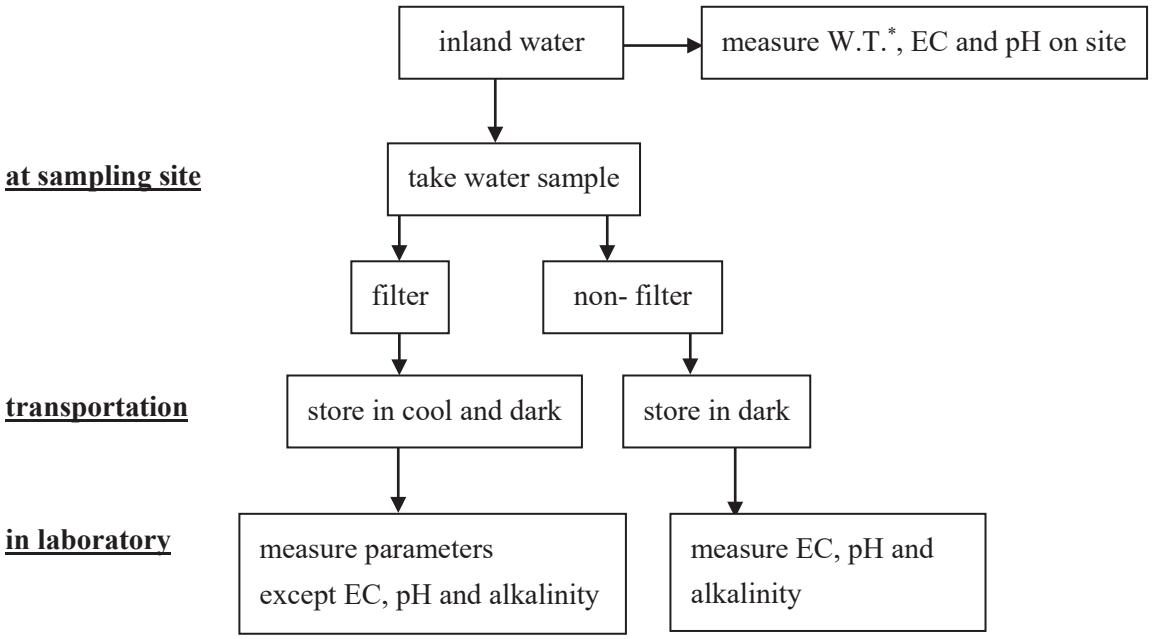
### 6.1.1 Selection of Sampling Sites

According to the technical manual (2000), the lakes chosen for monitoring should be harmonic type lakes, preferably with depths of approximately 10 m or less, a water residence time of 1 year or less, an area of 1 ha or more, with low alkalinity and electric conductivity, minimal anthropogenic water pollution and no coverage of the surface with aquatic organisms. For the monitoring sites, it is desirable to locate in nature protection areas, and human activities such as deforestation, and cultivation should be few and far between in the upstream area.

### 6.1.2 Field Operation

Surface water is sampled at one location at the center of the lake or river. In principle, measurements of pH and electric conductivity (EC) are conducted at the site before a more precise measurement is taken in the laboratory. Water samples for further analyses are kept in a tightly stoppered polyethylene bottle and stored in a cool dark place. The samples are shipped to the laboratory for chemical analysis. The water samples for analysis of chemical components other than pH, EC and alkalinity are filtered at the sampling site with a glass

fiber filter. An example of treatment procedure is described in Figure 6.1.




W.T.* : Water Temperature

**Figure 6.1 Example of treatment procedure of inland water sample**

### 6.1.3 Laboratory Operation

Collected samples are analyzed by analytical methods specified in Table 6.1 immediately, otherwise they are stored in a refrigerator. In addition, with regard to alkalinity, the Gran's plot titration method is adopted newly and recommended as a measurement parallel to the end-point pH 4.8 method in the latest version of the manual 2010.
Cations weren't analyzed in Nam Hum Lake.

**Table 6.1 Parameters and recommended analytical methods**

| Parameter | Analytical method |
|---|---|
| pH | pH meter (glass electrode) |
| Electric conductivity | Conductivity meter |
| Alkalinity | Titration by burette or digital burette with pH meter |
| $NH_4^+$, $NO_3^-$, $NO_2^-$, $PO_4^{3-}$ | Ion Chromatography or spectrometry |
| $K^+$, $Mg^{2+}$, $Ca^{2+}$, $Na^+$ | Ion Chromatography or atomic absorption spectrometry |
| $SO_4^{2-}$ | Ion Chromatography or turbidimetry |
| DOC | Combustion-infrared method or wet-oxidation method |

### 6.1.4 Monitoring Sites

As described in Table 6.2, 10 countries (Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Russia, Thailand and Vietnam) carried out inland aquatic environment monitoring. The monitoring sites were established in 10 lakes/reservoirs and 6 streams. For 2017, the data of Semenyih Dam, Pandin Lake and Ambulalakaw Lake have not been submitted yet. Properties of all the monitoring sites are shown on Table 6.3. However, more information should be appended to these tables in the future.

**Table 6.2 Outline of Inland Aquatic Environment Monitoring of 2017**

| Country | Site | Distance from the site | Nearest deposition monitoring site | Start year | Interval |
|---|---|---|---|---|---|
| Cambodia | Sras Srang Lake (Kampong Speu province) | - | Remote | 2012 | 2 times/yr. |
| China | Jinyunshan Lake (Chongqing) | - | Rural | 2001 | 4 times/yr. |
| | Xiaoping Dam (Xiamen) | - | Remote | 2001 | 4 times/yr. |
| | Jiwozi River (Xi'an) | - | Remote | 2001 | 4 times/yr. |
| | Zhuxiandong Stream (Zhuhai) | - | Urban | 2004 | 4 times/yr. |
| Indonesia | Patengang Lake (Bandung) | 47 km | Urban | 2001 | 3 times/yr. |
| | Gunung Lake (Sukabumi) | - | - | 2008 | 3 times/yr. |
| Japan | Ijira Lake (Gifu Pref.) | 1.1 km | Rural/Ecolog. (Ijira) | 2001 | 4 times/yr. |
| | Banryu Lake (Shimane Pref.) | 0.5 km | Urban/Ecolog. (Banryu) | 2001 | 4 times/yr. |

| | | | | | |
|---|---|---|---|---|---|
| Lao PDR | Nam Hum Lake (Vientiane province) | - | Vientiane | 2009 | 4 times/yr. |
| Malaysia | Semenyih Dam | 26 km | Urban (Petaling Jaya) | 2005 | - |
| | Tembaling River (Sabah) | - | Remote (Danum Valley) | 2007 | 6 times/yr. |
| Mongolia | Terelj River | - | Remote (Terelj) | 2002 | 5 times/yr. |
| Philippines | Pandin Lake | 30 km | Rural (Mt. Makiling) | 2004 | - |
| | Ambulalakaw Lake | - | Remote (Mt. Sto. Tomas) | 2005 | - |
| Russia | Pereemnaya River (Listvyanka) | 48 km | Rural (Listvyanka) | 2004 | 4 times/yr. |
| | Komarovka River (Primorskaya) | 0.5 km | Rural (Primorskaya) | 2005 | 5 times/yr. |
| Thailand | Vachiralongkorn Dam (Kanchanaburi Province) | - | Remote | 2002 | 4 times/yr. |
| Vietnam | Hoa Binh Reservoir | - | Rural | 2001 | 4 times/yr. |

### 6.2 Results of Monitoring

The results of monitoring of each parameter are shown in Table 6.4.1 to Table 6.4.12. Data within or exceeded the criteria of $R_1$ and $R_2$ are judged and marked as "O" or "×" in these tables respectively according to *QA/QC Program for Monitoring on Inland Aquatic Environment in East Asia*. The annual mean values of each monitoring sites are summarized in Table 6.4.13.

There were five sites (Sras Srang Lake in Cambodia, Zhuxiandong Stream in China, Patengang Lake and Gunung Lake in Indonesia and Tembaling River in Malaysia) which have results exceeding allowable range of $R_1$ and/or $R_2$. However, those main reasons could not be identified.

The annual mean values of each parameter from 2000 to 2017 are shown in Table 6.5.1 to Table 6.5.20.

**Table 6.3.1 Properties of lakes or streams**

Lake/Stream: Sras Srang Lake

| | |
|---|---|
| Country | Cambodia |
| Location | KIRIRUM national Park, Kampong Speu province |
| Latitude and longitude | 11° 19’ 69.29” N, 104° 2’ 22.97” E |
| Altitude | 800 m |
| Origin | - |
| Area and shape | 10,403 $m^2$ |
| Shore line length | - |
| Lake hydrologic type | - |
| Lake trophic type | - |
| Water depth | - |
| Water volume | - |
| Annual water level fluctuation | - |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Residence time of water | - |
| Lake utilization | - |
| Watershed area | - |
| River (inflow) | - |

- : no information

**Table 6.3.2 Properties of lakes or streams**

Lake Name: Jinyunshan Lake

| | |
|---|---|
| Country | China |
| Location | Chongqing Prefecture |
| Altitude | - |
| Origin | Artificial lake |
| Area and shape | 0.999 ha |
| Shore line length | About 2 km |
| Lake hydrologic type | Reservoir |
| Lake trophic type | Oligotrophic to Mesotrophic |
| Water depth | 6-13 m |
| Water volume | 60,000 $m^3$ |
| Annual water level fluctuation | 2-4 m |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Residence time of water | - |
| Lake utilization | For drink, Irrigation water |
| Watershed area | - |
| River (inflow) | - |

- : no information

**Table 6.3.3 Properties of lakes or streams**

Lake Name: Xiaoping Dam

| | |
|---|---|
| Country | China |
| Location | Xiaoping, Xiamen |
| Altitude | 595 m |
| Origin | Artificial lake |
| Area and shape | 26.4 ha |
| Shore line length | 100 m |
| Lake hydrologic type | Natural |
| Lake trophic type | Normal |
| Water depth | 57.5 m |
| Water volume | 4,080,000 $m^3$ |
| Annual water level fluctuation | - |
| Annual air temperature | 21.3 °C (mean) *1 |
| Precipitation | 1,084.5 mm/year *1 |
| Sunshine duration | 164.3 hrs/month (mean) *1 |
| Solar radiation | - |
| Wind speed | 2.4 m/s (mean) *1 |
| Wind direction | E and ENE (dominant) *1 |
| Residence time of water | 15 days |
| Lake utilization | Water power |
| Watershed area | 18.1 $km^2$ |
| River (flows into) | Dingxi lake |

- : no information

*1 Xiamen, 2014

**Table 6.3.4 Properties of lakes or streams**

Lake Name: Jiwozi River

| | |
|---|---|
| Country | China |
| Location | Xi'an |
| Origin | Natural stream |
| River length | - |
| Drainage area | - |
| The mean height of the river basin | - |
| Annual air temperature | 15.6 °C (mean) *1 |
| Precipitation | 649.0 mm/year *1 |
| Sunshine duration | 163.8 hrs/month (mean) *1 |
| Solar radiation | - |
| Wind speed | Mean 2.2 m/s *1 |
| Wind direction | ENE (dominant) *1 |
| Lake (flows into) | - |

- : no information

*1 Xi'an, 2017

**Table 6.3.5 Properties of lakes or streams**

Lake Name: Zhuxiandong Stream

| | |
|---|---|
| Country | China |
| Location | Zhuhai |
| Origin | Natural stream |
| River length | - |
| Drainage area | - |
| The mean height of the river basin | - |
| Annual air temperature | 23.5 °C (mean) *1 |
| Precipitation | 1,948.9 mm *1 |
| Sunshine duration | 159.2 hrs/month (mean) *1 |
| Solar radiation | - |
| Wind speed | Mean 2.6 m/s *1 |
| Wind direction | WNE, ESE (dominant) *1 |
| Lake (flows into) | - |

- : no information
*1 Zhuhai, 2017

The monitoring had conducted between 2001 and 2003 at Zhuxiandong reservoir, after that, Zhuxiandong Stream was selected as a new site for inland water monitoring in 2004. This site is located in the upper stream of Zhuxiandong Reservoir. Therefore continuous monitoring has been conducted since 2004 at Zhuxiandong Stream.

**Table 6.3.6 Properties of lakes or streams**

Lake Name: Patengang Lake

| | |
|---|---|
| Country | Indonesia |
| Location | Bandung |
| Altitude(including watershed) | 1600-1700 m |
| Origin | Natural lake |
| Area and shape | 65 $km^2$ |
| Shore line length | - |
| Lake hydrologic type | - |
| Lake trophic type | - |
| Water depth | 7 m (max) |
| Water volume | 4.98 x $10^6$ $m^3$ |
| Annual water level fluctuation | 1.42 m-4.20 m |
| Annual air temperature | 24.0 °C (mean) *1 |
| Precipitation | 6,728.8 mm *1 |
| Sunshine duration | - |
| Solar radiation | 408.1 $MJ/m^2$/month (mean) *1 |
| Wind speed | Mean 1.7 m/s *1 |
| Wind direction | W (dominant) *1 |
| Residence time of water | - |
| Lake utilization | Sightseeing |
| River (inflow) | - |

| | |
|---|---|
| Watershed area | 650 $km^2$ |
| Vegetation (dominant plants) | Strawberry, tea |

- : no information

*1 Bandung, 2017

**Table 6.3.7 Properties of lakes or streams**

Lake Name: Gunung Lake

| | |
|---|---|
| Country | Indonesia |
| Location | Sukabumi, West Java |
| Altitude (including watershed) | 950-1036 m |
| Origin | Natural lake |
| Area and shape | 9.5 ha |
| Shore line length | - |
| Lake hydrologic type | Reservoir |
| Lake trophic type | Eutrophic |
| Water depth | Ave 2.75 m ( < 10 m ) |
| Water volume | - |
| Annual water level fluctuation | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Residence time of water | - |
| Lake utilization | Irrigation |
| River (inflow) | 1 |

| | |
|---|---|
| Watershed area | 120 ha |
| Vegetation (dominant plants) | Pine Tree, *Agathis Damara* |
| Land uses | Agricultural area (5%), Residential area (1%, population < 500) |

- : no information

**Table 6.3.8 Properties of lakes or streams**

Lake Name: Ijira Lake

| | |
|---|---|
| Country | Japan |
| Location | Gifu prefecture |
| Altitude | 110 m |
| Origin | Artificial (dam-made lake) |
| Area and shape | 0.1 $km^2$ |
| Shore line length | 1.8 km |
| Lake hydrologic type | Reservoir |
| Lake trophic type | Oligotrophic or mesotrophic |
| Water depth | Ave. 5.4 m (Max 10.9 m) |
| Water volume | 0.00054 $km^3$ |
| Annual water level fluctuation | 0-0.74 m (Ave. 0.22 m) |
| Annual air temperature | 15.9 °C (mean) *1 |
| Precipitation | 1,864.0 mm/year *1 |
| Sunshine duration | 181.5 hrs/month (mean) *1 |
| Solar radiation | - |
| Wind speed | Mean 2.6 m/s *1 |
| Wind direction | NE (dominant) *1 |
| Residence time of water | 23 days |
| Lake utilization | Irrigation and fishing |
| River (inflow) | Kamagatani River, Kobora River |

| | |
|---|---|
| Watershed area | 5.4 $km^2$ |
| Surface geology | Chert |
| Vegetation (dominant plants) | *Pinus densiflora, Chamaecyparis obtuse, Cryptomeria japonica* |

*1 Gifu Local Meteorological Observatory, 2017

**Table 6.3.9 Properties of lakes or streams**

Lake Name: Banryu Lake

| | |
|---|---|
| Country | Japan |
| Location | Shimane prefecture |
| Altitude | 25 m |
| Origin | Natural damming lake |
| Area and shape | 0.13 $km^2$ |
| Shore line length | 5.7 km |
| Lake hydrologic type | Reservoir |
| Lake trophic type | Mesotrophic |
| Water depth | Ave. 8-8.5 m |
| Water volume | Unknown (Max 500,000 $m^3$) |
| Annual water level fluctuation | 0-1.1 m |
| Annual air temperature | 16.0 °C (mean) *1 |
| Precipitation | 1,423.0 mm/year *1 |
| Sunshine duration | 155.8 hrs/month (mean) *1 |
| Solar radiation | - |
| Wind speed | Mean 1.9 m/s *1 |
| Wind direction | NW (dominant) *1 |
| Residence time of water | 222 days (2004) |
| Lake utilization | Irrigation and sightseeing |
| River (inflow) | None |

- : no information

*1 Masuda AMeDAS of Japan Meteorological Agency, 2017

| | |
|---|---|
| Watershed area | 0.73 $km^2$ |
| Surface geology | Grave, sand, clay |
| Vegetation (dominant plants) | *Pinus thunbergii, Pinus densiflora* |

**Table 6.3.10 Properties of lakes or streams**

Lake Name: Semenyih Dam

| | |
|---|---|
| Country | Malaysia |
| Location | |
| Altitude | 30 m |
| Origin | Dam |
| Area and shape | 3.6 $km^2$ |
| Shore line length | 800 m |
| Lake hydrologic type | Reservoir |
| Lake trophic type | - |
| Water depth | Mean: 110 m |
| Water volume | - |
| Annual water level fluctuation | - |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Residence time of water | More than 1 year |
| Lake utilization | - |
| Watershed area | - |
| River (inflow) | - |

- : no information

**Table 6.3.11 Properties of lakes or streams**

Lake Name: Tembaling River

| | |
|---|---|
| Country | Malaysia |
| Location | Danum Valley, Sabah |
| Latitude and longitude | 04° 57’ N, 117° 48’ E |
| Altitude | - |
| Origin | Natural stream |
| Water depth | - |
| Water Volume | - |
| Watershed area | - |
| River length | - |
| Drainage area | - |
| The mean height of the river basin | - |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| River (meet in 10m from sampling point) | Segama river |

- : no information

**Table 6.3.12 Properties of lakes or streams**

Lake Name: Terelj River

| | |
|---|---|
| Country | Mongolia |
| Location | Terelj |
| Origin | Natural stream |
| River length | 65 km |
| Drainage area | 1220 $km^2$ |
| The mean height of the river basin | - |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Lake (flows into) | - |

- : no information

**Table 6.3.13 Properties of lakes or streams**

Lake Name: Pandin Lake

| | |
|---|---|
| Country | Philippines |
| Location | San Pablo City |
| Altitude | 200m |
| Origin | Natural lake |
| Area and shape | 0.24 $km^2$ |
| Shore line length | - |
| Lake hydrologic type | - |
| Lake trophic type | oligatrophic |
| Water depth | 61.75 m (mean), 63 m (max) |
| Water volume | 6600 $m^3$ |
| Annual water level fluctuation | - |
| Precipitation | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Residence time of water | - |
| Lake utilization | domestic, electric power and tourism |
| Watershed area | - |
| River (inflow) | - |

- : no information

**Table 6.3.14 Properties of lakes or streams**

Lake Name: Ambulalakao Lake

| | |
|---|---|
| Country | Philippines |
| Location | Kabayan, Benguet |
| Altitude | 2400 m |
| Origin | Natural lake |
| Area and shape | 0.006087 $km^2$ |
| Shore line length | - |
| Lake hydrologic type | - |
| Lake trophic type | - |
| Water depth | 1.5 m (mean), 4.0 m (max), 0.2 m (min) |
| Water volume | 11476 $m^3$ |
| Annual water level fluctuation | - |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Residence time of water | - |
| Lake utilization | Tourism |
| Watershed area | - |
| River (inflow) | - |

- : no information

**Table 6.3.15 Properties of lakes or streams**

Stream Name: Pereemnaya River

| | |
|---|---|
| Country | Russia |
| Location | Southern Baikal |
| Origin | Natural stream |
| Altitude(including watershed) | 460 m-1500 m |
| Water depth | 0.9 m (mean), 2 m (max) |
| River length | 42 km |
| Drainage area | About 360 $km^2$ |
| The mean height of the river basin | 1,260 m |
| Annual air temperature | - |
| Precipitation | About 800 mm/year |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | - |
| Wind direction | - |
| Lake (flows into) | Kholodnoe lake |

| | |
|---|---|
| Watershed area | About 360 $km^2$ |
| Surface geology | Archaean rocks, presented mainly by gneisses, crystal schists, andpegmatites |
| Vegetation<br>(dominant plants) | The larger part of the basin belongs to the zone of mountain-taiga soils. The lower taiga border begins from the lake's shore, and the upper border rises up to 900-1800 m depending on the slopes exposition. Above, within loach zone, waste-mountain landscapes with undersized motley grass and lichens prevail. Coniferous forest |

- : no information

**Table 6.3.16 Properties of lakes or streams**

Stream Name: Komarovka River

| | |
|---|---|
| Country | Russia |
| Location | Primorskli Kray, Ussuriyskii district, near Kamenushka settlement |
| Latitude | 43°42’ N |
| Altitude | 386 m |
| Origin | Natural stream |
| Water depth | Mean 0.8 m Maximum 1.5 m |
| Water discharge | 0.14 $m^3$/sec |
| River length | 66 km |
| Drainage area | - |
| Annual air temperature | - |
| Precipitation | 737 mm/year (2005) |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | 1.1-2.2 (mean 1.7 ) m/s (2005) |
| Wind direction | E, NE |
| Lake (flows into) | River Razdolnaya, Amurskiy Bay |

| | |
|---|---|
| Watershed area | About 1490 $km^2$ |
| Surface geology Rocks, sandstones, clayey schist | Rocks, sandstones, clayey schist |
| Soil type Mountain | Mountain- forest brown type of soil |
| Vegetation (dominant plants) | Komarovka valley is situated near Komarovskiy reserve surrounded by hills which protect the site from winds. The valley is covered by the mixed forest from broad-leaves to conifer. |
| Population | About 2000 |

- : no information

**Table 6.3.17 Properties of lakes or streams**

Lake Name: Vachiralongkorn Dam

| | |
|---|---|
| Country | Thailand |
| Location | Kanchanaburi Province |
| Latitude | 14°46’ N |
| Altitude | 170 m |
| Origin | Artificial (Dam made lake) |
| Area and shape | 3,720 $km^2$ |
| Shore line length | - |
| Lake hydrologic type | Reservoir |
| Lake trophic type | - |
| Water depth | 137.7-146.3m (mean: 141.9 m) (2016) |
| Water volume | 3.5688-5.8286 $km^3$ (mean: 4.6346 $km^3$) (2016) |
| Annual water level fluctuation | Depth: 4.2 m (2010) |
| Annual air temperature | - |
| Precipitation | - |
| Sunshine duration | - |
| Solar radiation | - |
| Wind speed | 0.02-0.26 (Ave. 0.07) m/s (2011) |
| Wind direction | - |
| Residence time of water | 165 days |
| Lake utilization | Irrigation, Electric power, Fishery, Flooding protection and Sight seeing |
| Watershed area | 3,720 $km^2$ |
| River (inflow) | |

- : no information

**Table 6.3.18 Properties of lakes or streams**

Lake Name: Hoa Binh Reservoir

| | |
|---|---|
| Country | Vietnam |
| Location | Hoa Binh Province |
| Altitude | 23 m |
| Origin | Artificial (dam-made lake) |
| Area and shape | 208 $km^2$ -25 $km^2$ *1 |
| Shore line length | 208 km-16.7 km *1 |
| Lake hydrologic type | Reservoir |
| Lake trophic type | Mesotrophic |
| Water depth | 60 m (max: 120 m) |
| Water volume | 9.45 $km^3$-2.5 $km^3$ *1 |
| Annual water level fluctuation | 80 m-120 m (Ave.100 m) |
| Annual air temperature | 24.6 °C (mean) *2 |
| Precipitation | 1,894.6 mm *2 |
| Sunshine duration | 154.4 hrs/month (mean) *2 |
| Solar radiation | - |
| Wind speed | Mean 1 m/s *2 |
| Wind direction | N (dominant) *2 |
| Residence time of water | 365 days |
| Lake utilization | Electric power and flood control |
| Watershed area | 51,700 $km^2$-13,700 $km^2$ *1 |
| River (inflow) | Da River |

- : no information

*1 Second value is in affected area of reservoir.

*2 Hoa Binh, 2017

**Table 6.4.1 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.3.-2017.10.
Country: Cambodia
Lake/Stream: Sras Srang Lake

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. ($^{o}$C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^{-}$ (mg/L) | $Cl^{-}$ (mg/L) | $NH_4^{+}$ (mg/L) | $Na^{+}$ (mg/L) | $K^{+}$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Sras Srang Lake | Mar-17 | 27.1 | 6.05 | 0.99 | 0.03 | 0.07 | 0.03 | 1.06 | 0.00 | 0.63 | 0.07 | 0.15 | 0.12 |
| | Oct-17 | 28.9 | 6.03 | 0.95 | 0.04 | 0.07 | 0.09 | 1.18 | 0.02 | 0.70 | 0.10 | 0.18 | 0.06 |
| | mean*1 | 28.0 | 6.04 | 0.97 | 0.03 | 0.07 | 0.06 | 1.12 | 0.01 | 0.67 | 0.08 | 0.17 | 0.09 |

| | | Mandatory Parameters: Once/year | | | | Parameters |
|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | $PO_4^{3-}$ (mg/L) | $NO_2^{-}$ (mg/L) | COD (mg/L) | DO (mg/L) |
| Sras Srang Lake | Mar-17 | 0.8 | - | - | - | 7.02 |
| | Oct-17 | 0.8 | - | - | - | 7.00 |
| | mean*1 | 0.8 | - | - | - | 7.01 |

note
- : Items were not analyzed.
*1: Mean of pH takes an average of hydrogen ion.

| | | Anion | Cation | R1 | Judge | Λcalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Sras Srang Lake | Mar-17 | 63.2 | 47.6 | -14.1 | × | 0.66 | -19.9 | × |
| | Oct-17 | 72.2 | 49.6 | -18.6 | × | 0.73 | -13.1 | × |

**Table 6.4.2 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.1.-2017.11.
Country: China
Lake/Stream: (See below)

| | | Mandatory Parameters : 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (°C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Chongqing | 31-Mar-17 | 19.0 | 6.64 | 12.0 | 0.07 | 30.2 | 12.4 | 3.11 | 0.02 | 3.16 | 1.77 | 12.6 | 3.66 |
| -Jinyunshan Lake | 25-Jun-17 | 23.0 | 6.14 | 10.9 | 0.10 | 27.6 | 13.2 | 2.58 | 0.02 | 2.36 | 1.91 | 10.8 | 3.17 |
| | 07-Sep-17 | 25.0 | 6.80 | 10.8 | 0.19 | 25.1 | 11.0 | 2.69 | 0.03 | 2.44 | 2.32 | 11.3 | 2.91 |
| | 24-Nov-17 | 14.5 | 6.65 | 11.0 | 0.12 | 26.3 | 10.7 | 2.42 | 0.02 | 2.56 | 1.92 | 10.6 | 3.23 |
| | mean*2 | 20.4 | 6.48 | 11.2 | 0.12 | 27.3 | 11.8 | 2.70 | 0.02 | 2.63 | 1.98 | 11.3 | 3.24 |
| Xiamen | 06-Mar-17 | 15.8 | 7.04 | 6.36 | 0.30 | 3.45 | 3.23 | 2.62 | 0.17 | 4.82 | 2.70 | 4.32 | 0.68 |
| -Xiaoping Dam | 03-May-17 | 23.8 | 7.27 | 4.98 | 0.23 | 3.37 | 4.35 | 2.86 | 0.07 | 4.03 | 2.47 | 3.87 | 0.63 |
| | 07-Sep-17 | 26.9 | 6.88 | 5.44 | 0.22 | 2.96 | 3.19 | 2.81 | 0.07 | 4.56 | 2.43 | 3.23 | 0.54 |
| | 08-Nov-17 | 24.3 | 7.26 | 6.26 | 0.30 | 2.89 | 2.55 | 3.09 | 0.01 | 4.81 | 2.29 | 4.43 | 0.64 |
| | mean*2 | 22.7 | 7.08 | 5.76 | 0.26 | 3.17 | 3.33 | 2.85 | 0.08 | 4.56 | 2.47 | 3.96 | 0.62 |
| Xi'an | 05-Jan-17 | 3.0 | 7.01 | 7.91 | 0.40 | 10.0 | 1.58 | 1.36 | 0.02 | 2.43 | 0.97 | 10.4 | 1.65 |
| -Jiwozi River | 11-May-17 | 12.0 | 6.95 | 6.49 | 0.34 | 8.24 | 1.25 | 0.74 | 0.02 | 2.04 | 0.85 | 8.14 | 1.24 |
| | 11-Sep-17 | 16.0 | 6.98 | 5.96 | 0.29 | 8.71 | 2.39 | 0.74 | 0.04 | 1.58 | 0.67 | 6.92 | 1.20 |
| | 07-Nov-17 | 8.0 | 7.01 | 7.12 | 0.31 | 9.10 | 3.14 | 1.22 | 0.03 | 2.04 | 0.78 | 8.92 | 1.56 |
| | mean*2 | 9.8 | 6.99 | 6.87 | 0.34 | 9.02 | 2.09 | 1.02 | 0.03 | 2.02 | 0.82 | 8.60 | 1.41 |
| Zhuhai | 04-Jan-17 | 25.0 | 7.29 | 9.29 | 0.49 | 5.48 | 2.82 | 6.25 | 0.00 | 8.59 | 1.45 | 7.05 | 2.27 |
| -Zhuxiandong | 05-Jun-17 | 25.0 | 7.10 | 16.8 | 0.50 | 5.02 | 2.13 | 27.4 | 0.35 | 19.4 | 1.99 | 4.57 | 2.78 |
| Stream | 04-Aug-17 | 25.0 | 7.26 | 8.13 | 0.50 | 2.28 | 2.68 | 5.51 | 0.06 | 6.62 | 1.55 | 6.98 | 2.25 |
| | 06-Nov-17 | 25.0 | 7.74 | 26.4 | 0.48 | 19.8 | 5.68 | 18.4 | 0.20 | 10.7 | 2.04 | 37.5 | 4.18 |
| | mean*2 | 25.0 | 7.29 | 15.2 | 0.49 | 8.15 | 3.33 | 14.4 | 0.15 | 11.3 | 1.76 | 14.0 | 2.87 |

| | | Mandatory Parameters : Once /year | | | | |
|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water Color | $PO_4^{3-}$ (mg/l) | $NO_2^-$ (mg/l) | COD (mg/l) |
| Chongqing | 31-Mar-17 | 2.9 | - | - | - | - |
| -Jinyunshan Lake | 25-Jun-17 | 1.8 | - | - | - | - |
| | 07-Sep-17 | 1.5 | - | - | - | - |
| | 24-Nov-17 | 1.7 | - | 0.00 | 0.00 | <10*1 |
| | mean*2 | 2.0 | - | 0.00 | 0.00 | <10*1 |
| Xiamen | 06-Mar-17 | 1.8 | - | - | 0.04 | 1.32 |
| -Xiaoping Dam | 03-May-17 | 1.1 | - | - | 0.03 | 1.30 |
| | 07-Sep-17 | 1.4 | - | - | 0.02 | 0.93 |
| | 08-Nov-17 | 1.5 | - | 0.03 | 0.01 | 0.85 |
| | mean*2 | 1.5 | - | 0.03 | 0.02 | 1.10 |
| Xi'an | 05-Jan-17 | - | - | - | - | - |
| -Jiwozi River | 11-May-17 | - | - | - | - | - |
| | 11-Sep-17 | - | - | - | - | - |
| | 07-Nov-17 | - | - | 0.01L*1 | 0.003L*1 | 5L*1 |
| | mean*2 | - | - | 0.01L*1 | 0.003L*1 | 5L*1 |
| Zhuhai | 04-Jan-17 | - | - | - | - | - |
| -Zhuxiandong | 05-Jun-17 | - | - | - | - | - |
| Stream | 04-Aug-17 | - | - | - | - | - |
| | 06-Nov-17 | - | - | - | - | - |
| | mean*2 | - | - | - | - | - |

note
- : Items were not analyzed.
*1: Less than determination limit.
*2: Mean of pH takes an average of hydrogen ion.
# When the value is under detection limit, it considers "0". Then the average and R1R2 were calculated by using it.

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Chongqing | 31-Mar-17 | 988 | 1111 | 5.9 | O | 13.8 | 7.1 | O |
| -Jinyunshan Lake | 25-Jun-17 | 960 | 954 | -0.3 | O | 12.6 | 7.6 | O |
| | 7-Sep-17 | 968 | 969 | 0.1 | O | 12.5 | 7.4 | O |
| | 24-Nov-17 | 911 | 957 | 2.5 | O | 12.2 | 5.3 | O |
| Xiamen | 6-Mar-17 | 495 | 560 | 6.2 | O | 6.1 | -2.5 | O |
| -Xiaoping | 3-May-17 | 448 | 487 | 4.2 | O | 5.5 | 4.9 | O |
| | 7-Sep-17 | 410 | 470 | 6.9 | O | 5.1 | -3.1 | O |
| | 8-Nov-17 | 487 | 542 | 5.4 | O | 5.9 | -3.3 | O |
| Xi'an | 5-Jan-17 | 673 | 788 | 7.8 | O | 8.5 | 3.5 | O |
| -Jiwozi | 11-May-17 | 553 | 620 | 5.7 | O | 6.8 | 2.2 | O |
| | 11-Sep-17 | 531 | 532 | 0.1 | O | 6.3 | 2.4 | O |
| | 7-Nov-17 | 585 | 684 | 7.8 | O | 7.5 | 2.4 | O |
| Zhuhai | 4-Jan-17 | 825 | 949 | 7.0 | O | 10.0 | 3.7 | O |
| -Zhuxiandong | 5-Jun-17 | 1413 | 1371 | -1.5 | O | 16.5 | -0.9 | O |
| Stream | 4-Aug-17 | 741 | 864 | 7.7 | O | 8.9 | 4.6 | O |
| | 6-Nov-17 | 1506 | 2744 | 29.1 | × | 25.9 | -1.0 | O |

**Table 6.4.3 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.5.-2017.10.
Country: Indonesia
Lake/Stream: (See below)

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (°C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Patengang Lake | 9-May-17 | - | 7.91 | 7.47 | 0.38 | 6.21 | 1.16 | 2.12 | 0.00 | 3.08 | 1.40 | 8.42 | 1.90 |
| | 27-Jul-17 | - | 7.91 | 4.72 | 0.60 | 6.58 | 0.22 | 2.31 | 0.01 | 4.32 | 1.60 | 7.88 | 2.56 |
| | 9-Oct-17 | - | 7.83 | 7.49 | 0.50 | 7.16 | 0.06 | 2.30 | 0.19 | 1.79 | 1.60 | 3.44 | 0.94 |
| | mean*1 | - | 7.88 | 6.56 | 0.49 | 6.65 | 0.48 | 2.24 | 0.07 | 3.07 | 1.53 | 6.58 | 1.80 |
| Gunung Lake | 4-May-17 | - | 7.92 | 4.66 | 0.31 | 0.88 | 0.25 | 0.85 | 0.01 | 1.99 | 0.48 | 5.06 | 1.29 |
| | 7-Jul-17 | - | 7.91 | 4.72 | 0.33 | 0.90 | 0.05 | 0.82 | 0.09 | 2.08 | 1.89 | 4.31 | 1.10 |
| | 19-Oct-17 | - | 7.83 | 4.02 | 0.31 | 2.99 | 0.08 | 0.79 | 0.16 | 1.53 | 0.38 | 5.85 | 1.12 |
| | mean*1 | - | 7.88 | 4.47 | 0.32 | 1.59 | 0.13 | 0.82 | 0.09 | 1.87 | 0.92 | 5.07 | 1.17 |

| | | Mandatory Parameters: Once/year | | | | |
|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water Color (PtCo unit) | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) | DOC (mg/L) |
| Patengang Lake | 9-May-17 | 2.0 | - | - | - | - |
| | 27-Jul-17 | 1.0 | - | - | - | - |
| | 9-Oct-17 | 1.1 | - | - | - | - |
| | mean*1 | 1.4 | - | - | - | - |
| Gunung Lake | 4-May-17 | 0.8 | - | - | - | - |
| | 7-Jul-17 | 0.8 | - | - | - | - |
| | 19-Oct-17 | 0.8 | - | - | - | - |
| | mean*1 | 0.8 | - | - | - | - |

note
- : Items were not analyzed.
*1: Mean of pH takes an average of hydrogen ion.

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Patengang Lake | 9-May-17 | 582.7 | 746.2 | 12.3 | × | 7.57 | 0.7 | O |
| | 27-Jul-17 | 805.7 | 832.8 | 1.7 | O | 9.01 | 31.2 | × |
| | 9-Oct-17 | 718.1 | 378.6 | -31.0 | × | 6.14 | -9.8 | × |
| Gunung Lake | 4-May-17 | 356.2 | 457.5 | 12.4 | × | 4.34 | -3.6 | O |
| | 7-Jul-17 | 376.9 | 450.1 | 8.9 | × | 4.44 | -3.1 | O |
| | 19-Oct-17 | 394.7 | 469.5 | 8.7 | × | 4.76 | 8.5 | O |

**Table 6.4.4 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.4.-2018.1.
Country: Japan
Lake/Stream: Ijira Lake

| | | Mandatory Parameters : 4times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (degreeC) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Center (Surface) | 12-Apr-17 | 12.8 | 6.74 | 3.78 | 0.11 | 6.17 | 1.28 | 1.91 | <0.01 | 1.94 | 0.23 | 2.44 | 1.24 |
| | 19-Jul-17 | 27.3 | 7.40 | 4.06 | 0.19 | 5.10 | 0.81 | 1.69 | <0.01 | 2.00 | 0.28 | 2.85 | 1.40 |
| | 17-Oct-17 | 19.2 | 7.00 | 3.81 | 0.19 | 4.66 | 0.96 | 1.79 | 0.02 | 1.94 | 0.29 | 2.89 | 1.33 |
| | 16-Jan-18 | 5.5 | 6.96 | 3.94 | 0.17 | 5.41 | 0.82 | 1.97 | <0.01 | 1.95 | 0.24 | 3.11 | 1.27 |
| | mean*2 | 16.2 | 7.02 | 3.89 | 0.16 | 5.33 | 0.97 | 1.84 | <0.01 | 1.96 | 0.26 | 2.82 | 1.31 |
| Center (near bottom) | 12-Apr-17 | 11.3 | 6.52 | 4.09 | 0.13 | 6.43 | 1.35 | 2.08 | <0.01 | 2.10 | 0.33 | 2.64 | 1.27 |
| | 19-Jul-17 | 23.6 | 6.52 | 4.34 | 0.19 | 5.41 | 1.10 | 1.80 | <0.01 | 2.04 | 0.32 | 3.07 | 1.51 |
| | 17-Oct-17 | 18.5 | 6.64 | 3.93 | 0.18 | 4.81 | 1.20 | 1.79 | 0.08 | 1.92 | 0.30 | 2.87 | 1.41 |
| | 16-Jan-18 | 5.3 | 7.01 | 3.95 | 0.17 | 5.44 | 0.83 | 1.97 | <0.01 | 1.94 | 0.24 | 3.13 | 1.27 |
| | mean*2 | 14.7 | 6.67 | 4.07 | 0.17 | 5.52 | 1.12 | 1.91 | 0.02 | 2.00 | 0.30 | 2.93 | 1.36 |
| Kamagatani River (Input) | 12-Apr-17 | 12.0 | 6.98 | 3.92 | 0.13 | 5.89 | 1.68 | 1.80 | <0.01 | 1.86 | 0.23 | 2.60 | 1.38 |
| | 19-Jul-17 | 20.6 | 6.98 | 4.13 | 0.16 | 5.86 | 1.41 | 1.72 | <0.01 | 1.97 | 0.28 | 2.76 | 1.44 |
| | 17-Oct-17 | 15.9 | 7.20 | 3.91 | 0.16 | 5.77 | 1.34 | 1.85 | <0.01 | 1.99 | 0.28 | 2.78 | 1.41 |
| | 16-Jan-18 | 7.5 | 7.00 | 4.00 | 0.14 | 7.08 | 1.22 | 1.89 | <0.01 | 1.99 | 0.21 | 2.76 | 1.43 |
| | mean*2 | 14.0 | 7.03 | 3.99 | 0.15 | 6.15 | 1.41 | 1.81 | <0.01 | 1.95 | 0.25 | 2.72 | 1.41 |
| Kobora River (Input) | 12-Apr-17 | 11.8 | 7.04 | 3.50 | 0.13 | 4.38 | 1.56 | 1.88 | <0.01 | 2.05 | 0.22 | 1.71 | 1.24 |
| | 19-Jul-17 | 20.8 | 7.04 | 3.59 | 0.15 | 4.45 | 1.06 | 1.77 | <0.01 | 2.20 | 0.26 | 1.87 | 1.35 |
| | 17-Oct-17 | 16.8 | 7.08 | 3.50 | 0.15 | 4.51 | 1.11 | 1.92 | <0.01 | 2.27 | 0.25 | 1.97 | 1.35 |
| | 16-Jan-18 | 5.8 | 6.90 | 3.49 | 0.13 | 5.29 | 0.98 | 1.99 | <0.01 | 2.22 | 0.19 | 1.88 | 1.33 |
| | mean*2 | 13.8 | 7.01 | 3.52 | 0.14 | 4.66 | 1.18 | 1.89 | <0.01 | 2.18 | 0.23 | 1.85 | 1.32 |

| | | Mandatory Parameters : Once/year | | | | | | Parameters |
|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water Color (Forel-Ule Scale) | Water Color (sample) | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) | DOC (mg/L) | Chl-a (μg/L) |
| Center (Surface) | 12-Apr-17 | 5.5 | 16 | clear, colorless | <0.1*1 | <0.01*1 | 0.55 | 1.50 |
| | 19-Jul-17 | 2.5 | 15 | clear, colorless | - | <0.01*1 | - | 1.10 |
| | 17-Oct-17 | 2.2 | 16 | clear, colorless | - | <0.01*1 | - | 3.65 |
| | 16-Jan-18 | 3.2 | 17 | clear, colorless | - | <0.01*1 | - | 1.75 |
| | mean | 3.3 | - | - | <0.1*1 | <0.01*1 | 0.55 | 2.00 |
| Center (near bottom) | 12-Apr-17 | - | - | clear, colorless | <0.1*1 | <0.01*1 | 0.85 | 2.20 |
| | 19-Jul-17 | - | - | clear, colorless | - | <0.01*1 | - | 4.85 |
| | 17-Oct-17 | - | - | clear, colorless | - | <0.01*1 | - | 4.20 |
| | 16-Jan-18 | - | - | clear, colorless | - | <0.01*1 | - | 2.15 |
| | mean | - | - | - | <0.1*1 | <0.01*1 | 0.85 | 3.35 |
| Kamagatani River (Input) | 12-Apr-17 | - | - | clear, colorless | <0.1*1 | <0.01*1 | 0.30 | - |
| | 19-Jul-17 | - | - | clear, colorless | - | <0.01*1 | - | - |
| | 17-Oct-17 | - | - | clear, colorless | - | <0.01*1 | - | - |
| | 16-Jan-18 | - | - | clear, colorless | - | <0.01*1 | - | - |
| | mean | - | - | - | <0.1*1 | <0.01*1 | 0.30 | - |
| Kobora River (Input) | 12-Apr-17 | - | - | clear, colorless | <0.1*1 | <0.01*1 | 0.30 | - |
| | 19-Jul-17 | - | - | clear, colorless | - | <0.01*1 | - | - |
| | 17-Oct-17 | - | - | clear, colorless | - | <0.01*1 | - | - |
| | 16-Jan-18 | - | - | clear, colorless | - | <0.01*1 | - | - |
| | mean | - | - | - | <0.1*1 | <0.01*1 | 0.30 | - |

note
- : Items were not analyzed.
*1: Less than detection limit.
*2: Mean of pH takes an average of hydrogen ion.
# When the value is under detection limit, it considers "0". Then the average and R1R2 were calculated by using it.
# Annual precipitation is 1864.0 mm/year in 2017 (Gifu pref. Meteorological observatory).

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Center (Surface) | 12-Apr-17 | 315 | 314 | -0.1 | O | 3.83 | 0.7 | O |
| | 19-Jul-17 | 356 | 351 | -0.7 | O | 4.10 | 0.5 | O |
| | 17-Oct-17 | 348 | 346 | -0.2 | O | 4.03 | 2.8 | O |
| | 16-Jan-18 | 354 | 350 | -0.5 | O | 4.14 | 2.6 | O |
| Center (near bottom) | 12-Apr-17 | 346 | 336 | -1.5 | O | 4.13 | 0.6 | O |
| | 19-Jul-17 | 372 | 374 | 0.3 | O | 4.36 | 0.2 | O |
| | 17-Oct-17 | 353 | 354 | 0.1 | O | 4.13 | 2.5 | O |
| | 16-Jan-18 | 355 | 351 | -0.5 | O | 4.16 | 2.6 | O |
| Kamagatani River (Input) | 12-Apr-17 | 333 | 330 | -0.4 | O | 3.98 | 0.9 | O |
| | 19-Jul-17 | 356 | 349 | -1.0 | O | 4.17 | 0.5 | O |
| | 17-Oct-17 | 351 | 348 | -0.5 | O | 4.15 | 2.9 | O |
| | 16-Jan-18 | 356 | 347 | -1.2 | O | 4.25 | 3.1 | O |
| Kobora River (Input) | 12-Apr-17 | 297 | 282 | -2.6 | O | 3.43 | -1.1 | O |
| | 19-Jul-17 | 311 | 306 | -0.8 | O | 3.59 | 0.0 | O |
| | 17-Oct-17 | 316 | 314 | -0.3 | O | 3.68 | 2.6 | O |
| | 16-Jan-18 | 314 | 305 | -1.6 | O | 3.68 | 2.7 | O |

**Table 6.4.5 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.5.-20181.
Country: Japan
Lake/Stream: Banryu Lake

| | | Mandatory Parameters : 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (°C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| NO.2 (center) | 30-May-17 | 24.9 | 7.12 | 10.2 | 0.15 | 4.76 | <0.08 | 22.9 | <0.05 | 13.3 | 1.83 | 1.68 | 1.62 |
| surface | 25-Jul-17 | 31.0 | 7.20 | 9.56 | 0.14 | 3.99 | <0.08 | 22.0 | <0.05 | 13.4 | 1.80 | 1.68 | 1.67 |
| | 18-Oct-17 | 20.4 | 6.77 | 9.55 | 0.19 | 3.49 | <0.08 | 20.5 | <0.05 | 14.4 | 1.45 | 1.39 | 2.04 |
| | 05-Jan-18 | 6.5 | 6.99 | 10.2 | 0.20 | 4.30 | 0.31 | 23.3 | 0.07 | 13.0 | 1.88 | 1.45 | 1.65 |
| | mean*2 | 20.7 | 6.99 | 9.89 | 0.17 | 4.13 | <0.08 | 22.2 | <0.05 | 13.5 | 1.74 | 1.55 | 1.74 |
| NO.2 (center) | 30-May-17 | 10.8 | 6.47 | 10.9 | 0.21 | 4.98 | 0.23 | 22.6 | <0.05 | 13.7 | 1.85 | 2.29 | 2.07 |
| near bottom | 25-Jul-17 | 12.0 | 6.46 | 12.7 | 0.43 | 2.90 | <0.08 | 23.9 | <0.05 | 14.9 | 2.03 | 3.54 | 3.22 |
| | 18-Oct-17 | 15.0 | 6.47 | 14.3 | 0.69 | 1.23 | <0.08 | 21.9 | 0.53 | 16.1 | 2.06 | 4.53 | 4.06 |
| | 05-Jan-18 | 5.9 | 6.98 | 10.3 | 0.20 | 4.35 | 0.30 | 23.7 | 0.08 | 13.1 | 1.90 | 1.46 | 1.71 |
| | mean*2 | 10.9 | 6.55 | 12.0 | 0.38 | 3.36 | 0.13 | 23.0 | 0.15 | 14.4 | 1.96 | 2.95 | 2.76 |

| | | Mandatory Parameters : Once/year | | | | | | | Optional Parameters |
|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water Color (Forel-Ule Scale) | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) | DOC (mg/L) | COD (mg/L) | D-Al (mg/L) | Chl-a (μg/L) |
| NO.2 (center) | 30-May-17 | 3.3 | 14 | <0.003*1 | <0.01*1 | 2.49 | - | - | 4.85 |
| surface | 25-Jul-17 | 3.0 | 14 | - | - | - | - | - | 4.75 |
| | 18-Oct-17 | 2.1 | 14 | - | - | - | - | - | 9.40 |
| | 05-Jan-18 | 3.0 | 14 | - | - | - | - | - | 5.60 |
| | mean | 2.9 | - | <0.003*1 | <0.01*1 | 2.49 | - | - | 6.15 |
| NO.2 (center) | 30-May-17 | - | - | <0.003*1 | <0.01*1 | 2.03 | - | - | 28.5 |
| near bottom | 25-Jul-17 | - | - | - | - | - | - | - | 47.0 |
| | 18-Oct-17 | - | - | - | - | - | - | - | 95.4 |
| | 05-Jan-18 | - | - | - | - | - | - | - | 7.35 |
| | mean | - | - | <0.003*1 | <0.01*1 | 2.03 | - | - | 44.5 |

- : Items were not analyzed.
*1: Less than determination limit.
*2: Mean of pH takes an average of hydrogen ion.
# When the value is under detection limit, it considers "0". Then the average and R1R2 were calculated by using it.
# Annual precipitation is 1471.2 mm/year in 2017 (Lake Banryu national acid rain monitoring station).

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| NO.2 (center) | 30-May-17 | 890 | 843 | -2.7 | O | 10.8 | 2.9 | O |
| surface | 25-Jul-17 | 844 | 848 | 0.2 | O | 10.5 | 4.7 | O |
| | 18-Oct-17 | 840 | 898 | 3.3 | O | 10.5 | 5.0 | O |
| | 05-Jan-18 | 953 | 825 | -7.2 | O | 11.0 | 3.8 | O |
| NO.2 (center) | 30-May-17 | 954 | 926 | -1.5 | O | 11.6 | 3.2 | O |
| near bottom | 25-Jul-17 | 1166 | 1142 | -1.1 | O | 13.7 | 3.4 | O |
| | 18-Oct-17 | 1336 | 1342 | 0.2 | O | 15.3 | 3.4 | O |
| | 05-Jan-18 | 962 | 836 | -7.0 | O | 11.2 | 4.1 | O |

**Table 6.4.6 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.3.-2017.12.
Country: Lao PDR
Lake/Stream: Nam Hum Lake

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. ($^{o}$C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^{-}$ (mg/L) | $Cl^{-}$ (mg/L) | $NH_4^{+}$ (mg/L) | $Na^{+}$ (mg/L) | $K^{+}$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Nam Hum Lake | 30-Mar-17 | 26.4 | 7.49 | 2.86 | 0.20 | 3.45 | 0.01 | 0.25 | - | - | - | - | - |
| | 29-Jun-17 | 27.1 | 7.83 | 3.69 | 0.40 | 3.50 | 0.01 | 0.30 | - | - | - | - | - |
| | 29-Sep-17 | 24.4 | 7.70 | 3.60 | 0.29 | 4.00 | 0.01 | 0.40 | - | - | - | - | - |
| | 29-Dec-17 | 25.0 | 7.31 | 3.40 | 0.32 | 4.08 | 0.01 | 0.96 | - | - | - | - | - |
| | mean*1 | 25.7 | 7.54 | 3.39 | 0.30 | 3.76 | 0.01 | 0.48 | - | - | - | - | - |

| | | Mandatory Parameters: Once/year | | | | | Optional Parameters |
|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water Color (PtCo unit) | $PO_4^{3-}$ (mg/L) | $NO_2^{-}$ (mg/L) | COD (mg/L) | DO (mg/L) |
| Nam Hum Lake | 30-Mar-17 | 0.5 | - | 0.01 | - | 3.6 | 6.6 |
| | 29-Jun-17 | 0.5 | - | 0.01 | - | 3.9 | 6.7 |
| | 29-Sep-17 | 0.5 | - | 0.01 | - | 3.5 | 6.9 |
| | 29-Dec-17 | 1.0 | - | 0.01 | - | 3.7 | 7.5 |
| | mean*1 | 0.6 | - | 0.01 | - | 3.7 | 6.9 |

- : Items were not analyzed.
*1 : Mean of pH takes an average of hydrogen ion.

| | | Anion | Cation | R1 | Judge | Λcalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Nam Hum Lake | 30-Mar-17 | 279 | - | - | - | - | - | - |
| | 29-Jun-17 | 482 | - | - | - | - | - | - |
| | 29-Sep-17 | 385 | - | - | - | - | - | - |
| | 29-Dec-17 | 433 | - | - | - | - | - | - |

**Table 6.4.7 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.2.-2017.12.
Country: Malaysia
Lake/Stream: (See below)

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (°C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Semenyih Dam | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | mean*2 | - | - | - | - | - | - | - | - | - | - | - | - |
| Tembaling River | 14-Feb-17 | 25.3 | 7.90 | 18.1 | 1.83 | 8.38 | 0.95 | 3.15 | 0.01 | 7.24 | 0.36 | 18.2 | 9.43 |
| | 11-Apr-17 | 25.1 | 7.90 | 18.7 | 1.77 | 9.53 | 0.88 | 2.77 | 0.01 | 8.06 | 0.44 | 17.8 | 9.15 |
| | 13-Jun-17 | 27.3 | 8.27 | 14.4 | 1.27 | 6.89 | 0.63 | 1.89 | 0.00 | 6.14 | 0.32 | 12.6 | 8.08 |
| | 16-Aug-17 | 26.2 | 7.77 | 16.7 | 1.36 | 5.91 | 1.97 | 1.47 | 0.01 | 8.60 | 1.03 | 15.2 | 5.57 |
| | 17-Oct-17 | 25.8 | 8.07 | 19.0 | 1.72 | 8.07 | 0.42 | 1.95 | 0.01 | 6.87 | 0.52 | 15.7 | 7.57 |
| | 12-Dec-17 | 25.1 | 8.06 | 15.6 | 1.21 | 5.57 | 0.85 | 2.40 | 0.00 | 7.76 | 0.37 | 16.8 | 7.66 |
| | mean*2 | 25.8 | 7.97 | 17.1 | 1.53 | 7.39 | 0.95 | 2.27 | 0.00 | 7.44 | 0.51 | 16.1 | 7.91 |

| | | Mandatory Parameters: Once/year | |
|---|---|---|---|
| Site | Sampling Date | $PO_4^{3-}$ (mg/L) | COD (mg/L) |
| Semenyih Dam | - | - | - |
| | - | - | - |
| | mean*2 | - | - |
| Tembaling River | 14-Feb-17 | <0.10 | 3.75 |
| | 11-Apr-17 | <0.10 | 5.53 |
| | 13-Jun-17 | <0.10 | 2.85 |
| | 16-Aug-17 | <0.10 | 7.05 |
| | 17-Oct-17 | <0.10 | 5.30 |
| | 12-Dec-17 | <0.10 | 4.85 |
| | mean*2 | <0.10*1 | 4.89 |

- : Items were not analyzed.
*1: Less than determination limit.
*2: Mean of pH takes an average of hydrogen ion.
# When the value is under detection limit, it considers "0". Then the average and R1R2 were calculated by using it.

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Semenyih Dam | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - |
| Tembaling River | 14-Feb-17 | 2112 | 2008 | -2.5 | O | 21.6 | 8.7 | O |
| | 11-Apr-17 | 2058 | 2003 | -1.4 | O | 21.3 | 6.6 | O |
| | 13-Jun-17 | 1477 | 1569 | 3.0 | O | 16.0 | 5.3 | O |
| | 16-Aug-17 | 1557 | 1618 | 1.9 | O | 16.6 | -0.1 | O |
| | 17-Oct-17 | 1945 | 1719 | -6.2 | O | 19.0 | 0.1 | O |
| | 12-Dec-17 | 1402 | 1813 | 12.8 | × | 17.0 | 4.5 | O |

**Table 6.4.8 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.6.-2017.10.
Country: Mongolia
Lake/Stream: Terelj River

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (°C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Terelj River | 8-Jun-17 | 25.0 | 7.02 | 4.79 | 0.37 | 4.79 | 0.66 | 0.55 | 0.02 | 1.91 | 0.60 | 7.22 | 0.92 |
| | 28-Jun-17 | 25.0 | 6.73 | 5.13 | 0.37 | 5.09 | 1.47 | 0.74 | 0.01 | 2.18 | 0.59 | 7.12 | 0.93 |
| | 9-Aug-17 | 25.0 | 6.42 | 5.09 | 0.36 | 4.55 | 0.77 | 0.33 | 0.00 | 1.96 | 0.51 | 7.17 | 0.91 |
| | 7-Sep-17 | 25.0 | 6.71 | 4.72 | 0.31 | 4.40 | 0.43 | 0.36 | 0.00 | 1.69 | 0.46 | 6.43 | 0.82 |
| | 5-Oct-17 | 25.0 | 7.14 | 5.72 | 0.32 | 4.77 | 0.90 | 0.41 | 0.00 | 1.70 | 0.42 | 6.56 | 0.84 |
| | mean*1 | 25.0 | 6.73 | 5.09 | 0.35 | 4.72 | 0.85 | 0.48 | 0.01 | 1.89 | 0.52 | 6.90 | 0.88 |

| | | Mandatory Parameters : Once/year | |
|---|---|---|---|
| Site | Sampling Date | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) |
| Terelj River | 8-Jun-17 | - | - |
| | 28-Jun-17 | - | - |
| | 9-Aug-17 | - | - |
| | 7-Sep-17 | - | - |
| | 5-Oct-17 | - | - |
| | mean*1 | - | - |

note
- : Items were not analyzed.
*1: Less than determination limit.
*2: Mean of pH takes an average of hydrogen ion.

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Terelj River | 8-Jun-17 | 496 | 536 | 3.8 | O | 5.74 | 9.0 | O |
| | 28-Jun-17 | 521 | 542 | 2.1 | O | 5.95 | 7.4 | O |
| | 9-Aug-17 | 476 | 531 | 5.5 | O | 5.60 | 4.7 | O |
| | 7-Sep-17 | 418 | 474 | 6.3 | O | 4.98 | 2.6 | O |
| | 5-Oct-17 | 444 | 481 | 4.0 | O | 5.19 | -4.9 | O |

**Table 6.4.9 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.2.-2017.11.
Country: Russian Federation
Lake/Stream: (See below)

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. ($^{o}$C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^{-}$ (mg/L) | $Cl^{-}$ (mg/L) | $NH_4^{+}$ (mg/L) | $Na^{+}$ (mg/L) | $K^{+}$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Pereemnaya River | 20-Feb-17 | 0.2 | 6.70 | 5.22 | 0.18 | 12.7 | 0.93 | 0.18 | 0.01 | 1.34 | 0.73 | 5.41 | 1.31 |
| | 17-May-17 | 5.6 | 6.60 | 3.19 | 0.07 | 8.75 | 1.29 | 0.07 | 0.00 | 0.62 | 0.46 | 3.55 | 0.60 |
| | 14-Jul-17 | 17.2 | 7.00 | 5.01 | 0.14 | 12.5 | 0.50 | 0.01 | 0.01 | 1.19 | 0.78 | 4.99 | 0.98 |
| | 3-Oct-17 | 4.4 | 6.82 | 5.14 | 0.12 | 13.6 | 0.77 | 0.11 | 0.00 | 0.95 | 0.69 | 5.62 | 0.98 |
| | mean*1 | 6.8 | 6.76 | 4.64 | 0.13 | 11.9 | 0.87 | 0.09 | 0.01 | 1.03 | 0.66 | 4.89 | 0.97 |
| Komarovka River | 14-Feb-17 | 0.1 | 7.00 | 9.12 | 0.38 | 14.5 | 4.82 | 3.38 | 0.31 | 5.17 | 0.80 | 8.53 | 2.28 |
| | 11-Apr-17 | 3.8 | 6.70 | 8.62 | 0.44 | 10.5 | 6.10 | 4.05 | 0.15 | 4.10 | 0.88 | 9.80 | 1.60 |
| | 20-Jun-17 | 14.5 | 6.90 | 8.67 | 0.37 | 10.6 | 3.81 | 5.68 | 0.22 | 4.30 | 0.90 | 10.0 | 1.80 |
| | 26-Sep-17 | 15.3 | 7.00 | 9.01 | 0.51 | 10.4 | 0.93 | 4.40 | 0.21 | 4.10 | 1.38 | 10.3 | 2.10 |
| | 21-Nov-17 | 0.2 | 7.21 | 9.25 | 0.42 | 11.4 | 4.21 | 4.30 | 0.08 | 4.27 | 0.40 | 11.4 | 1.78 |
| | mean*1 | 6.8 | 6.93 | 8.93 | 0.42 | 11.5 | 3.97 | 4.36 | 0.19 | 4.39 | 0.87 | 10.0 | 1.91 |

| | | Mandatory Parameters: Once/year | | | | | Optional Parameters | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water color | $PO_4^{3-}$ (mg/L) | $NO_2^{-}$ (mg/L) | COD (mg/L) | Fe (mg/L) | TP (mg/L) | $O_2$ (mg/L) | Si (mg/L) |
| Pereemnaya River | 20-Feb-17 | - | colorless | 0.00 | 0.00 | 0.2 | - | 0.00 | 16.3 | 2.17 |
| | 17-May-17 | - | colorless | 0.01 | 0.00 | 1.1 | - | 0.00 | 11.8 | 1.79 |
| | 14-Jul-17 | - | colorless | 0.00 | 0.00 | 0.6 | - | 0.01 | 8.05 | 1.06 |
| | 3-Oct-17 | - | colorless | 0.00 | 0.00 | 1.0 | - | 0.01 | 11.9 | 2.11 |
| | mean*1 | - | - | 0.00 | 0.00 | 0.8 | - | 0.00 | 12.0 | 1.78 |
| Komarovka River | 14-Feb-17 | - | colorless | 0.01 | 0.02 | 1.9 | 0.07 | - | 13.4 | 6.12 |
| | 11-Apr-17 | - | colorless | 0.01 | 0.01 | 4.8 | 0.35 | - | 11.9 | 4.80 |
| | 20-Jun-17 | - | colorless | 0.01 | 0.02 | 2.9 | 0.34 | - | 10.5 | 4.30 |
| | 26-Sep-17 | - | colorless | 0.01 | 0.01 | 4.1 | 0.11 | - | 9.90 | 3.88 |
| | 21-Nov-17 | - | colorless | 0.01 | 0.02 | 3.0 | 0.15 | - | 14.1 | 6.48 |
| | mean*1 | - | - | 0.01 | 0.02 | 3.3 | 0.20 | - | 12.0 | 5.12 |

note
- : Items were not analyzed.
*1: Mean of pH takes an average of hydrogen ion.

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Pereemnaya River | 20-Feb-17 | 465 | 456 | -1.0 | O | 5.69 | 4.4 | O |
| | 17-May-17 | 278 | 266 | -2.2 | O | 3.50 | 4.7 | O |
| | 14-Jul-17 | 409 | 401 | -0.9 | O | 5.09 | 0.8 | O |
| | 3-Oct-17 | 416 | 420 | 0.4 | O | 5.34 | 2.0 | O |
| Komarovka River | 14-Feb-17 | 856 | 876 | 1.2 | O | 10.3 | 6.3 | O |
| | 11-Apr-17 | 871 | 830 | -2.4 | O | 10.0 | 7.6 | O |
| | 20-Jun-17 | 812 | 869 | 3.4 | O | 10.0 | 7.4 | O |
| | 26-Sep-17 | 867 | 912 | 2.5 | O | 10.3 | 6.7 | O |
| | 21-Nov-17 | 850 | 913 | 3.6 | O | 10.4 | 5.9 | O |

**Table 6.4.10 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.2.-2017.11.
Country: Thailand
Lake/Stream: Vachiralongkorn Dam

| | | Mandatory Parameters : 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. (°C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Station1 | 23-Feb-17 | 28.1 | 6.70 | 11.9 | 1.19 | 1.66 | 0.10 | 1.80 | 0.02 | 1.75 | 1.06 | 17.1 | 3.39 |
| (Ban Pong Chang) | 3-May-17 | 33.4 | 7.00 | 11.9 | 1.18 | 1.42 | 0.10 | 1.00 | <0.01*1 | 1.40 | 1.04 | 19.0 | 3.44 |
| | 13-Jul-17 | 30.0 | 8.30 | 11.9 | 1.18 | 2.35 | 0.05 | 0.95 | 0.01 | 1.35 | 1.00 | 18.7 | 3.38 |
| | 16-Nov-17 | 30.4 | 7.40 | 12.1 | 1.22 | 0.88 | 0.10 | 0.85 | 0.01 | 1.28 | 1.14 | 16.9 | 3.61 |
| | mean*1 | 30.5 | 7.07 | 11.9 | 1.19 | 1.57 | 0.09 | 1.15 | 0.01 | 1.44 | 1.06 | 17.9 | 3.45 |
| Station2 | 23-Feb-17 | 27.4 | 6.70 | 11.9 | 1.21 | 1.53 | 0.10 | 0.92 | 0.01 | 1.24 | 1.00 | 18.3 | 2.91 |
| (Ban Pang Pueng) | 3-May-17 | 31.4 | 7.30 | 12.2 | 1.23 | 1.57 | 0.10 | 1.06 | <0.01*1 | 1.47 | 1.10 | 20.2 | 3.11 |
| | 13-Jul-17 | 30.3 | 8.40 | 11.6 | 1.17 | 2.09 | 0.10 | 1.13 | 0.04 | 1.48 | 1.04 | 18.9 | 3.01 |
| | 16-Nov-17 | 29.4 | 7.80 | 11.7 | 1.19 | 1.26 | 0.10 | 0.82 | 0.01 | 1.30 | 1.04 | 17.5 | 2.88 |
| | mean*1 | 29.6 | 7.17 | 11.8 | 1.20 | 1.61 | 0.10 | 0.98 | 0.02 | 1.37 | 1.04 | 18.7 | 2.98 |

| | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water color | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) | COD (mg/L) |
| Station1 | 23-Feb-17 | 2.5 | light green | 0.02 | - | - |
| (Ban Pong Chang) | 3-May-17 | 3.0 | light green | 0.02 | - | - |
| | 13-Jul-17 | 3.0 | light green | 0.02 | - | - |
| | 16-Nov-17 | 3.0 | light green | 0.01 | - | - |
| | mean*1 | 2.9 | - | 0.02 | - | - |
| Station2 | 23-Feb-17 | 3.0 | light green | 0.02 | - | - |
| (Ban Pang Pueng) | 3-May-17 | 4.0 | light green | 0.02 | - | - |
| | 13-Jul-17 | 3.5 | light green | 0.02 | - | - |
| | 16-Nov-17 | 4.0 | light green | 0.01 | - | - |
| | mean*1 | 3.6 | - | 0.02 | - | - |

note
- : Items were not analyzed.
*1: Less than determination limit.
*2: Mean of pH takes an average of hydrogen ion.

| | Date | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Station1 | 23-Feb-17 | 1277 | 1236 | -1.6 | O | 13.2 | 4.9 | O |
| (Ban Pong Chang) | 3-May-17 | 1240 | 1315 | 3.0 | O | 13.4 | 5.9 | O |
| | 13-Jul-17 | 1257 | 1296 | 1.5 | O | 13.4 | 6.1 | O |
| | 16-Nov-17 | 1264 | 1226 | -1.5 | O | 12.9 | 3.3 | O |
| Station2 | 23-Feb-17 | 1265 | 1230 | -1.4 | O | 13.0 | 4.3 | O |
| (Ban Pang Pueng) | 3-May-17 | 1290 | 1356 | 2.5 | O | 13.9 | 6.5 | O |
| | 13-Jul-17 | 1243 | 1281 | 1.5 | O | 13.3 | 6.7 | O |
| | 16-Nov-17 | 1236 | 1193 | -1.8 | O | 12.6 | 4.1 | O |

**Table 6.4.11 Result of Inland Aquatic Environment Monitoring**

Duration: 2017.3.-2017.12.
Country: Vietnam
Lake/Stream: Hoa Binh Reservoir

| | | Mandatory Parameters: 4 times/year | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Temp. ($^{o}$C) | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Hoa Binh Reservoir | 15-Mar-17 | 25.4 | 7.28 | 15.1 | 1.22 | 5.80 | 1.37 | 1.18 | 0.01 | 1.86 | 0.60 | 20.5 | 3.49 |
| | 15-Jun-17 | 28.6 | 7.64 | 16.5 | 1.40 | 5.76 | 1.22 | 1.25 | 0.01 | 2.73 | 1.14 | 21.3 | 4.72 |
| | 15-Sep-17 | 27.6 | 7.13 | 15.5 | 1.32 | 4.39 | 1.60 | 0.79 | 0.01 | 2.07 | 1.34 | 19.9 | 4.02 |
| | 15-Dec-17 | 20.5 | 7.26 | 16.3 | 1.38 | 4.41 | 1.52 | 0.92 | 0.01 | 1.93 | 1.28 | 20.3 | 4.62 |
| | mean*1 | 25.5 | 7.29 | 15.9 | 1.33 | 5.09 | 1.43 | 1.04 | 0.01 | 2.15 | 1.09 | 20.5 | 4.21 |

| | | Mandatory Parameters: Once/year | | | | | |
|---|---|---|---|---|---|---|---|
| Site | Sampling Date | Transparency (m) | Water Color (PtCo unit) | $F^-$ (mg/L) | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) | COD (mg/L) |
| Hoa Binh Reservoir | 15-Mar-17 | 1.2 | - | 0.14 | 0.05 | 0.01 | 3.5 |
| | 15-Jun-17 | 1.2 | - | 0.11 | 0.05 | 0.00 | 4.3 |
| | 15-Sep-17 | 0.6 | - | 0.15 | 0.05 | 0.01 | 4.8 |
| | 15-Dec-17 | 1.2 | 13 | 0.12 | 0.03 | 0.01 | 4.0 |
| | mean*1 | 1.0 | - | 0.13 | 0.04 | 0.01 | 4.2 |

note
- : Items were not analyzed.
*1 : Mean of pH takes an average of hydrogen ion.

| | | Anion | Cation | R1 | Judge | Acalc | R2 | Judge |
|---|---|---|---|---|---|---|---|---|
| Hoa Binh Reservoir | 15-Mar-17 | 1398 | 1406 | 0.3 | O | 15.0 | -0.4 | O |
| | 15-Jun-17 | 1577 | 1597 | 0.6 | O | 16.8 | 1.0 | O |
| | 15-Sep-17 | 1461 | 1447 | -0.5 | O | 15.4 | -0.4 | O |
| | 15-Dec-17 | 1523 | 1509 | -0.5 | O | 16.0 | -0.9 | O |

**Table 6.4 (12) Summary of Inland Aquatic Environment Monitoring**

| | | | Mandatory Parameters : 4 times/year | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Country | Location | Site | pH | EC (mS/m) | Alkalinity (meq/L) | $SO_4^{2-}$ (mg/L) | $NO_3^-$ (mg/L) | $Cl^-$ (mg/L) | $NH_4^+$ (mg/L) | $Na^+$ (mg/L) | $K^+$ (mg/L) | $Ca^{2+}$ (mg/L) | $Mg^{2+}$ (mg/L) |
| Cambodia | Kampong Speu province | Sras Srang Lake*2 | 6.04 | 0.97 | 0.03 | 0.07 | 0.06 | 1.12 | 0.01 | 0.67 | 0.08 | 0.17 | 0.09 |
| China | Chongqing | Jinyunshan Lake | 6.48 | 11.2 | 0.12 | 27.3 | 11.8 | 2.70 | 0.02 | 2.63 | 1.98 | 11.3 | 3.24 |
| | Xiamen | Xiaoping Dam | 7.08 | 5.76 | 0.26 | 3.17 | 3.33 | 2.85 | 0.08 | 4.56 | 2.47 | 3.96 | 0.62 |
| | Xi'an | Jiwozi River | 6.99 | 6.87 | 0.34 | 9.02 | 2.09 | 1.02 | 0.03 | 2.02 | 0.82 | 8.60 | 1.41 |
| | Zhuhai | Zhuxiandong Stream | 7.29 | 15.2 | 0.49 | 8.15 | 3.33 | 14.4 | 0.15 | 11.3 | 1.76 | 14.0 | 2.87 |
| Indonesia | Bandung | Patengang Lake*3 | 7.88 | 6.56 | 0.49 | 6.65 | 0.48 | 2.24 | 0.07 | 3.07 | 1.53 | 6.58 | 1.80 |
| | Sukabumi, West Java | Gunung Lake*3 | 7.88 | 4.47 | 0.32 | 1.59 | 0.13 | 0.82 | 0.09 | 1.87 | 0.92 | 5.07 | 1.17 |
| Japan | Gifu pref. | Ijira Lake (Center, surface) | 7.02 | 3.89 | 0.16 | 5.33 | 0.97 | 1.84 | <0.01*1 | 1.96 | 0.26 | 2.82 | 1.31 |
| | Shimane pref. | Banryu Lake (Center, surface) | 6.99 | 9.89 | 0.17 | 4.13 | <0.08*1 | 22.2 | <0.05*1 | 13.5 | 1.74 | 1.55 | 1.74 |
| Lao PDR | Vientiane province | Nam Hum Lake | 7.54 | 3.39 | 0.30 | 3.76 | 0.01 | 0.48 | - | - | - | - | - |
| Malaysia | Selangor | Semenyih Dam | - | - | - | - | - | - | - | - | - | - | - |
| | Sabah | Tembaling river*4 | 7.97 | 17.1 | 1.53 | 7.39 | 0.95 | 2.27 | 0.00 | 7.44 | 0.51 | 16.1 | 7.91 |
| Mongolia | Terelj | Terelj River*5 | 6.73 | 5.09 | 0.35 | 4.72 | 0.85 | 0.48 | 0.01 | 1.89 | 0.52 | 6.90 | 0.88 |
| Philippines | San Pablo City | Pandin Lake | - | - | - | - | - | - | - | - | - | - | - |
| | Benguet | Ambulalakaw Lake | - | - | - | - | - | - | - | - | - | - | - |
| Russia | Southern Baikal | Pereemnaya River | 6.76 | 4.64 | 0.13 | 11.9 | 0.87 | 0.09 | 0.01 | 1.03 | 0.66 | 4.89 | 0.97 |
| | Primorskaya | Komarovka River*5 | 6.93 | 8.93 | 0.42 | 11.5 | 3.97 | 4.36 | 0.19 | 4.39 | 0.87 | 10.0 | 1.91 |
| Thailand | Kanchanaburi Province | Vachiralongkorn Dam (Ban Pong Chang) | 7.07 | 11.9 | 1.19 | 1.57 | 0.09 | 1.15 | 0.01 | 1.44 | 1.06 | 17.9 | 3.45 |
| | | Vachiralongkorn Dam (Ban Pang Pueng) | 7.17 | 11.8 | 1.20 | 1.61 | 0.10 | 0.98 | 0.02 | 1.37 | 1.04 | 18.7 | 2.98 |
| Vietnam | Hoa Binh Province | Hoa Binh Reservoir | 7.29 | 15.9 | 1.33 | 5.09 | 1.43 | 1.04 | 0.01 | 2.15 | 1.09 | 20.5 | 4.21 |

| | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|
| Country | Location | Site | Transparency (m) | $PO_4^{3-}$ (mg/L) | $NO_2^-$ (mg/L) | DOC (mg/L) | COD (mg/L) |
| Cambodia | Kampong Speu province | Sras Srang Lake*2 | 0.78 | - | - | - | 7.01 |
| China | Chongqing | Jinyunshan Lake | 1.98 | 0.00 | 0.00 | - | <10*1 |
| | Xiamen | Xiaoping Dam | 1.45 | 0.03 | 0.02 | - | 1.10 |
| | Xi'an | Jiwozi River | - | <0.01*1 | <0.003*1 | - | <5*1 |
| | Zhuhai | Zhuxiandong Stream | - | - | - | - | - |
| Indonesia | Bandung | Patengang Lake*3 | 1.37 | - | - | - | - |
| | Sukabumi, West Java | Gunung Lake*3 | 0.75 | - | - | - | - |
| Japan | Gifu pref. | Ijira Lake (Center, surface) | 3.35 | <0.1*1 | <0.01*1 | 0.55 | - |
| | Shimane pref. | Banryu Lake (Center, surface) | 2.85 | <0.003*1 | <0.01*1 | 2.49 | - |
| Lao PDR | Vientiane province | Nam Hum Lake | 0.63 | 0.01 | - | - | 3.66 |
| Malaysia | Selangor | Semenyih Dam | - | - | - | - | - |
| | Sabah | Tembaling river*4 | - | <0.10*1 | - | - | 4.89 |
| Mongolia | Terelj | Terelj River*5 | - | - | - | - | - |
| Philippines | San Pablo City | Pandin Lake | - | - | - | - | - |
| | Benguet | Ambulalakaw Lake | - | - | - | - | - |
| Russia | Southern Baikal | Pereemnaya River | - | 0.00 | 0.00 | - | 0.79 |
| | Primorskaya | Komarovka River*5 | - | 0.01 | 0.02 | - | 3.32 |
| Thailand | Kanchanaburi Province | Vachiralongkorn Dam (Ban Pong Chang) | 2.88 | 0.02 | - | - | - |
| | | Vachiralongkorn Dam (Ban Pang Pueng) | 3.63 | 0.02 | - | - | - |
| Vietnam | Hoa Binh Province | Hoa Binh Reservoir | 1.04 | 0.04 | 0.01 | - | 4.15 |

note
- : Items were not analyzed.
*1: Less than determination/detection limit.
*2: Surveyed twice a year.
*3: Surveyed three times a year.
*4: Surveyed six times a year.
*5: Surveyed five times a year.

**Table 6.5(1) Annual mean values of each parameters of 2012 to 2017 at Sras Srang Lake (Cambodia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2012 | 6.46 | 0.88 | 0.04 | 0.08 | 0.06 | 1.65 | 0.04 | 0.94 | 0.13 | 0.27 | 0.16 | 0.7 | - | - | - | - |
| 2013 | 5.74 | 0.93 | 0.03 | 0.05 | 0.28 | 1.39 | 0.02 | 0.94 | 0.12 | 0.29 | 0.13 | 0.7 | - | - | - | - |
| 2014 | 5.84 | 0.96 | 0.04 | 0.06 | 0.60 | 1.38 | 0.12 | 1.03 | 0.31 | 0.26 | 0.12 | 0.7 | - | - | - | - |
| 2015 | 5.81 | 0.98 | 0.04 | 0.09 | 0.22 | 1.17 | 0.07 | 0.80 | 0.19 | 0.37 | 0.22 | 0.8 | - | - | - | - |
| 2016 | 5.95 | 0.92 | 0.03 | 0.10 | 0.30 | 1.10 | 0.09 | 0.91 | 0.14 | 0.27 | 0.13 | 0.7 | - | - | - | - |
| 2017 | 6.04 | 0.97 | 0.03 | 0.07 | 0.06 | 1.12 | 0.01 | 0.67 | 0.08 | 0.17 | 0.09 | 0.8 | - | - | - | - |

**Table 6.5(2) Annual mean values of each parameters from 2001 to 2017 at Jinyushan Lake (China)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 7.50 | 9.05 | - | 26.1 | 7.68 | 2.58 | 0.65 | 1.78 | 1.58 | 6.63 | 2.63 | - | - | - | - | - |
| 2002 | 6.12 | 9.52 | - | 26.4 | 7.99 | 2.53 | 0.09 | 2.50 | 1.79 | 9.08 | 3.28 | - | - | - | - | - |
| 2003 | 6.55 | 9.79 | 0.21 | 23.2 | 5.16 | 2.68 | 0.21 | 2.60 | 1.72 | 9.03 | 3.30 | 0.9 | - | - | - | - |
| 2004 | 6.34 | 9.61 | 0.08 | 25.7 | 7.94 | 1.74 | 0.30 | 1.98 | 1.65 | 9.66 | 2.71 | 2.6 | - | - | - | 7.60 |
| 2005 | 6.04 | 10.2 | 0.07 | 28.1 | 8.16 | 2.63 | 0.04 | 2.70 | 1.82 | 9.36 | 3.22 | 3.7 | *1 | *1 | - | 2.94 |
| 2006 | 6.36 | 11.9 | 0.11 | 32.7 | 9.53 | 3.05 | 0.11 | 2.96 | 2.27 | 11.1 | 3.82 | 5.0 | *1 | *1 | - | 3.20 |
| 2007 | 6.24 | 12.4 | 0.09 | 37.2 | 10.2 | 3.12 | 0.12 | 2.81 | 2.18 | 11.2 | 3.81 | 3.0 | *1 | *1 | - | 4.37 |
| 2008 | 5.42 | 12.2 | 0.07 | 33.3 | 12.8 | 2.77 | 0.16 | 2.65 | 1.98 | 11.3 | 3.77 | 3.7 | *1 | *1 | - | 2.90 |
| 2009 | 5.84 | 11.2 | 0.05 | 29.3 | 8.29 | 2.95 | 0.23 | 2.59 | 1.96 | 10.1 | 3.63 | 2.3 | *1 | *1 | - | <10*1 |
| 2010 | 5.76 | 12.8 | 0.16 | 34.5 | 10.6 | 3.00 | 0.14 | 2.90 | 2.07 | 11.7 | 3.98 | 3.4 | *1 | *1 | - | <10*1 |
| 2011 | 5.25 | 14.2 | 0.06 | 39.6 | 15.2 | 3.76 | 0.12 | 2.71 | 2.27 | 12.8 | 3.90 | 4.5 | *1 | *1 | - | <10*1 |
| 2012 | 5.47 | 13.5 | 0.05 | 40.8 | 9.88 | 3.71 | 0.14 | 3.08 | 2.38 | 12.8 | 3.98 | 3.1 | *1 | *1 | - | <10*1 |
| 2013 | 6.03 | 7.12 | 0.08 | 20.7 | 3.93 | 0.68 | 0.12 | 0.75 | 0.77 | 8.75 | 0.98 | 3.5 | *1 | *1 | - | <10*1 |
| 2014 | 5.41 | 12.4 | 0.04 | 34.9 | 14.3 | 2.65 | 0.09 | 2.54 | 2.14 | 11.8 | 3.77 | 6.3 | *1 | *1 | - | - |
| 2015 | 6.48 | 11.4 | 0.14 | 29.4 | 10.1 | 2.24 | 0.25 | 2.25 | 2.01 | 11.6 | 3.46 | 0.9 | *1 | *1 | - | <10*1 |
| 2016 | 6.49 | 12.2 | 0.27 | 28.6 | 11.7 | 2.97 | *1 | 2.91 | 2.30 | 12.7 | 3.59 | 2.5 | *1 | *1 | - | <10*1 |
| 2017 | 6.48 | 11.2 | 0.12 | 27.3 | 11.8 | 2.70 | 0.02 | 2.63 | 1.98 | 11.3 | 3.24 | 2.0 | *1 | *1 | - | <10*1 |

**Table 6.5(3) Annual mean values of each parameters from 2001 to 2017 at Xiaoping Dam (China)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 7.21 | - | - | 1.43 | 1.30 | 2.18 | - | - | - | - | - | - | - | - | - | - |
| 2002 | 7.39 | 7.00 | - | 4.67 | 6.66 | 2.82 | 0.20 | 7.29 | 2.14 | 2.29 | 0.82 | - | - | - | - | - |
| 2003 | 6.73 | 7.19 | 0.19 | 2.68 | 5.02 | 5.91 | 0.17 | 6.53 | 2.06 | 2.35 | 0.86 | - | - | - | - | 1.83 |
| 2004 | 7.34 | 5.57 | 0.24 | 2.68 | 7.83 | 4.35 | 0.18 | 6.70 | 2.18 | 2.92 | 0.64 | - | 0.02 | 0.01 | - | 2.12 |
| 2005 | 6.73 | 4.62 | 0.23 | 2.07 | 2.83 | 3.94 | 0.05 | 4.77 | 2.37 | 2.95 | 0.61 | 0.9 | 0.02 | 0.01 | - | 1.33 |
| 2006 | 6.81 | 5.27 | 0.19 | 2.46 | 2.52 | 5.13 | 0.19 | 6.02 | 2.33 | 3.19 | 0.66 | 0.9 | 0.02 | 0.01 | - | 0.66 |
| 2007 | 7.07 | 7.32 | 0.11 | 2.67 | 2.67 | 5.13 | 0.15 | 3.64 | 1.63 | 2.82 | 0.54 | - | - | 0.01 | - | 1.78 |
| 2008 | 6.73 | 5.66 | 0.12 | 4.49 | 2.67 | 12.9 | 0.14 | 4.97 | 2.46 | 3.90 | 0.56 | - | 0.01 | 0.01 | - | 1.93 |
| 2009 | 6.72 | 7.53 | 0.19 | 3.14 | 2.67 | 7.44 | 0.10 | 6.91 | 3.52 | 2.43 | 0.82 | - | 0.01 | 0.01 | - | 3.50 |
| 2010 | 6.63 | 6.19 | 0.19 | 2.70 | 3.70 | 5.54 | 0.11 | 5.80 | 2.53 | 2.51 | 0.69 | 1.1 | 0.02 | 0.01 | - | 1.86 |
| 2011 | 6.78 | 4.85 | 0.17 | 2.60 | 2.89 | 3.14 | 0.09 | 3.50 | 2.10 | 2.57 | 0.52 | 0.7 | 0.05 | 0.02 | - | 1.83 |
| 2012 | 6.94 | 5.08 | 0.15 | 2.92 | 3.46 | 3.10 | 0.06 | 3.78 | 2.50 | 2.51 | 0.68 | 1.2 | 0.03 | 0.03 | - | 2.52 |
| 2013 | 6.80 | 5.52 | 0.22 | 2.71 | 3.42 | 2.77 | 0.05 | 3.80 | 2.83 | 3.20 | 0.76 | 0.9 | 0.02 | 0.03 | - | 1.66 |
| 2014 | 7.18 | 5.79 | 0.22 | 3.71 | 3.53 | 2.64 | 0.05 | 3.09 | 2.61 | 3.70 | 0.84 | 0.9 | 0.04 | 0.02 | - | 1.47 |
| 2015 | 7.01 | 6.01 | 0.18 | 3.99 | 3.17 | 3.43 | 0.05 | 3.65 | 2.64 | 3.61 | 0.66 | 0.7 | 0.05 | 0.01 | - | 1.23 |
| 2016 | 6.65 | 5.98 | 0.28 | 2.39 | 2.61 | 2.87 | 0.11 | 4.43 | 2.36 | 3.52 | 0.66 | 1.2 | 0.04 | 0.02 | - | 0.92 |
| 2017 | 7.08 | 5.76 | 0.26 | 3.17 | 3.33 | 2.85 | 0.08 | 4.56 | 2.47 | 3.96 | 0.62 | 1.5 | 0.03 | 0.02 | - | 1.10 |

- : Items were not analyzed.

*1: Less than determination/detection limit.

**Table 6.5(4) Annual mean values of each parameters from 2001 to 2017 at Jiwozi River (China)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 7.11 | 4.50 | 0.23 | 10.0 | 1.47 | 1.06 | 0.04 | 1.90 | 0.70 | 8.83 | 1.38 | - | - | - | - | - |
| 2002 | 7.60 | 8.47 | 0.11 | 12.2 | 1.70 | 1.80 | *1 | 2.80 | 1.20 | 12.7 | 1.72 | - | - | - | - | - |
| 2003 | 7.54 | 7.83 | 0.14 | 11.4 | 2.01 | 1.63 | *1 | 2.08 | 0.95 | 12.0 | 1.59 | - | - | - | - | - |
| 2004 | 7.20 | 6.63 | 0.24 | 11.7 | 2.30 | 1.06 | *1 | 1.79 | 0.68 | 9.04 | 1.35 | - | *1 | *1 | - | 3.20 |
| 2005 | 6.99 | 7.99 | 0.21 | 15.3 | 0.81 | 1.74 | 0.06 | 1.77 | 0.72 | 7.44 | 1.35 | - | *1 | 0.090 | - | 1.60 |
| 2006 | 6.80 | 7.59 | 0.24 | 11.8 | 1.87 | 1.21 | 0.07 | 1.93 | 0.65 | 7.64 | 1.11 | - | 0.03 | 0.003 | - | 2.80 |
| 2007 | 7.32 | 8.86 | 0.25 | 16.7 | 3.46 | 1.31 | 0.13 | 2.09 | 0.96 | 11.0 | 0.96 | - | *1 | *1 | - | 2.20 |
| 2008 | 7.05 | 8.42 | 0.25 | 13.9 | 1.89 | 1.51 | 0.30 | 1.43 | 1.05 | 9.38 | 1.20 | - | <0.01*1 | <0.003*1 | - | 2.50 |
| 2009 | 6.98 | 8.28 | 0.28 | 15.5 | 2.07 | 1.34 | 0.14 | 1.88 | 1.04 | 9.85 | 1.38 | - | <0.01*1 | <0.003*1 | - | 2.50 |
| 2010 | 7.33 | 8.11 | 0.28 | 13.9 | 2.83 | 1.27 | *1 | 1.22 | 0.81 | 10.5 | 1.35 | - | <0.01*1 | <0.003*1 | - | 3.00 |
| 2011 | 6.85 | 6.83 | 0.28 | 12.9 | 0.87 | 0.51 | *1 | 0.74 | 0.84 | 8.09 | 2.01 | - | <0.01*1 | <0.003*1 | - | 3.00 |
| 2012 | 6.83 | 6.95 | 0.28 | 13.0 | 0.96 | 0.57 | *1 | 0.70 | 0.83 | 7.80 | 2.01 | - | <0.01*1 | <0.003*1 | - | 4.00 |
| 2013 | 6.86 | 8.92 | 0.33 | 15.0 | 2.39 | 3.16 | *1 | 3.50 | 1.37 | 11.1 | 1.69 | - | <0.01*1 | <0.003*1 | - | 5.00 |
| 2014 | 7.05 | 8.24 | 0.27 | 15.8 | 1.28 | 1.32 | 0.27 | 1.93 | 1.06 | 9.15 | 1.61 | - | <0.01*1 | <0.003*1 | - | 4.00 |
| 2015 | 7.09 | 7.27 | 0.26 | 11.3 | 6.45 | 1.55 | *1 | 4.12 | 0.95 | 9.19 | 1.28 | - | <0.01*1 | <0.003*1 | - | 3.00 |
| 2016 | 7.10 | 7.60 | 0.30 | 11.7 | 2.86 | 0.82 | *1 | 2.29 | 0.65 | 10.1 | 1.11 | - | <0.01*1 | <0.003*1 | | *1 |
| 2017 | 6.99 | 6.87 | 0.34 | 9.02 | 2.09 | 1.02 | 0.03 | 2.02 | 0.82 | 8.60 | 1.41 | - | <0.01*1 | <0.003*1 | - | *1 |

**Table 6.5(5) Annual mean values of each parameters from 2004 to 2017 at Zhuxiandong stream and from 2001 to 2003 at Zhuxiandong resorvoir(China)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 7.62 | - | - | 17.7 | 0.63 | 43 | 0.20 | - | - | - | - | - | - | - | - | - |
| 2002 | 7.93 | 6.70 | 0.96 | 19.9 | 0.83 | 24 | 0.23 | 7.27 | 1.57 | 17.0 | 2.50 | - | - | - | - | - |
| 2003 | 7.82 | 7.54 | 1.60 | 17.5 | 0.29 | 20 | 0.17 | 7.34 | 1.96 | 16.8 | 2.36 | - | - | 0.029 | - | 1.68 |
| 2004 | 7.12 | 8.49 | 0.65 | 5.47 | 1.90 | 6.03 | *1 | 8.95 | 1.88 | 5.41 | 2.84 | - | | *1 | - | 1.08 |
| 2005 | 6.97 | 9.53 | 0.13 | 5.83 | 1.70 | 6.73 | *1 | 8.90 | 1.60 | 4.63 | 2.65 | 1.3 | *1 | *1 | - | 0.93 |
| 2006 | 7.18 | 7.35 | 0.23 | 2.60 | 1.15 | 4.50 | 1.10 | 5.40 | 1.13 | 4.38 | 1.58 | 1.3 | *1 | *1 | | 0.98 |
| 2007 | 7.28 | 7.80 | 0.24 | 3.61 | 1.77 | 5.09 | 0.10 | 6.01 | 1.22 | 3.65 | 1.38 | 1.3 | *1 | *1 | - | 1.13 |
| 2008 | 7.18 | 7.58 | 0.17 | 2.95 | 2.36 | 4.90 | 0.05 | 6.83 | 1.31 | 4.40 | 1.76 | 1.3 | *1 | *1 | - | 1.13 |
| 2009 | 7.16 | 7.74 | 0.37 | 2.97 | 4.20 | 6.30 | 0.06 | 7.86 | 1.57 | 2.77 | 1.96 | 1.1 | *1 | *1 | - | 1.28 |
| 2010 | 7.22 | 6.86 | 0.39 | 2.49 | 2.50 | 5.15 | 0.08 | 6.98 | 1.23 | 4.30 | 1.72 | 1.1 | *1 | *1 | - | 1.38 |
| 2011 | 7.16 | 7.42 | 0.47 | 1.95 | 1.00 | 4.33 | 0.09 | 7.70 | 1.15 | 4.68 | 1.69 | 1.1 | *1 | *1 | - | 1.28 |
| 2012 | 7.26 | 7.62 | 0.50 | 2.98 | 2.00 | 5.38 | 0.09 | 7.50 | 1.69 | 4.81 | 1.88 | 1.1 | *1 | *1 | - | 1.15 |
| 2013 | 7.20 | 7.87 | 0.50 | 3.81 | 4.11 | 4.66 | 0.07 | 6.95 | 1.77 | 4.91 | 1.91 | 1.2 | *1 | *1 | - | 1.13 |
| 2014 | 7.19 | 8.27 | 0.50 | 4.64 | 4.80 | 3.75 | 0.02 | 6.42 | 1.69 | 5.22 | 2.53 | - | - | - | - | - |
| 2015 | 6.38 | 6.73 | 0.50 | 2.47 | 1.31 | 2.50 | 0.44 | 7.48 | 1.84 | 2.84 | 1.14 | - | - | - | - | - |
| 2016 | 6.99 | 7.45 | 0.50 | 1.85 | 2.01 | 3.69 | 0.03 | 6.70 | 1.53 | 4.35 | 1.64 | - | - | - | - | - |
| 2017 | 7.29 | 15.2 | 0.49 | 8.15 | 3.33 | 14.4 | 0.15 | 11.3 | 1.76 | 14.0 | 2.87 | - | - | - | - | - |

**Table 6.5(6) Annual mean values of each parameters from 2001 to 2016 at Patenggang Lake (Indonesia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 7.90 | 7.28 | 0.49 | 4.33 | 0.07 | 8.19 | 0.13 | 4.90 | 0.54 | 6.32 | 2.18 | - | - | - | - | - |
| 2002 | 8.46 | 5.83 | 0.26 | 7.33 | 0.06 | 6.30 | 0.17 | 4.60 | 0.71 | 4.03 | 1.93 | - | - | - | - | - |
| 2003 | 7.34 | 6.58 | 0.46 | 7.76 | 0.19 | 7.50 | 0.53 | 4.30 | 0.49 | 5.17 | 2.53 | 0.6 | 0.21 | *1 | 12.4 | - |
| 2004 | 7.29 | 5.89 | 0.34 | 2.65 | 0.03 | 3.85 | 0.02 | 2.10 | 0.85 | 5.75 | 2.20 | 0.6 | 0.01 | *1 | 7.30 | - |
| 2005 | 7.19 | 6.71 | 0.46 | 8.83 | 0.23 | 2.30 | 0.43 | 4.04 | 1.87 | 5.70 | 2.70 | 0.1 | 0.01 | *1 | 10.9 | - |
| 2006 | 7.49 | 5.74 | 0.41 | 3.80 | 0.47 | 2.58 | 0.39 | 2.87 | 1.70 | 5.70 | 1.43 | 0.1 | 0.09 | 0.02 | 8.13 | - |
| 2007 | 7.17 | 6.75 | 0.42 | 7.45 | 0.32 | 2.59 | 0.41 | 3.40 | 1.53 | 5.75 | 1.47 | 0.1 | 0.04 | 0.01 | 3.80 | - |
| 2008 | 6.76 | 6.43 | 0.45 | 7.89 | 0.07 | 2.18 | 0.05 | 2.84 | 1.29 | 6.18 | 2.39 | 0.9 | 0.20 | 0.02 | 10.2 | - |
| 2009 | 6.99 | 6.96 | 0.49 | 5.16 | 0.58 | 2.24 | 0.19 | 3.68 | 2.33 | 6.66 | 1.09 | 1.1 | 0.01 | 0.01 | 8.62 | - |
| 2010 | 6.66 | 6.75 | 0.51 | 4.93 | 0.01 | 2.33 | 0.17 | 3.43 | 1.52 | 6.87 | 2.12 | 1.1 | 0.03 | 0.01 | 7.54 | - |
| 2011 | 7.84 | 7.40 | 0.52 | 8.08 | 0.02 | 2.48 | 0.34 | 3.18 | 1.38 | 6.46 | 2.61 | 0.7 | 0.29 | 0.01 | 6.87 | - |
| 2012 | 7.72 | 6.09 | 0.40 | 7.40 | *1 | 1.80 | 0.43 | 3.50 | 1.47 | 5.26 | 2.06 | 0.8 | 0.13 | *1 | 7.58 | - |
| 2013 | 7.41 | 6.64 | 0.44 | 8.23 | 0.06 | 1.50 | 0.09 | 4.83 | 2.03 | 4.60 | 1.97 | 0.9 | *1 | 0.01 | 12.1 | - |
| 2014 | 7.48 | 6.19 | 0.36 | 7.15 | 0.12 | 2.44 | 0.47 | 3.00 | 1.15 | 4.90 | 2.06 | 1.6 | 0.01 | 0.01 | 6.82 | - |
| 2015 | 7.75 | 7.03 | 0.37 | 9.96 | 0.12 | 2.06 | 0.06 | 3.12 | 1.50 | 5.74 | 2.22 | - | - | - | - | - |
| 2016 | 8.09 | 9.51 | 0.43 | 6.40 | 0.82 | 3.62 | 0.09 | 4.68 | 1.14 | 5.32 | 1.84 | - | - | - | - | - |
| 2017 | 7.88 | 6.56 | 0.49 | 6.65 | 0.48 | 2.24 | 0.07 | 3.07 | 1.53 | 6.58 | 1.80 | 1.4 | - | - | - | - |

- : Items were not analyzed.

*1: Less than determination/detection limit.

**Table 6.5(7) Annual mean values of each parameters from 2008 to 2016 at Gunung Lake (Indonesia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2008 | 6.73 | 5.90 | 0.44 | 5.59 | 0.03 | 2.01 | 0.57 | 2.24 | 0.71 | 5.09 | 1.87 | 1.1 | 0.04 | 0.01 | 6.65 | - |
| 2009 | 6.69 | 5.54 | 0.46 | 3.48 | 0.06 | 1.30 | 0.16 | 3.14 | 1.02 | 4.62 | 2.20 | 1.0 | 0.01 | 0.01 | 10.8 | - |
| 2010 | 6.24 | 5.14 | 0.44 | 1.70 | 0.00 | 1.15 | 0.11 | 2.01 | 0.87 | 5.35 | 1.66 | 1.1 | 0.13 | 0.00 | 4.98 | - |
| 2011 | 7.38 | 5.15 | 0.41 | 4.04 | 0.07 | 1.00 | 0.12 | 2.36 | 0.84 | 5.04 | 2.02 | 0.7 | 0.04 | 0.00 | 10.2 | - |
| 2012 | 6.56 | 5.86 | 0.45 | 4.04 | *1 | 1.10 | *1 | 1.74 | 0.88 | 5.30 | 2.54 | 0.5 | 0.71 | *1 | 9.46 | - |
| 2013 | 7.38 | 4.15 | 0.32 | 3.05 | 0.04 | 0.75 | 0.08 | 2.75 | 0.76 | 2.92 | 1.18 | 1.0 | *1 | 0.00 | 5.28 | - |
| 2014 | 6.97 | 3.96 | 0.25 | 4.05 | 0.04 | 1.68 | 0.13 | 2.74 | 0.87 | 2.65 | 0.92 | 1.0 | 0.02 | 0.00 | 8.83 | 4.81 |
| 2015 | 7.33 | 4.91 | 0.27 | 6.74 | 0.05 | 1.96 | 0.03 | 1.74 | 0.49 | 4.46 | 2.00 | - | - | - | - | - |
| 2016 | 7.41 | 3.92 | 0.41 | 1.27 | 0.15 | 0.81 | 0.09 | 4.10 | 0.51 | 5.53 | 1.36 | - | - | - | - | - |
| 2017 | 7.88 | 4.47 | 0.32 | 1.59 | 0.13 | 0.82 | 0.09 | 1.87 | 0.92 | 5.07 | 1.17 | 0.8 | - | - | - | - |

**Table 6.5(8) Annual mean values of each parameters from 2001 to 2017 at Ijira Lake (Japan)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 6.85 | 4.33 | 0.14 | 4.66 | 2.31 | 2.19 | 0.07 | 2.37 | 0.40 | 3.51 | 1.61 | - | <0.01*1 | - | - | - |
| 2002 | 6.72 | 4.52 | 0.17 | 5.63 | 2.01 | 2.27 | 0.09 | 2.23 | 0.38 | 3.39 | 1.37 | 2.2 | <0.066*1 | <0.01*1 | 3.18 | - |
| 2003 | 6.75 | 4.10 | 0.15 | 5.14 | 2.07 | 2.40 | 0.08 | 1.86 | 0.30 | 2.94 | 1.36 | 3.0 | <0.01*1 | <0.03*1 | 1.40 | - |
| 2004 | 7.17 | 4.05 | 0.14 | 4.79 | 1.88 | 2.34 | 0.12 | 2.15 | 0.23 | 2.71 | 1.23 | 2.8 | <0.03*1 | <0.02*1 | 1.13 | - |
| 2005 | 6.94 | 4.47 | 0.15 | 5.73 | 2.37 | 2.32 | 0.08 | 2.29 | 0.39 | 3.27 | 1.42 | 3.0 | <0.03*1 | 0.07 | 0.74 | - |
| 2006 | 6.81 | 3.94 | 0.16 | 4.53 | 2.11 | 2.09 | 0.03 | 2.00 | 0.33 | 2.80 | 1.23 | 2.4 | <0.1*1 | <0.02*1 | 0.62 | - |
| 2007 | 7.09 | 4.58 | 0.21 | 5.77 | 1.22 | 2.27 | 0.03 | 2.24 | 0.30 | 3.57 | 1.46 | 2.7 | <0.1*1 | <0.02*1 | 1.00 | - |
| 2008 | 7.19 | 4.36 | 0.18 | 5.37 | 1.78 | 2.16 | 0.04 | 2.10 | 0.28 | 3.24 | 1.45 | 2.7 | <0.1*1 | <0.01*1 | 0.80 | - |
| 2009 | 7.04 | 4.26 | 0.18 | 5.18 | 1.47 | 2.13 | 0.01 | 2.08 | 0.26 | 3.03 | 1.35 | 2.7 | <0.1*1 | <0.01*1 | 0.70 | - |
| 2010 | 7.01 | 3.74 | 0.16 | 4.58 | 1.10 | 1.96 | <0.01*1 | 1.88 | 0.25 | 2.61 | 1.18 | 2.3 | <0.1*1 | <0.01*1 | 0.49 | - |
| 2011 | 7.11 | 3.85 | 0.16 | 4.77 | 1.34 | 1.86 | <0.01*1 | 1.89 | 0.23 | 3.05 | 1.22 | 1.8 | <0.1*1 | <0.01*1 | 0.83 | - |
| 2012 | 7.11 | 3.76 | 0.15 | 4.66 | 1.31 | 1.89 | <0.01*1 | 1.85 | 0.23 | 2.78 | 1.23 | 2.3 | <0.1*1 | <0.01*1 | 0.50 | - |
| 2013 | 7.17 | 3.94 | 0.16 | 5.02 | 1.06 | 1.97 | <0.01*1 | 1.97 | 0.24 | 2.73 | 1.25 | 2.4 | <0.1*1 | <0.01*1 | 0.50 | - |
| 2014 | 7.06 | 3.73 | 0.14 | 4.67 | 1.21 | 1.86 | <0.01*1 | 1.82 | 0.27 | 2.34 | 1.12 | 1.9 | <0.1*1 | <0.01*1 | 0.50 | - |
| 2015 | 7.16 | 3.57 | 0.15 | 4.38 | 1.06 | 1.87 | <0.01*1 | 1.79 | 0.27 | 2.12 | 1.05 | 2.2 | <0.1*1 | <0.01*1 | 0.55 | - |
| 2016 | 7.11 | 3.73 | 0.14 | 5.37 | 1.39 | 1.78 | <0.01*1 | 1.89 | 0.27 | 2.39 | 1.20 | 4.8 | <0.1*1 | <0.01*1 | 0.60 | - |
| 2017 | 7.02 | 3.89 | 0.16 | 5.33 | 0.97 | 1.84 | <0.01*1 | 1.96 | 0.26 | 2.82 | 1.31 | 3.3 | <0.1*1 | <0.01*1 | 0.55 | - |

**Table 6.5(9) Annual mean values of each parameters from 2001 to 2017 at Banryu Lake (Japan)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 6.98 | 9.43 | 0.17 | 4.07 | 0.11 | 19.7 | 0.15 | 12.2 | 1.75 | 1.23 | 1.60 | - | <0.003*1 | - | - | 5.30 |
| 2002 | 7.07 | 10.1 | 0.18 | 3.93 | 0.30 | 21.9 | 0.12 | 13.0 | 1.80 | 1.21 | 1.76 | 1.6 | <0.003*1 | <0.003*1 | 2.48 | 5.71 |
| 2003 | 6.98 | 10.9 | 0.17 | 3.96 | 0.14 | 22.3 | 0.19 | 13.4 | 1.78 | 1.09 | 1.69 | 1.5 | <0.003*1 | <0.003*1 | 2.64 | 5.61 |
| 2004 | 7.10 | 10.7 | 0.16 | 3.96 | 0.21 | 23.0 | 0.09 | 14.0 | 1.84 | 1.05 | 1.69 | 2.5 | <0.003*1 | <0.003*1 | 3.33 | 4.78 |
| 2005 | 7.09 | 10.7 | 0.16 | 4.31 | 0.14 | 23.1 | 0.04 | 14.2 | 1.91 | 1.47 | 1.82 | 2.2 | 0.003 | <0.003*1 | 2.59 | 5.03 |
| 2006 | 7.01 | 10.3 | 0.16 | 4.44 | 0.13 | 21.6 | 0.11 | 13.8 | 1.83 | 1.49 | 1.77 | 2.5 | <0.003*1 | 0.003 | 2.72 | 4.84 |
| 2007 | 7.02 | 10.8 | 0.18 | 4.49 | 0.10 | 22.5 | 0.02 | 14.3 | 1.94 | 1.52 | 1.62 | 2.5 | <0.003*1 | <0.003*1 | 2.63 | 5.00 |
| 2008 | 7.05 | 10.7 | 0.17 | 4.24 | 0.14 | 22.8 | 0.03 | 14.3 | 1.87 | 1.37 | 1.65 | 3.0 | <0.003*1 | <0.003*1 | 2.54 | - |
| 2009 | 7.02 | 10.1 | 0.17 | 4.14 | 0.10 | 22.0 | 0.03 | 13.7 | 1.79 | 1.52 | 1.81 | 2.7 | <0.003*1 | <0.003*1 | 2.94 | - |
| 2010 | 7.03 | 10.1 | 0.14 | 4.00 | 0.16 | 21.9 | 0.04 | 13.5 | 1.77 | 1.67 | 1.88 | 2.9 | <0.003*1 | <0.003*1 | 2.85 | 5.49 |
| 2011 | 6.97 | 10.9 | 0.17 | 4.08 | 0.21 | 23.6 | 0.04 | 14.3 | 1.90 | 1.85 | 2.07 | 3.2 | <0.003*1 | <0.003*1 | 2.44 | 5.04 |
| 2012 | 7.00 | 11.0 | 0.18 | 4.02 | 0.15 | 24.3 | 0.04 | 14.7 | 1.92 | 1.88 | 2.04 | 2.7 | <0.003*1 | 0.004 | 2.20 | 4.68 |
| 2013 | 7.01 | 9.89 | 0.17 | 4.15 | 0.13 | 21.5 | 0.03 | 13.2 | 1.78 | 1.76 | 1.89 | 2.5 | <0.003*1 | <0.003*1 | 2.46 | 4.99 |
| 2014 | 7.06 | 10.5 | 0.16 | 3.99 | 0.14 | 21.7 | 0.04 | 12.8 | 1.70 | 1.64 | 1.83 | 3.1 | <0.003*1 | <0.003*1 | 2.14 | 4.81 |
| 2015 | 6.91 | 10.3 | 0.16 | 4.62 | <0.08*1 | 24.0 | <0.05*1 | 14.3 | 1.78 | 1.75 | 1.90 | 3.5 | <0.003*1 | <0.01*1 | 2.20 | - |
| 2016 | 6.96 | 9.92 | 0.17 | 4.20 | 0.10 | 22.3 | 0.06 | 13.6 | 1.63 | 1.59 | 1.78 | 2.5 | <0.003*1 | <0.01*1 | 2.30 | - |
| 2017 | 6.99 | 9.89 | 0.17 | 4.13 | <0.08*1 | 22.2 | <0.05*1 | 13.5 | 1.74 | 1.55 | 1.74 | 2.9 | <0.003*1 | <0.01*1 | 2.49 | - |

- : Items were not analyzed.

*1: Less than determination/detection limit.

**Table 6.5(10) Annual mean values of each parameters of 2009 and 2016 at Nam Hum Lake (Lao PDR)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2009 | 7.55 | 3.90 | 0.41 | 1.83 | 0.65 | 1.45 | 0.15 | 0.94 | 1.75 | 4.43 | 0.86 | - | 0.00 | - | - | 10.2 |
| 2014 | 7.18 | 4.12 | 0.44 | - | - | - | - | - | - | - | - | 0.8 | 0.01 | - | - | 23.1 |
| 2016 | 7.20 | 2.34 | 0.34 | 2.61 | 0.02 | 1.83 | 0.01 | 1.07 | 0.40 | 1.14 | 1.72 | 0.6 | 0.01 | - | - | 11.2 |
| 2017 | 7.54 | 3.39 | 0.30 | 3.76 | 0.01 | 0.48 | - | - | - | - | - | 0.6 | 0.01 | - | - | 3.66 |

**Table 6.5(11) Annual mean values of each parameters from 2005 to 2015 at Semenyih Dam (Malaysia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2005 | 7.08 | 2.27 | 0.23 | 0.75 | 1.07 | 1.41 | 0.11 | 2.34 | 2.01 | 4.93 | 1.40 | - | - | - | - | - |
| 2006 | 7.24 | 3.03 | 0.69 | 5.04 | 0.87 | 7.03 | 0.29 | 14.5 | 16.8 | 14.4 | 2.70 | - | - | - | - | - |
| 2007 | 7.02 | 2.67 | 0.27 | 1.22 | 0.10 | 0.75 | 0.04 | 2.35 | 2.05 | 2.30 | 0.69 | - | - | - | - | - |
| 2008 | 6.94 | 1.53 | 0.26 | 1.73 | 0.18 | 0.83 | 0.06 | 2.46 | 2.08 | 2.54 | 0.66 | - | - | - | - | - |
| 2009 | 6.91 | 3.30 | 0.23 | 1.80 | 0.22 | 0.83 | 0.02 | 2.13 | 1.90 | 1.83 | 0.55 | - | - | - | - | - |
| 2010 | 6.92 | 2.77 | 0.23 | 2.40 | 0.05 | 0.81 | 0.02 | 2.18 | 2.00 | 2.43 | 0.65 | - | <0.10*1 | - | - | - |
| 2011 | 6.99 | 2.69 | 0.27 | 2.85 | 0.54 | 0.96 | 0.05 | 2.15 | 2.01 | 2.53 | 0.60 | - | - | - | - | - |
| 2012 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | 6.63 | 2.96 | 0.23 | 2.98 | 0.25 | 0.77 | 0.06 | 2.12 | 1.94 | 2.55 | 0.61 | - | <0.10*1 | - | - | 5.27 |
| 2014 | 7.06 | 3.63 | 0.23 | 3.16 | 0.42 | 0.78 | 0.15 | 2.18 | 2.07 | 3.24 | 0.68 | - | <0.10*1 | - | - | 4.93 |
| 2015 | 6.99 | 3.20 | 0.24 | 1.32 | 0.14 | 1.61 | 0.03 | 3.70 | 1.60 | 2.21 | 0.64 | - | <0.10*1 | - | - | 7.62 |

**Table 6.5(12) Annual mean values of each parameters from 2007 to 2017 at Tembaling River (Malaysia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2007 | 6.80 | 13.9 | 1.64 | 7.03 | 0.63 | 2.20 | 0.05 | 3.01 | 3.37 | 16.5 | 8.68 | - | - | - | - | - |
| 2008 | 7.07 | 18.6 | 1.85 | 8.10 | 0.75 | 1.20 | 0.01 | 5.83 | 0.40 | 22.0 | 10.4 | - | - | - | - | - |
| 2009 | 7.97 | 20.3 | 1.98 | 9.38 | 0.72 | 1.33 | 0.01 | 6.25 | 0.53 | 20.5 | 10.2 | - | - | - | - | - |
| 2010 | 8.11 | 21.8 | 2.07 | 9.94 | 0.59 | 1.55 | 0.03 | 6.99 | 0.81 | 18.4 | 16.0 | - | <0.10*1 | - | - | 4.01 |
| 2011 | 8.18 | 17.4 | 1.63 | 7.23 | 1.19 | 1.35 | 0.01 | 4.99 | 0.40 | 16.3 | 7.50 | - | <0.10*1 | - | - | 7.81 |
| 2012 | 8.06 | 17.8 | 1.80 | 6.11 | 0.29 | 1.18 | 0.01 | 4.71 | 0.25 | 19.4 | 9.20 | - | <0.10*1 | - | - | 4.46 |
| 2013 | 8.05 | 19.2 | 1.91 | 5.50 | 0.38 | 1.20 | 0.04 | 5.73 | 0.38 | 20.4 | 10.7 | - | <0.10*1 | - | - | 4.59 |
| 2014 | 7.82 | 20.8 | 2.00 | 7.79 | 0.47 | 1.02 | 0.04 | 6.39 | 0.57 | 21.5 | 11.0 | - | <0.10*1 | - | - | 4.75 |
| 2015 | 8.02 | 23.4 | 2.21 | 11.3 | 0.54 | 2.33 | 0.03 | 9.37 | 0.64 | 24.0 | 12.1 | - | <0.10*1 | - | - | 4.84 |
| 2016 | 7.77 | 18.2 | 1.59 | 9.26 | 0.55 | 3.73 | 0.06 | 7.77 | 1.73 | 17.8 | 8.5 | - | <0.10*1 | - | - | 6.34 |
| 2017 | 7.97 | 17.1 | 1.53 | 7.39 | 0.95 | 2.27 | 0.00 | 7.44 | 0.51 | 16.1 | 7.9 | - | <0.10*1 | - | - | 4.89 |

- : Items were not analyzed.

*1: Less than determination/detection limit.

**Table 6.5(13) Annual mean values of each parameters from 2002 to 2017 at Terelj River (Mongolia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2002 | 7.23 | 4.84 | 0.10 | 3.47 | 1.11 | 0.43 | 0.04 | 1.87 | 0.52 | 7.17 | 0.87 | - | - | - | - | - |
| 2003 | 6.75 | 4.60 | 0.27 | 3.16 | 0.74 | 0.36 | 0.04 | 1.65 | 0.48 | 5.88 | 0.83 | - | - | - | - | - |
| 2004 | 6.80 | 4.44 | 0.30 | 2.76 | 0.70 | 0.54 | 0.06 | 1.60 | 0.72 | 5.93 | 0.89 | - | - | - | - | - |
| 2005 | 6.90 | 4.84 | 0.37 | 3.18 | 0.82 | 0.56 | 0.05 | 1.95 | 0.68 | 8.90 | 1.04 | - | - | 0.00 | - | - |
| 2006 | 6.99 | 5.07 | 0.33 | 3.60 | 0.79 | 0.46 | 0.11 | 2.07 | 0.62 | 9.04 | 1.07 | - | - | 0.00 | - | - |
| 2007 | 6.89 | 5.06 | 0.34 | 3.18 | 0.79 | 0.57 | 0.07 | 2.22 | 0.55 | 8.63 | 1.03 | - | <0.005*1 | 0.00 | - | - |
| 2008 | 6.36 | 6.59 | 0.28 | 3.82 | 1.33 | 0.73 | <0.01*1 | 1.93 | 0.60 | 13.7 | 1.00 | - | 0.01 | <0.005*1 | - | - |
| 2009 | 7.13 | 4.70 | 0.33 | 3.47 | 0.49 | 0.41 | <0.01*1 | 1.66 | 0.58 | 5.41 | 0.76 | - | - | <0.005*1 | - | - |
| 2010 | 6.67 | 5.57 | 0.38 | 4.47 | 0.86 | 0.78 | 0.13 | 2.17 | 1.19 | 7.52 | 1.15 | - | 0.01 | <0.005*1 | - | - |
| 2011 | 6.28 | 5.33 | 0.33 | 3.73 | 0.76 | 0.79 | 0.06 | 1.57 | 0.68 | 5.80 | 0.87 | - | 0.01 | 0.00 | - | - |
| 2012 | 7.24 | 4.55 | 0.32 | - | - | - | - | - | - | - | - | - | 0.01 | 0.01 | - | - |
| 2013 | 6.84 | 4.32 | 0.29 | 2.81 | 0.46 | 0.37 | *1 | 1.46 | 1.01 | 6.13 | 0.83 | - | - | - | - | - |
| 2014 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2015 | 7.23 | 5.37 | 0.35 | 4.43 | 0.82 | 0.38 | - | - | - | - | - | - | - | - | - | - |
| 2016 | 6.59 | 4.39 | 0.28 | 3.42 | 0.34 | 0.35 | *1 | 1.45 | 0.57 | 6.55 | 0.82 | - | - | - | - | - |
| 2017 | 6.73 | 5.09 | 0.35 | 4.72 | 0.85 | 0.48 | 0.01 | 1.89 | 0.52 | 6.90 | 0.88 | - | - | - | - | - |

**Table 6.5(14) Annual mean values of each parameters from 2004 to 2016 at Pandin Lake (Philippines)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2004 | 8.08 | 18.2 | 1.81 | 0.33 | 0.08 | 3.16 | 0.02 | 8.91 | 5.81 | 12.1 | 6.91 | - | 0.01 | 0.07 | - | - |
| 2005 | 7.96 | 18.1 | 1.72 | 1.11 | 0.58 | 3.76 | 0.69 | 8.18 | 4.89 | 14.3 | 7.84 | - | 0.01 | 0.30 | - | - |
| 2006 | 7.72 | 17.3 | 1.76 | 0.43 | 0.19 | 2.40 | 0.22 | 8.08 | 5.08 | 15.1 | 7.30 | 2.2 | 0.00 | 0.01 | - | - |
| 2007 | 7.76 | 17.6 | 1.71 | 0.52 | 0.10 | 3.37 | 0.26 | 7.28 | 6.29 | 12.1 | 9.03 | - | 0.00 | 0.01 | - | - |
| 2008 | 7.48 | 18.0 | 1.63 | 0.76 | 5.23 | 3.70 | 0.02 | 7.33 | 4.92 | 12.6 | 7.97 | - | 0.01 | - | - | - |
| 2009 | 7.68 | 18.7 | 1.81 | 0.66 | 5.72 | 3.78 | 1.02 | 8.61 | 4.35 | 14.1 | 7.32 | 1.8 | 0.09 | - | - | - |
| 2010 | 8.25 | 18.4 | 1.84 | 0.34 | 3.36 | 3.28 | *1 | 8.79 | 5.59 | 13.1 | 8.49 | - | 0.06 | - | - | - |
| 2011 | 7.67 | 20.5 | 1.74 | 0.49 | 2.08 | 3.29 | 0.17 | 7.99 | 4.14 | 14.9 | 7.58 | - | 0.09 | - | - | - |
| 2012 | 7.95 | 17.6 | 1.68 | 1.53 | 0.48 | 3.45 | 0.06 | 8.19 | 4.43 | 14.1 | 7.59 | - | *1 | - | - | - |
| 2013 | 7.29 | 17.7 | 1.73 | 0.56 | 0.16 | 3.19 | 0.10 | 8.17 | 4.24 | 15.6 | 7.89 | - | 0.00 | *1 | - | - |
| 2014 | 7.64 | 20.5 | 2.15 | 0.22 | 0.14 | 2.54 | 0.04 | 7.00 | 3.70 | 19.1 | 9.09 | - | - | *1 | - | - |
| 2015 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2016 | 7.18 | 18.7 | 1.74 | 0.84 | 0.32 | 3.48 | 0.32 | 8.58 | 4.41 | 15.8 | 8.29 | - | 0.11 | *1 | - | - |

**Table 6.5(15) Annual mean values of each parameters from 2005 to 2016 at Ambulalakao Lake (Philippines)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2005 | 5.82 | 0.44 | 0.02 | 0.15 | 0.11 | 0.06 | - | 0.22 | 0.15 | 0.15 | 0.04 | - | - | 0.10 | - | - |
| 2007 | 5.49 | 0.53 | 0.03 | 0.46 | 0.12 | 0.25 | 0.02 | 0.37 | 0.13 | 0.40 | 0.10 | - | *1 | *1 | - | - |
| 2008 | 5.74 | 0.38 | 0.08 | 0.27 | 0.12 | 0.17 | 0.10 | 0.19 | 0.07 | 0.26 | 0.15 | - | 0.00 | - | - | - |
| 2009 | 5.72 | 30.3 | 0.28 | 23.1 | 14.8 | 9.27 | 0.13 | 6.54 | 0.33 | 32.6 | 2.84 | - | - | - | - | - |
| 2010 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2011 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2012 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2013 | 5.75 | 0.52 | 0.06 | *1 | *1 | 0.39 | *1 | 0.56 | 0.13 | 0.49 | 0.11 | - | - | - | - | - |
| 2014 | 5.69 | 0.52 | 0.02 | 0.11 | *1 | 0.20 | 0.21 | 0.46 | 0.35 | 0.59 | 0.12 | - | - | - | - | - |
| 2015 | 5.86 | 0.50 | 0.03 | 0.21 | 0.36 | 0.22 | 0.05 | 0.48 | 0.14 | 0.37 | 0.31 | - | - | - | - | - |
| 2016 | 5.81 | 0.51 | 0.03 | 0.11 | 0.02 | 0.18 | 0.00 | 0.46 | 0.12 | 0.26 | 0.10 | - | - | - | - | - |

- : Items were not analyzed.

*1: Less than determination/detection limit.

**Table 6.5(16) Annual mean values of each parameters from 2004 to 2017 at Pereemnaya River (Russia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2004 | 6.55 | 3.93 | 0.14 | 7.18 | 0.76 | 0.23 | 0.03 | 1.10 | 0.77 | 3.23 | 0.94 | 2.0 | 0.01 | 0.00 | - | - |
| 2005 | 6.80 | 4.03 | 0.14 | 7.84 | 0.66 | 0.20 | 0.03 | 0.96 | 0.71 | 3.29 | 1.04 | - | 0.00 | 0.01 | - | 0.82 |
| 2006 | 6.74 | 3.95 | 0.14 | 7.49 | 0.81 | 0.20 | 0.04 | 1.07 | 0.75 | 3.36 | 1.02 | - | 0.00 | 0.00 | 1.53 | 1.05 |
| 2007 | 6.59 | 4.21 | 0.13 | 8.98 | 0.91 | 0.18 | 0.11 | 1.06 | 0.76 | 3.92 | 0.85 | - | 0.00 | 0.00 | 1.57 | 1.03 |
| 2008 | 6.68 | 4.87 | 0.16 | 9.77 | 1.03 | 0.13 | 0.03 | 0.93 | 0.60 | 4.78 | 1.05 | - | 0.01 | 0.00 | 0.99 | 0.76 |
| 2009 | 6.66 | 4.87 | 0.13 | 11.7 | 0.85 | 0.14 | 0.02 | 1.00 | 0.60 | 4.94 | 0.97 | - | 0.00 | 0.00 | - | 0.60 |
| 2010 | 6.88 | 5.14 | 0.13 | 12.9 | 0.79 | 0.20 | 0.03 | 0.99 | 0.66 | 5.18 | 1.05 | - | 0.01 | 0.00 | - | 1.10 |
| 2011 | 6.85 | 4.79 | 0.14 | 11.4 | 0.67 | 0.16 | 0.02 | 1.02 | 0.68 | 4.97 | 0.83 | - | 0.00 | 0.00 | - | 0.88 |
| 2012 | 6.61 | 4.21 | 0.14 | 9.49 | 0.38 | 0.17 | 0.09 | 0.95 | 0.63 | 4.42 | 0.67 | - | 0.01 | 0.00 | - | 1.18 |
| 2013 | 6.76 | 4.61 | 0.13 | 11.1 | 0.57 | 0.13 | 0.02 | 1.00 | 0.65 | 4.92 | 0.82 | 1.9 | 0.01 | 0.00 | - | 0.97 |
| 2014 | 6.69 | 4.66 | 0.14 | 11.2 | 0.58 | 0.19 | 0.01 | 1.30 | 0.78 | 4.87 | 0.78 | 1.9 | 0.01 | 0.00 | - | 1.23 |
| 2015 | 6.63 | 4.29 | 0.12 | 10.5 | 0.48 | 0.20 | 0.01 | 1.01 | 0.66 | 4.57 | 0.76 | 1.9 | 0.01 | 0.00 | - | 0.84 |
| 2016 | 6.78 | 4.53 | 0.14 | 11.1 | 0.70 | 0.14 | 0.01 | 1.06 | 0.66 | 4.90 | 0.85 | 1.9 | 0.00 | 0.00 | - | 0.90 |
| 2017 | 6.76 | 4.64 | 0.13 | 11.9 | 0.87 | 0.09 | 0.01 | 1.03 | 0.66 | 4.89 | 0.97 | - | 0.00 | 0.00 | - | 0.79 |

**Table 6.5(17) Annual mean values of each parameters from 2005 to 2017 at Komarovka River (Russia)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2005 | 7.24 | 8.75 | 0.50 | 11.18 | 0.33 | 3.09 | 0.15 | 3.34 | 0.60 | 9.07 | 2.25 | - | *1 | *1 | - | - |
| 2006 | 7.08 | 8.37 | 0.43 | 9.02 | 0.26 | 3.12 | 0.08 | 3.10 | 0.57 | 8.51 | 2.27 | - | 0.01 | 0.00 | - | - |
| 2007 | 7.15 | 8.68 | 0.39 | 10.51 | 0.26 | 4.03 | 0.09 | 3.39 | 0.65 | 8.04 | 2.34 | - | 0.01 | 0.03 | - | 4.33 |
| 2008 | 7.22 | 8.68 | 0.39 | 12.08 | 0.52 | 3.06 | 0.09 | 3.80 | 0.62 | 8.14 | 2.08 | - | 0.03 | 0.05 | - | 3.63 |
| 2009 | 7.02 | 8.64 | 0.35 | 12.59 | 1.11 | 3.69 | 0.22 | 3.57 | 0.60 | 8.21 | 2.07 | - | 0.04 | 0.07 | - | 4.42 |
| 2010 | 6.99 | 8.32 | 0.44 | 8.62 | 0.99 | 3.33 | 0.19 | 3.21 | 0.46 | 8.29 | 2.12 | - | 0.01 | 0.04 | - | 4.00 |
| 2011 | 7.09 | 8.86 | 0.40 | 12.67 | 1.63 | 3.11 | 0.27 | 3.88 | 0.74 | 8.58 | 2.22 | - | 0.01 | 0.02 | - | 4.44 |
| 2012 | 6.99 | 8.54 | 0.38 | 9.61 | 1.33 | 3.88 | 0.45 | 3.53 | 0.79 | 7.88 | 2.37 | - | 0.02 | 0.04 | - | 5.10 |
| 2013 | 6.84 | 8.45 | 0.37 | 11.87 | 1.27 | 3.61 | 0.16 | 3.44 | 0.64 | 7.71 | 2.66 | - | 0.01 | 0.03 | - | 4.14 |
| 2014 | 6.91 | 8.45 | 0.37 | 11.76 | 2.81 | 3.16 | 0.14 | 3.52 | 0.72 | 8.29 | 2.27 | - | 0.01 | 0.03 | - | 4.57 |
| 2015 | 6.98 | 8.75 | 0.40 | 13.46 | 1.27 | 3.06 | 0.12 | 3.45 | 0.58 | 8.73 | 2.20 | - | 0.01 | 0.03 | - | 4.36 |
| 2016 | 6.71 | 9.09 | 0.38 | 14.25 | 3.68 | 3.57 | 0.24 | 3.82 | 0.75 | 8.85 | 2.02 | - | 0.01 | 0.02 | - | 5.56 |
| 2017 | 6.93 | 8.93 | 0.42 | 11.48 | 3.97 | 4.36 | 0.19 | 4.39 | 0.87 | 10.00 | 1.91 | - | 0.01 | 0.02 | - | 3.32 |

**Table 6.5(18) Annual mean values of each parameters from 2002 to 2017 at Vachiralongkorn Dam (Ban Pong Chang) (Thailand)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2002 | 7.52 | 12.1 | 0.63 | 1.15 | 0.04 | 0.89 | *1 | 1.14 | 1.01 | 13.3 | 2.98 | 5.3 | 0.02 | *1 | - | 4.00 |
| 2003 | 7.45 | 10.8 | 0.63 | 1.29 | 0.01 | 0.84 | *1 | 1.14 | 0.97 | 16.2 | 3.52 | 5.0 | *1 | *1 | - | 5.75 |
| 2004 | 7.77 | 11.5 | 1.05 | 1.27 | 0.20 | 0.98 | 0.05 | 1.18 | 0.97 | 15.7 | 3.26 | 5.6 | 0.02 | 0.010 | - | 7.50 |
| 2005 | 7.33 | 11.2 | 1.28 | 1.47 | 0.11 | 1.05 | 0.01 | 1.26 | 1.02 | 15.8 | 3.12 | 3.6 | 0.01 | 0.010 | - | <4.0*1 |
| 2006 | 7.21 | 10.4 | 1.13 | 1.31 | 0.20 | 0.85 | 0.06 | 1.14 | 1.03 | 16.2 | 3.17 | 4.6 | <0.01*1 | <0.01*1 | | 10.0 |
| 2007 | 7.80 | 10.4 | 1.09 | 1.17 | 0.20 | 0.75 | 0.01 | 1.21 | 0.96 | 16.5 | 3.26 | 5.1 | 0.01 | 0.010 | - | 5.15 |
| 2008 | 7.71 | 10.6 | 1.18 | 1.11 | 0.05 | 0.75 | <0.01*1 | 1.16 | 0.97 | 16.3 | 3.23 | 4.4 | <0.01*1 | 0.010 | - | 6.75 |
| 2009 | 7.79 | 10.8 | 1.11 | 1.33 | 0.06 | 0.74 | - | 1.16 | 0.95 | 16.1 | 3.39 | 4.4 | 0.01 | <0.01*1 | - | - |
| 2010 | 7.70 | 11.8 | 1.18 | 1.55 | 0.06 | 0.83 | 0.01 | 1.24 | 1.01 | 16.6 | 3.62 | 3.6 | 0.01 | 0.010 | - | 4.70 |
| 2011 | 7.38 | 12.8 | 1.18 | 1.43 | 0.07 | 0.82 | 0.01 | 1.22 | 1.04 | 17.9 | 3.70 | 3.0 | 0.01 | <0.01*1 | - | 5.73 |
| 2012 | 7.32 | 11.8 | 1.15 | 1.22 | 0.19 | 0.94 | 0.03 | 1.21 | 1.12 | 16.8 | 3.53 | 3.2 | 0.01 | - | - | 8.45 |
| 2013 | 7.67 | 13.5 | 1.19 | 1.10 | 0.10 | 0.87 | 0.01 | 1.21 | 1.02 | 17.0 | 3.81 | 2.8 | 0.01 | - | - | - |
| 2014 | 7.55 | 5.6 | 1.14 | 1.64 | 0.09 | 0.88 | 0.04 | 1.20 | 0.95 | 16.7 | 3.29 | 3.8 | 0.01 | - | - | - |
| 2015 | 7.50 | 5.3 | 1.07 | 1.44 | 0.11 | 0.93 | 0.04 | 1.18 | 0.86 | 15.8 | 3.10 | 3.0 | 0.01 | - | - | - |
| 2016 | 7.06 | 12.2 | 1.12 | 1.28 | 0.10 | 1.06 | 0.01 | 1.47 | 0.96 | 17.2 | 3.61 | 2.7 | 0.02 | - | - | 40.0 |
| 2017 | 7.07 | 11.9 | 1.19 | 1.57 | 0.09 | 1.15 | 0.01 | 1.44 | 1.06 | 17.9 | 3.45 | 2.9 | 0.02 | - | - | - |

- : Items were not analyzed.

*1: Less than determination/detection limit.

**Table 6.5(19) Annual mean values of each parameters from 2002 to 2017 at Vachiralongkorn Dam (Ban Pang Pueng) (Thailand)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2002 | 7.31 | 12.0 | 0.63 | 1.24 | 0.06 | 0.90 | *1 | 1.19 | 0.99 | 13.3 | 2.90 | 5.5 | 0.03 | *1 | - | 3.00 |
| 2003 | 7.87 | 10.5 | 0.59 | 1.41 | 0.01 | 0.84 | *1 | 1.17 | 0.98 | 16.2 | 2.94 | 5.8 | *1 | *1 | - | 7.33 |
| 2004 | 7.24 | 11.1 | 1.01 | 1.54 | 0.20 | 0.95 | 0.05 | 1.21 | 1.03 | 16.0 | 2.83 | 8.1 | 0.02 | 0.01 | - | 5.00 |
| 2005 | 6.98 | 11.2 | 1.02 | 1.29 | 0.11 | 1.15 | 0.03 | 1.52 | 1.02 | 16.2 | 2.98 | 4.4 | 0.14 | 0.01 | - | *1 |
| 2006 | 7.12 | 10.0 | 1.05 | 1.44 | 0.20 | 0.83 | 0.03 | 1.14 | 1.04 | 16.2 | 2.64 | 5.0 | <0.01*1 | <0.01*1 | | 11.0 |
| 2007 | 7.84 | 10.2 | 1.05 | 1.25 | 0.20 | 0.70 | 0.01 | 1.13 | 0.98 | 16.8 | 2.98 | 5.3 | 0.01 | 0.01 | - | 4.00 |
| 2008 | 7.78 | 9.88 | 1.10 | 1.49 | <0.06*1 | 0.75 | <0.01*1 | 1.17 | 1.00 | 15.7 | 2.49 | 4.4 | <0.01*1 | 0.01 | - | 4.70 |
| 2009 | 7.93 | 10.3 | 1.07 | 1.42 | 0.06 | 0.73 | - | 1.14 | 2.04 | 15.9 | 2.79 | 4.6 | 0.01 | <0.01*1 | - | - |
| 2010 | 7.79 | 11.2 | 1.11 | 1.61 | 0.06 | 0.76 | 0.01 | 1.16 | 0.99 | 16.4 | 2.86 | 4.1 | 0.01 | 0.01 | - | 7.05 |
| 2011 | 7.41 | 11.8 | 1.10 | 1.51 | 0.07 | 0.79 | 0.02 | 1.18 | 0.98 | 16.9 | 2.92 | 3.5 | 0.01 | <0.01*1 | - | 8.40 |
| 2012 | 7.30 | 9.41 | 1.05 | 1.85 | 0.08 | 0.86 | 0.03 | 1.17 | 1.08 | 16.3 | 2.80 | 3.8 | 0.01 | - | - | 6.90 |
| 2013 | 7.90 | 11.1 | 1.09 | 1.26 | 0.10 | 0.83 | 0.01 | 1.14 | 1.01 | 16.8 | 2.88 | 4.0 | 0.01 | - | - | - |
| 2014 | 7.75 | 5.5 | 1.09 | 1.46 | 0.07 | 0.89 | 0.03 | 1.22 | 0.96 | 16.5 | 2.70 | 4.0 | 0.01 | - | - | - |
| 2015 | 7.87 | 6.9 | 1.08 | 1.41 | 0.10 | 1.01 | 0.01 | 1.40 | 0.87 | 16.3 | 2.72 | 3.4 | 0.01 | - | - | - |
| 2016 | 7.28 | 11.8 | 1.12 | 1.55 | 0.11 | 1.09 | 0.01 | 1.51 | 0.92 | 17.8 | 3.15 | 2.9 | 0.02 | - | - | 40.0 |
| 2017 | 7.17 | 11.8 | 1.20 | 1.61 | 0.10 | 0.98 | 0.02 | 1.37 | 1.04 | 18.7 | 2.98 | 3.6 | 0.02 | - | - | - |

**Table 6.5(20) Annual mean values of each parameters from 2001 to 2017 at Hoa Binh Reservoir (Vietnam)**

| | Mandatory Parameters : 4 times/year | | | | | | | | | | Mandatory Parameters : Once/year | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH | EC | Alkalinity | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | $Mg^{2+}$ | Transparency | $PO_4^{3-}$ | $NO_2^-$ | DOC | COD |
| | | mS/m | meq/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | m | mg/L | mg/L | mg/L | mg/L |
| 2001 | 7.59 | 17.4 | 1.58 | 5.44 | 0.59 | 1.16 | 0.15 | 1.97 | 1.22 | 21.8 | 6.12 | - | - | - | - | - |
| 2002 | 7.88 | 17.1 | 1.61 | 3.90 | 0.46 | 1.35 | 0.21 | 1.70 | 1.16 | 22.5 | 5.49 | - | - | - | - | - |
| 2003 | 7.29 | 18.4 | 1.60 | 6.13 | 0.63 | 1.33 | 0.08 | 2.14 | 1.36 | 24.5 | 4.78 | - | - | - | - | - |
| 2004 | 6.55 | 19.3 | 1.68 | 4.51 | 1.16 | 1.38 | 0.17 | 2.45 | 1.11 | 27.2 | 4.11 | - | - | - | - | - |
| 2005 | 7.58 | 19.0 | 1.61 | 5.62 | 1.04 | 1.62 | 0.16 | 4.40 | 1.31 | 23.1 | 4.77 | - | - | - | - | - |
| 2006 | 7.22 | 19.1 | 1.61 | 7.71 | 0.87 | 1.41 | 0.12 | 3.62 | 1.46 | 25.2 | 4.87 | 0.7 | 0.01 | 0.01 | - | 2.20 |
| 2007 | 7.62 | 19.1 | 1.61 | 8.14 | 1.44 | 1.54 | 0.11 | 3.53 | 1.48 | 24.9 | 4.64 | 0.9 | 0.02 | 0.02 | - | 1.92 |
| 2008 | 7.73 | 18.3 | 1.53 | 7.36 | 1.04 | 1.65 | 0.04 | 2.33 | 0.91 | 22.9 | 5.01 | 1.5 | 0.02 | 0.03 | - | 2.23 |
| 2009 | 7.98 | 16.7 | 1.39 | 6.55 | 0.67 | 2.05 | 0.02 | 3.10 | 0.84 | 20.8 | 4.49 | 1.1 | 0.02 | 0.01 | - | 1.43 |
| 2010 | 7.80 | 17.7 | 1.42 | 7.26 | 1.66 | 2.07 | 0.11 | 4.20 | 1.56 | 23.3 | 2.94 | 1.0 | 0.01 | 0.01 | - | 0.93 |
| 2011 | 7.43 | 18.5 | 1.54 | 7.36 | 1.59 | 2.26 | 0.07 | 3.51 | 1.26 | 23.2 | 4.55 | 1.1 | 0.01 | 0.01 | - | 3.38 |
| 2012 | 7.10 | 17.7 | 1.52 | 4.67 | 1.52 | 2.13 | 0.12 | 3.59 | 1.39 | 23.1 | 4.25 | 1.0 | 0.01 | 0.02 | - | 4.33 |
| 2013 | 7.54 | 17.2 | 1.44 | 6.92 | 1.04 | 2.41 | 0.14 | 4.96 | 1.58 | 20.0 | 5.31 | 1.1 | 0.01 | 0.01 | - | 3.65 |
| 2014 | 7.65 | 17.2 | 1.50 | 5.13 | 0.80 | 1.64 | 0.02 | 3.05 | 1.31 | 22.3 | 4.50 | 1.1 | 0.02 | 0.01 | - | 3.50 |
| 2015 | 7.60 | 17.9 | 1.43 | 7.01 | 1.47 | 0.95 | 0.02 | 2.93 | 1.06 | 24.4 | 3.65 | 1.2 | 0.04 | 0.01 | - | 3.45 |
| 2016 | 7.39 | 18.8 | 1.55 | 6.70 | 1.61 | 1.24 | 0.00 | 3.01 | 1.24 | 21.8 | 6.28 | 1.2 | 0.04 | 0.06 | - | 3.95 |
| 2017 | 7.29 | 15.9 | 1.33 | 5.09 | 1.43 | 1.04 | 0.01 | 2.15 | 1.09 | 20.5 | 4.21 | 1.0 | 0.04 | 0.01 | - | 4.15 |

- : Items were not analyzed.

*1: Less than determination/detection limit.

# CHAPTER 7

## Catchment-scale Monitoring

# 7. Catchment-scale Monitoring

## 7.1 Method

*The Guideline for Catchment-scale Monitoring in East Asia (2010)* recommended to measure input from atmosphere (total deposition), output from the catchment (discharge from the stream), and some biogeochemical processes in selected small forest catchments to discuss relationship between seasonal or annual changes in stream water chemistry and those in atmospheric deposition. Material/elemental input-output budget in the catchment can be calculated based on the atmospheric deposition chemistry, stream water chemistry, and water balance. Based on the catchment-scale dataset, the simulation model on biogeochemical cycles is expected to be developed.

### 7.1.1 Field Operation

Recommended methods and proposed frequency of major monitoring items in the field are summarized in Table 7.1. The existing EANET technical documents can be referred in the field operation for the items. Moreover, the existing EAENET data on wet and dry deposition collected at the nearest the monitoring sites can be used to calculate total deposition. Similarly, the existing EANET data on soil and vegetation can be referred as the relevant information on biogeochemical processes.

**Table 7.1 Methods and frequency of major monitoring items**

| Items | | Recommended methods | Proposed frequency |
|---|---|---|---|
| Input (total deposition) | Precipitation amount | Rain gauge | Continuously or daily |
| | Wet deposition[*1] | Wet-only sampling | Daily or weekly |
| | | Bulk sampling (when electricity is not available) | Weekly or biweekly |
| | Dry deposition[*1] | Inferential method: based on Filter pack data and Meteorological data | Weekly (for filter pack method) |
| | | Automatic monitors (alternative for air concentration) | Continuously |
| | Total deposition | Wet + Dry | Biweekly or monthly |
| | | Throughfall–Stemflow method (when electricity is not available) | Biweekly |

| | | | |
|---|---|---|---|
| Output (discharge from the stream) | Water discharge | Weir | Continuously or biweekly |
| | | H-Q curve method (when a weir is not available) | |
| | Stream water chemistry | Periodical collection of stream water | Weekly or biweekly |
| | | Intensive sampling | During heavy-rain or snow-melting events |
| | Chemical discharge | Calculation based on the water flux and the chemical concentration | Biweekly, monthly or annual |
| Soil | Soil chemistry[*1] | Collection from the permanent plots | Once for several years |
| Vegetation | Plant growth[*1] | Measurement of tree size (diameter at breast height, height of tree and name of species) | Once for several years |

Note. *1, The relevant EANET data can be referred.

### 7.1.2 Laboratory Operation

**Table 7.2 Chemical parameters for the respective items**

| Items | Parameters |
|---|---|
| Rainwater samples | Mandatory: $SO_4^{2-}$, $NO_3^-$, $Cl^-$, $NH_4^+$, $Ca^{2+}$, $Mg^{2+}$, $Na^+$, $K^+$, Electric conductivity (EC), and pH<br>Optional: Total organic nitrogen (TON), Total organic carbon (TOC) |
| Stream water samples | Mandatory: $SO_4^{2-}$, $NO_3^-$, $Cl^-$, $NH_4^+$, $Ca^{2+}$, $Mg^{2+}$, $Na^+$, $K^+$, Electric conductivity (EC), pH, and Alkalinity (Gran's ANC and/or pH 4.8 endpoint)<br>Optional: $SiO_2$, TON, TOC, Total dissolved Al |
| Air concentrations (by filter pack method) | Cations: $NH_4^+$, $Ca^{2+}$, $Mg^{2+}$, $Na^+$, and $K^+$, Anions: $SO_4^{2-}$, $NO_3^-$, and $Cl^-$, Gasses: $SO_2$, $HNO_3$, HCl, and $NH_3$ |
| Soil chemistry | pH($H_2O$), pH(KCl), Exchangeable Base Cations (Ca, Mg, K and Na), Exchangeable Acidity, Al and H, Effective Cation Exchangeable Capacity |

Chemical parameters for the respective monitoring items are shown in Table 7.2. Basically, the parameters are same as those for other EANET monitoring items. The existing EANET technical documents can also be referred in the laboratory operation.

### 7.1.3 Data Management

Data quality was controlled and assured according to the EANET QA/QC program. In particular, for rainwater and stream water samples, ion balance ($R_1$) and conductivity check ($R_2$) can be applied to check the analytical results as same as monitoring on wet deposition and inland aquatic environment.

The data should be evaluated on a catchment scale. The input- output budget should be calculated based on the atmospheric deposition chemistry, stream water chemistry, and water balance to outline the material/elemental cycles in the catchment. The standard units should be used for the input and output. Recommended basic units for evaluation is as follows:

- Water flux (precipitation amount and stream water discharge): mm
- Chemical concentration: $mol_c\ L^{-1}$ (ex. $\mu mol_c\ L^{-1}$ or $mmol_c\ L^{-1}$)
- Ion flux (deposition, discharge or soil/vegetation flux): $mol_c\ ha^{-1}$ or $mol_c\ m^{-2}$
- Elemental flux for N and S: $kg\ ha^{-1}\ y^{-1}$ or $g\ m^{-2}\ y^{-1}$

Based on the compiled data with the standard units on a water-year basis, initial evaluations should be done for the following items:

- Water balance on a catchment-scale: input, output and possible evapotranspiration
- Material/elemental balance on a catchment-scale: input-output budget

Dataset should be submitted to the Network Center after an initial evaluation is done by the national center. Since the catchment-scale data should be evaluated based on the water year, the dataset should be compiled on a water-year basis of the respective catchment sites.

### 7.1.4 Monitoring sites

Several EANET countries have the experience on catchment-scale analysis as research activities and/or national monitoring activities. Many research projects were conducted by universities and institutes in China and Japan. The case studies have been conducted in Japan, Malaysia and Thailand as the EANET joint research projects. Moreover, the new site in the Philippines is under preparation. Some countries may have an intention to start the regular catchment-scale monitoring as a part of the EANET activities.

Japan submitted the data of the water year 2016-2017, based on the regular catchment-scale monitoring in the Lake Ijira Catchment, which was started in 2007. Site characteristics and the survey outline are shown in Table 7.3 and 7.4, respectively. The map of the Lake Ijira catchment site is shown in Figure 7.1.

**Table 7.3 Site for the catchment-scale monitoring**

| Country | Site name (and name of river/stream) | Catchment area ($km^2$) | Geology and soil type | Coverage of forest (%) and major species | Start year |
|---|---|---|---|---|---|
| Japan | Lake Ijira Catchment (Kamagatani River) | 2.98 | Chert Cambisols (brown forest soils) | 99.6%, Japanese cedar (*Cryptomeria japonica)*, Japanese cypress (*Chamaecyparis obtusa)*, and Japanese red pine (*Pinus densiflora)* | November 2007 (the water year here: from November to the next October) |

**Table 7.4 Survey outline for the catchment-scale monitoring**

| Site | Items | Detailed items |
|---|---|---|
| Lake Ijira Catchment | Input (total deposition) | 1. Precipitation amount (at 3 points)[*1]<br>2. Wet deposition[*1]<br>3. Dry deposition (Air concentration measurement for Inferential method)[*1]<br>4. Total deposition (calculated as wet+dry) |
| | Output (chemical discharge from the stream) | 1. Water discharge (by H-Q curve method)<br>2. Stream water chemistry: biweekly<br>3. Chemical discharge |
| | Soil[*2] | Soil chemical properties |
| | Vegetation[*2] | 1. Plant growth (field measurement)<br>2. Species composition (field measurement) |

Note: [*1], The EANET data collected at the Ijira deposition monitoring site will be used; [*2], The EANET data collected in the Lake Ijira soil and vegetation monitoring plots will be referred.

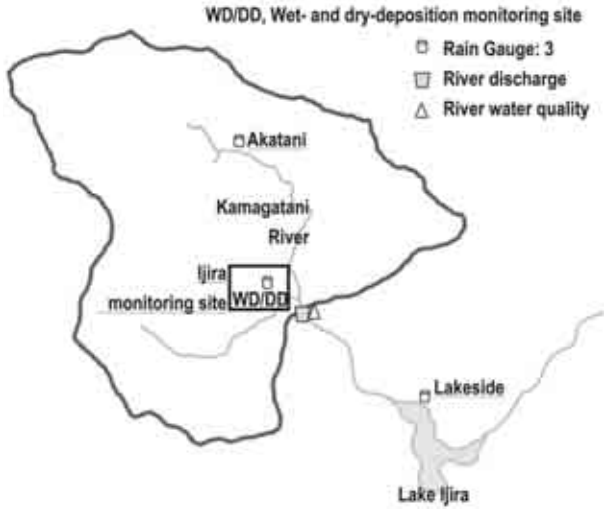



**Figure 7.1 Sampling design at the Lake Ijira catchment site**

The area surrounded by a bold line indicates the catchment area for calculation of the material budget.

## 7.2 Results of Monitoring

The list of the dataset submitted to the NC is shown in Table 7.5.

**Table 7.5 List of the dataset submitted for Data Report 2017**

| Site | Items | Detailed items | Water year |
|---|---|---|---|
| Lake Ijira Catchment | Input (total deposition) [*1] | 1. Precipitation amount (at 3 points) [*2]<br>Calculation of total deposition is still under discussion for precise estimation. | 2016-2017 [*3] |
| | Output (chemical discharge from the stream) | 1. Water discharge<br>2. Stream water chemistry: biweekly<br>3. Chemical discharge | 2016-2017 [*3] |

Note. [*1], The data of wet deposition and dry deposition (air concentration) in the Ijira deposition monitoring site for the same period can be found in Data Reports 2016 and 2017; [*2], Precipitation data at 3 points (approx. 260, 140 and 110 m above sea level) including the Ijira deposition monitoring site were submitted; [*3], The water year was defined as the period from November to October in the following year. Soil chemical properties, plant growth and understory-species composition are surveyed in 2016 as a part of soil and vegetation monitoring.

The submitted data above are summarized in the following tables.

Table 7.6: Water balance in the catchment

Table 7.7: Stream water chemistry

Table 7.8: Periodic chemical discharges from the stream

Table 7.9: Annual chemical discharges from the stream

**Table 7.6 Water balance in the catchment: Lake Ijira Catchment**

| Fluxes[*1] | Points | Water year[*2] |
|---|---|---|
| | | 2016-2017 |
| Input by precipitation, mm $y^{-1}$ | Akatani (260 m) | 3254 |
| | Ijira monitoring site (140 m) | 3022 |
| | Lakeside (110 m) | 2934 |
| | Mean | 3070 |
| Output by the stream, mm $y^{-1}$ | Outlet of Kamagatani River | 1896 |
| Runoff rate, % | | 62 |

Note. [*1], Fluxes were calculated based on the catchment area, 2.98 $km^{-2}$, at the outlet of Kamagatani River; [*2], The water year: from November to the next October.

## Table 7.7 Stream water chemistry: Lake Ijira Catchment (Water year 2016-2017)

| Collection date | pH | EC | alkalinity pH4.8 | Gran's ANC | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $Na^+$ | $Ca^{2+}$ | $Mg^{2+}$ | $K^+$ | $NH_4^{+*1}$ | $H^+$ | Al | TOC | $SiO_2$ | Water level, m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $mS\ m^{-1}$ | | | $\mu mol_c\ L^{-1}$ | | | | | | | | | $mg\ L^{-1}$ | $mg\text{-}C\ L^{-1}$ | $mg\text{-}SiO_2\ L^{-1}$ | |
| 2016/11/15 | 7.04 | 4.12 | 152 | 135 | 138 | 25.1 | 55.6 | 89.7 | 144 | 123 | 6.6 | < 3.0 | 0.09 | <0.02 | 0.4 | 8.5 | 0.20 |
| 2016/11/30 | 7.01 | 4.20 | 144 | 129 | 149 | 24.8 | 55.3 | 81.1 | 131 | 112 | 5.3 | < 3.0 | 0.10 | <0.02 | 0.2 | 8.4 | 0.19 |
| 2016/12/15 | 6.99 | 4.24 | 138 | 120 | 155 | 32.8 | 55.8 | 93.2 | 154 | 132 | 6.0 | < 3.0 | 0.10 | <0.02 | 0.3 | 8.0 | 0.18 |
| 2016/12/26 | 6.99 | 4.30 | 142 | 131 | 164 | 26.8 | 56.4 | 95.4 | 156 | 134 | 5.9 | < 3.0 | 0.10 | <0.02 | 0.2 | 8.0 | 0.20 |
| 2017/1/16 | 6.94 | 4.26 | 136 | 115 | 161 | 25.1 | 61.1 | 94.1 | 154 | 132 | 5.3 | < 3.0 | 0.11 | <0.02 | 0.4 | 7.6 | 0.23 |
| 2017/1/31 | 6.95 | 4.26 | 130 | 112 | 154 | 30.6 | 58.1 | 86.8 | 150 | 129 | 5.3 | < 3.0 | 0.11 | <0.02 | 0.3 | 7.6 | 0.22 |
| 2017/2/15 | 7.00 | 4.25 | 134 | 112 | 156 | 22.8 | 55.1 | 88.4 | 148 | 127 | 5.2 | < 3.0 | 0.10 | <0.02 | 0.3 | 7.7 | 0.20 |
| 2017/2/28 | 6.98 | 4.03 | 134 | 117 | 141 | 25.0 | 54.8 | 84.8 | 141 | 120 | 5.3 | < 3.0 | 0.10 | <0.02 | 0.3 | 7.8 | 0.22 |
| 2017/3/15 | 7.01 | 4.24 | 138 | 95 | 152 | 17.9 | 57.5 | 89.1 | 149 | 126 | 5.5 | < 3.0 | 0.10 | <0.02 | 0.7 | 7.7 | 0.21 |
| 2017/3/29 | 7.04 | 4.29 | 140 | 103 | 157 | 17.9 | 55.9 | 91.3 | 151 | 129 | 5.6 | < 3.0 | 0.09 | <0.02 | 0.4 | 8.1 | 0.20 |
| 2017/4/14 | 7.08 | 3.99 | 132 | 106 | 133 | 21.7 | 55.1 | 84.9 | 139 | 118 | 6.0 | < 3.0 | 0.08 | <0.02 | 0.3 | 8.2 | 0.25 |
| 2017/4/28 | 7.09 | 3.83 | 122 | 95 | 126 | 19.4 | 56.4 | 84.6 | 131 | 111 | 6.3 | < 3.0 | 0.08 | <0.02 | 0.6 | 8.4 | 0.25 |
| 2017/5/15 | 7.05 | 4.25 | 144 | 133 | 143 | 25.3 | 52.1 | 89.5 | 152 | 127 | 7.3 | < 3.0 | 0.09 | <0.02 | 0.7 | 8.3 | 0.24 |
| 2017/5/31 | 7.01 | 4.57 | 160 | 143 | 159 | 16.7 | 53.8 | 98.9 | 161 | 138 | 7.5 | < 3.0 | 0.10 | <0.02 | 0.5 | 8.8 | 0.21 |
| 2017/6/15 | 6.94 | 4.66 | 162 | 143 | 164 | 18.0 | 54.3 | 98.8 | 166 | 139 | 7.4 | < 3.0 | 0.11 | <0.02 | 0.5 | 8.7 | 0.21 |
| 2017/6/30 | 6.93 | 4.35 | 146 | 122 | 140 | 35.8 | 46.1 | 87.6 | 160 | 132 | 8.0 | < 3.0 | 0.12 | <0.02 | 0.8 | 8.2 | 0.28 |
| 2017/7/14 | 6.82 | 3.94 | 140 | 131 | 127 | 22.9 | 47.5 | 83.0 | 144 | 119 | 7.4 | < 3.0 | 0.15 | <0.02 | 0.8 | 8.5 | 0.29 |
| 2017/7/31 | 7.00 | 4.10 | 148 | 136 | 130 | 20.8 | 52.0 | 88.3 | 148 | 122 | 7.3 | < 3.0 | 0.10 | <0.02 | 0.5 | 9.0 | 0.25 |
| 2017/8/14 | 7.03 | 3.74 | 136 | 119 | 114 | 20.3 | 54.2 | 83.6 | 131 | 109 | 7.2 | < 3.0 | 0.09 | <0.02 | 0.4 | 8.9 | 0.21 |
| 2017/8/31 | 6.87 | 3.96 | 146 | 137 | 123 | 19.1 | 54.5 | 87.9 | 139 | 116 | 7.3 | < 3.0 | 0.13 | <0.02 | 0.3 | 9.1 | 0.18 |
| 2017/9/15 | 7.05 | 4.00 | 144 | 129 | 93 | 20.8 | 53.5 | 95.9 | 99 | 108 | 6.8 | < 3.0 | 0.09 | <0.02 | 0.4 | 8.8 | 0.20 |
| 2017/9/29 | 6.92 | 4.16 | 142 | 108 | 131 | 28.2 | 52.7 | 88.2 | 148 | 125 | 7.2 | < 3.0 | 0.12 | <0.02 | 0.4 | 8.8 | 0.19 |
| 2017/10/16 | 7.01 | 3.90 | 148 | 129 | 120 | 21.5 | 53.0 | 87.9 | 137 | 120 | 7.5 | < 3.0 | 0.10 | <0.02 | 0.5 | 8.6 | 0.21 |
| 2017/10/31 | 6.97 | 3.51 | 118 | 97 | 80 | 16.6 | 38.8 | 66.2 | 99 | 86 | 5.3 | < 3.0 | 0.11 | <0.02 | 0.3 | 8.6 | 0.28 |

Note. The water year was difined as the period from November to October in the following year. *1, The data was processed according to the determination limit decided by the data quality objectives (DQO) of EANET.

## Table 7.8 Periodic chemical discharges from the stream: Lake Ijira Catchment (Water year 2016-2017)

| Start date | End date | pH4.8 | Gran's ANC | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $Na^+$ | $Ca^{2+}$ | $Mg^{2+}$ | $K^+$ | $NH_4^+$ | $H^+$ | Al | TOC | $SiO_2$ | Periodic discharge, |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | $kmol_c\ ha^{-1}$ | | | | | | $mg\ L^{-1}$ | $kg\text{-}C\ ha^{-1}$ | $kg\text{-}SiO_2\ ha^{-1}$ | mm |
| 2016/10/31 | 2016/11/15 | 0.07 | 0.06 | 0.06 | 0.01 | 0.03 | 0.04 | 0.07 | 0.06 | 0.003 | ND | 4.30E-05 | ND | 0.19 | 4.1 | 48 |
| 2016/11/15 | 2016/11/30 | 0.07 | 0.06 | 0.07 | 0.01 | 0.03 | 0.04 | 0.07 | 0.06 | 0.003 | ND | 4.50E-05 | ND | 0.15 | 4.0 | 47 |
| 2016/11/30 | 2016/12/15 | 0.05 | 0.05 | 0.06 | 0.01 | 0.02 | 0.03 | 0.05 | 0.05 | 0.002 | ND | 3.72E-05 | ND | 0.09 | 3.0 | 37 |
| 2016/12/15 | 2016/12/26 | 0.04 | 0.03 | 0.04 | 0.01 | 0.01 | 0.03 | 0.04 | 0.04 | 0.002 | ND | 2.67E-05 | ND | 0.07 | 2.1 | 27 |
| 2016/12/26 | 2017/1/16 | 0.08 | 0.07 | 0.09 | 0.02 | 0.03 | 0.06 | 0.09 | 0.08 | 0.003 | ND | 6.11E-05 | ND | 0.19 | 4.5 | 58 |
| 2017/1/16 | 2017/1/31 | 0.07 | 0.06 | 0.08 | 0.01 | 0.03 | 0.05 | 0.08 | 0.07 | 0.003 | ND | 5.61E-05 | ND | 0.19 | 3.9 | 51 |
| 2017/1/31 | 2017/2/15 | 0.07 | 0.06 | 0.08 | 0.01 | 0.03 | 0.05 | 0.08 | 0.07 | 0.003 | ND | 5.58E-05 | ND | 0.15 | 4.1 | 53 |
| 2017/2/15 | 2017/2/28 | 0.08 | 0.07 | 0.09 | 0.01 | 0.03 | 0.05 | 0.09 | 0.08 | 0.003 | ND | 6.24E-05 | ND | 0.16 | 4.9 | 62 |
| 2017/2/28 | 2017/3/15 | 0.07 | 0.05 | 0.07 | 0.01 | 0.03 | 0.04 | 0.07 | 0.06 | 0.003 | ND | 4.82E-05 | ND | 0.23 | 3.7 | 48 |
| 2017/3/15 | 2017/3/29 | 0.06 | 0.05 | 0.07 | 0.01 | 0.03 | 0.04 | 0.07 | 0.06 | 0.003 | ND | 4.39E-05 | ND | 0.25 | 3.7 | 46 |
| 2017/3/29 | 2017/4/14 | 0.12 | 0.09 | 0.13 | 0.02 | 0.05 | 0.08 | 0.13 | 0.11 | 0.005 | ND | 7.44E-05 | ND | 0.31 | 7.2 | 88 |
| 2017/4/14 | 2017/4/28 | 0.25 | 0.20 | 0.26 | 0.04 | 0.11 | 0.17 | 0.27 | 0.23 | 0.012 | ND | 1.60E-04 | ND | 0.93 | 16.7 | 200 |
| 2017/4/28 | 2017/5/15 | 0.11 | 0.10 | 0.11 | 0.02 | 0.05 | 0.07 | 0.12 | 0.10 | 0.006 | ND | 7.20E-05 | ND | 0.53 | 7.1 | 85 |
| 2017/5/15 | 2017/5/31 | 0.10 | 0.09 | 0.10 | 0.01 | 0.03 | 0.06 | 0.10 | 0.09 | 0.005 | ND | 6.23E-05 | ND | 0.38 | 5.6 | 66 |
| 2017/5/31 | 2017/6/15 | 0.10 | 0.09 | 0.10 | 0.01 | 0.03 | 0.06 | 0.10 | 0.09 | 0.005 | ND | 6.48E-05 | ND | 0.32 | 5.4 | 62 |
| 2017/6/15 | 2017/6/30 | 0.11 | 0.10 | 0.11 | 0.02 | 0.04 | 0.07 | 0.12 | 0.10 | 0.006 | ND | 8.55E-05 | ND | 0.49 | 6.3 | 74 |
| 2017/6/30 | 2017/7/14 | 0.15 | 0.13 | 0.14 | 0.03 | 0.05 | 0.09 | 0.16 | 0.13 | 0.008 | ND | 1.40E-04 | ND | 0.82 | 8.7 | 104 |
| 2017/7/14 | 2017/7/31 | 0.20 | 0.19 | 0.18 | 0.03 | 0.07 | 0.12 | 0.21 | 0.17 | 0.010 | ND | 1.76E-04 | ND | 0.89 | 12.3 | 141 |
| 2017/7/31 | 2017/8/14 | 0.21 | 0.19 | 0.18 | 0.03 | 0.08 | 0.12 | 0.20 | 0.17 | 0.011 | ND | 1.38E-04 | ND | 0.62 | 13.0 | 145 |
| 2017/8/14 | 2017/8/31 | 0.18 | 0.16 | 0.15 | 0.02 | 0.07 | 0.11 | 0.17 | 0.14 | 0.009 | ND | 1.38E-04 | ND | 0.46 | 11.3 | 125 |
| 2017/8/31 | 2017/9/15 | 0.07 | 0.06 | 0.05 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 | 0.003 | ND | 5.05E-05 | ND | 0.18 | 4.1 | 46 |
| 2017/9/15 | 2017/9/29 | 0.06 | 0.05 | 0.04 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 | 0.003 | ND | 4.17E-05 | ND | 0.17 | 3.5 | 40 |
| 2017/9/29 | 2017/10/16 | 0.12 | 0.10 | 0.10 | 0.02 | 0.04 | 0.07 | 0.12 | 0.10 | 0.006 | ND | 9.03E-05 | ND | 0.39 | 7.2 | 82 |
| 2017/10/16 | 2017/10/31 | 0.21 | 0.18 | 0.16 | 0.03 | 0.07 | 0.12 | 0.19 | 0.17 | 0.010 | ND | 1.69E-04 | ND | 0.68 | 13.9 | 161 |

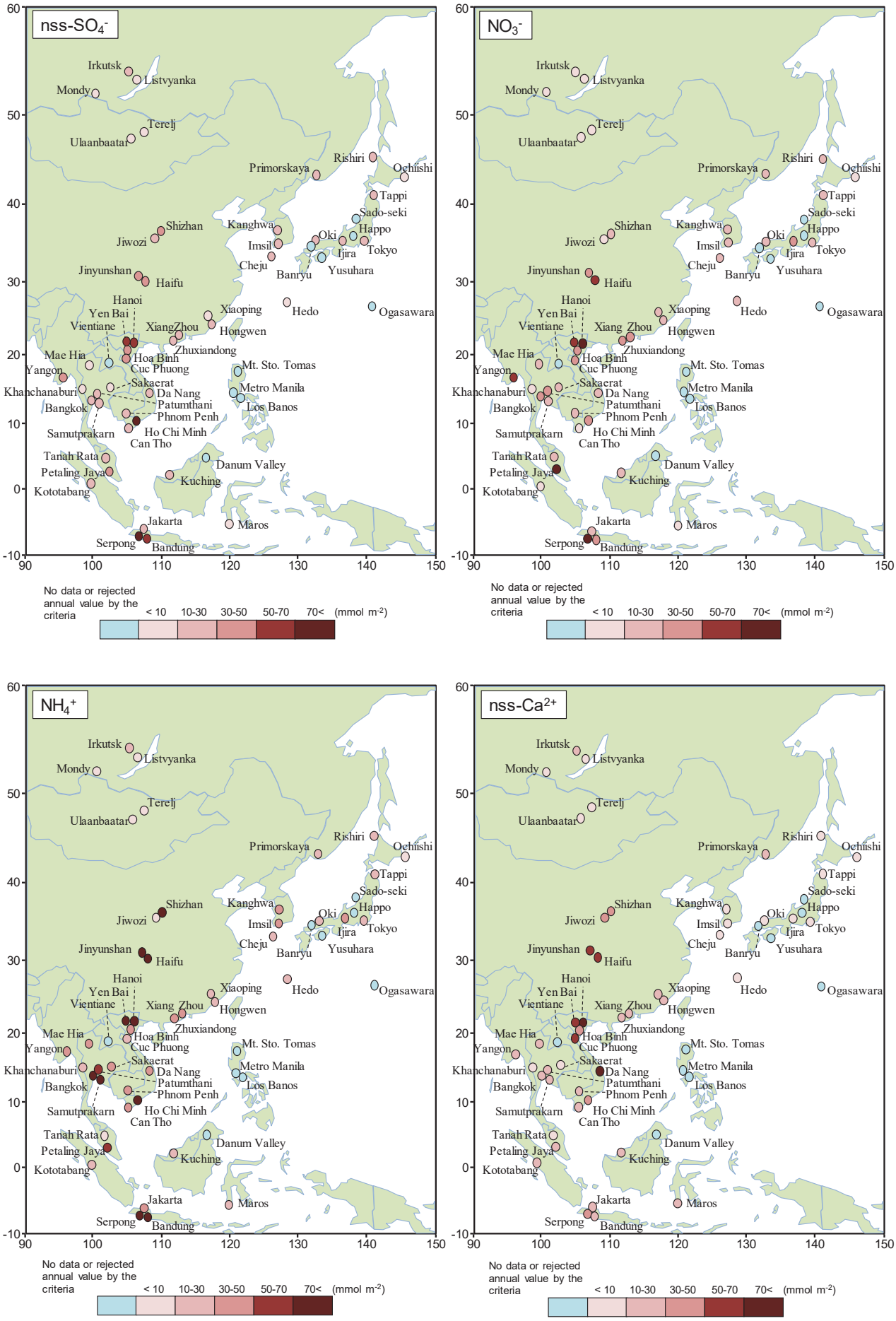
Note. Periodic chemical discharges were calculated based on the mean concentrations and the water discharge for the respective sampling intervals.

## Table 7.9 Annual chemical discharges from the stream: Lake Ijira Catchment (Water year 2016-2017)

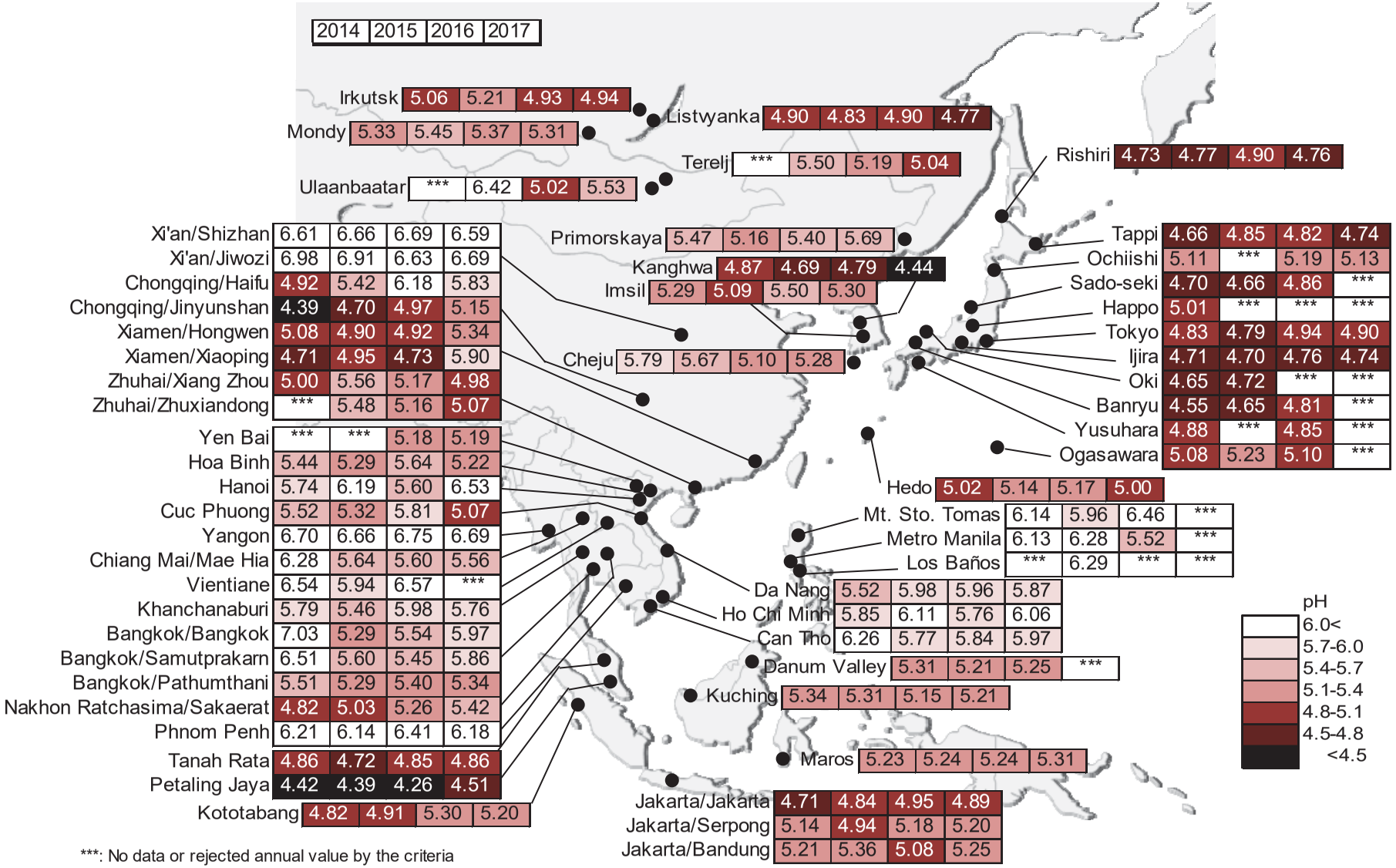
| Water year | alkalinity | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | pH4.8 | Gran's ANC | $SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $Na^+$ | $Ca^{2+}$ | $Mg^{2+}$ | $K^+$ | $NH_4^+$ | $H^+$ | Al | TOC | $SiO_2$ |
| | | | | | | $kmol_c\ ha^{-1}$ | | | | | | $mg\ L^{-1}$ | $kg\text{-}C\ ha^{-1}$ | $kg\text{-}SiO_2\ ha^{-1}$ |
| 2016 - 2017 | 2.7 | 2.3 | 2.5 | 0.4 | 1.0 | 1.7 | 2.7 | 2.3 | 0.1 | 0.0 | 0.0 | 0.0 | 8.8 | 160 |

# Appendix 1

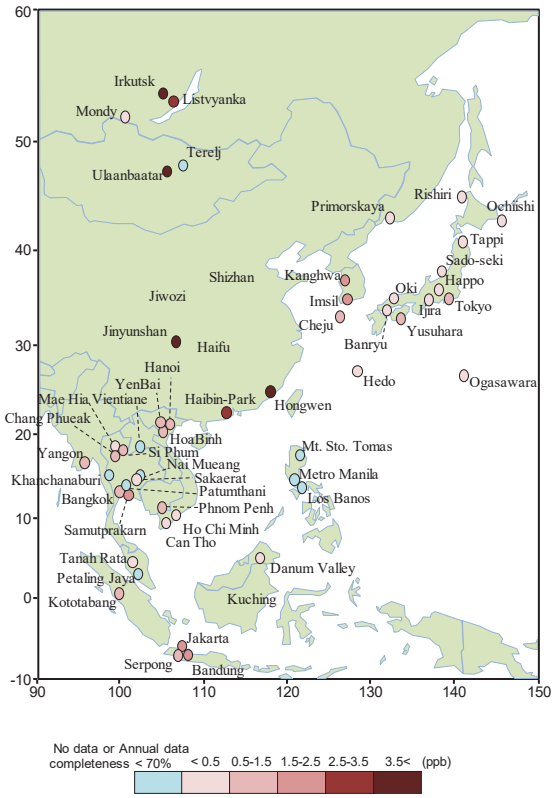
# Overview of Data Report 2017



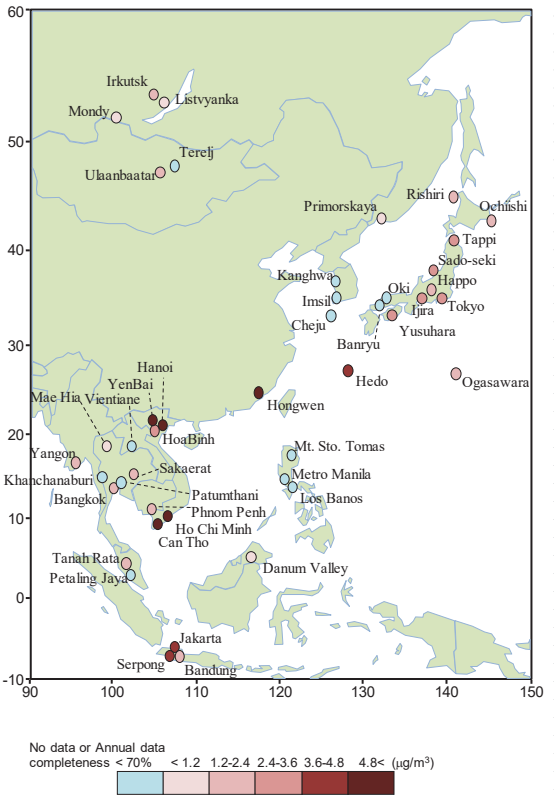

**Appendix Fig. 1-1 Annual wet deposition levels of nss-$SO_4^{2-}$, $NO_3^-$, $NH_4^+$ and nss-$Ca^{2+}$ in 2017**



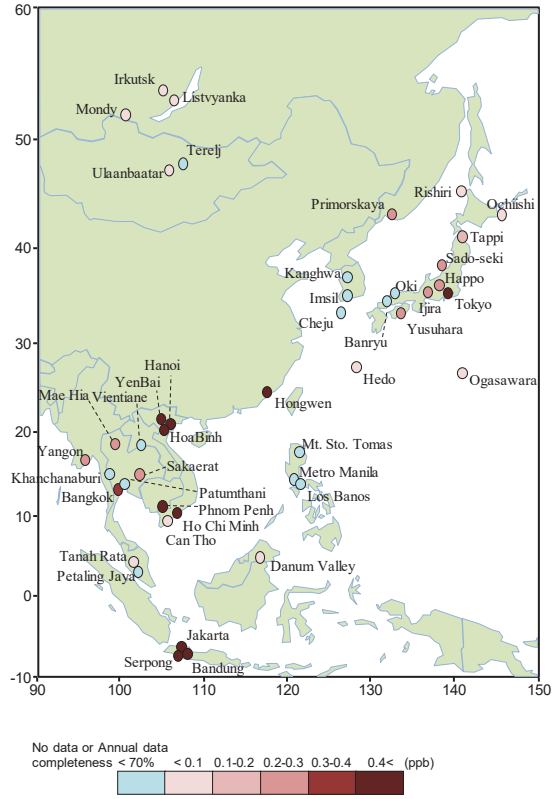

**Appendix Fig. 1-2 Trends of pH in each EANET site from 2014 to 2017**



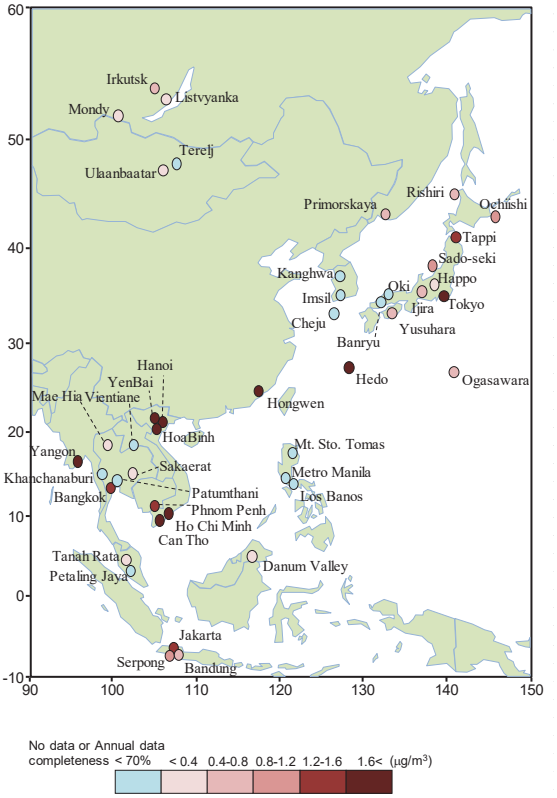

**Appendix Fig. 1-3 Levels of annual $SO_2$ concentrations at EANET monitoring sites in 2017.**



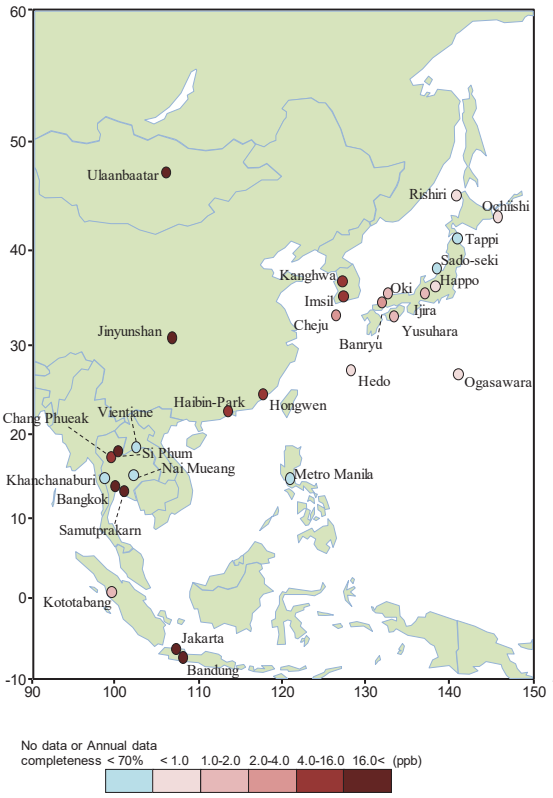

**Appendix Fig. 1-4 Levels of annual particulate $SO_4^{2-}$ concentrations at EANET monitoring sites in 2017.**



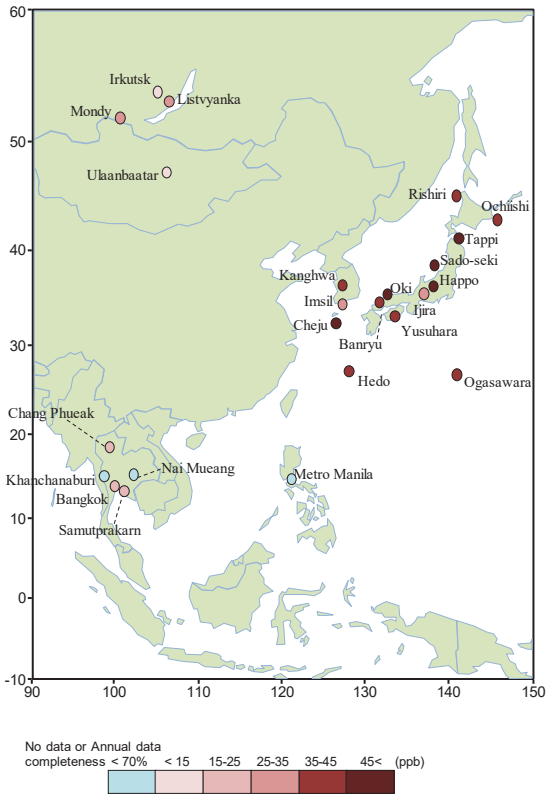

**Appendix Fig. 1-5 Levels of annual $HNO_3$ concentrations at EANET monitoring sites in 2017.**



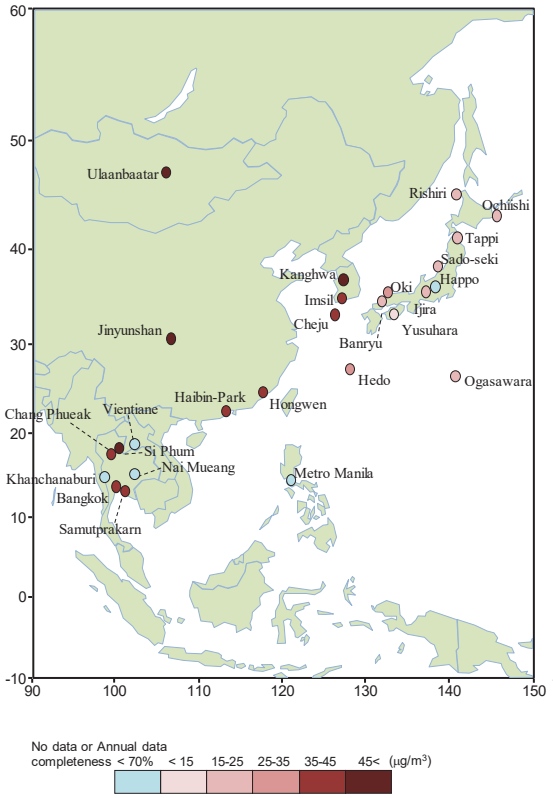

**Appendix Fig. 1-6 Levels of annual particulate $NO_3^-$ concentrations at EANET monitoring sites in 2017.**




**Appendix Fig. 1-7 Levels of annual NOx or $NO_2$ concentrations at EANET monitoring sites in 2017.**

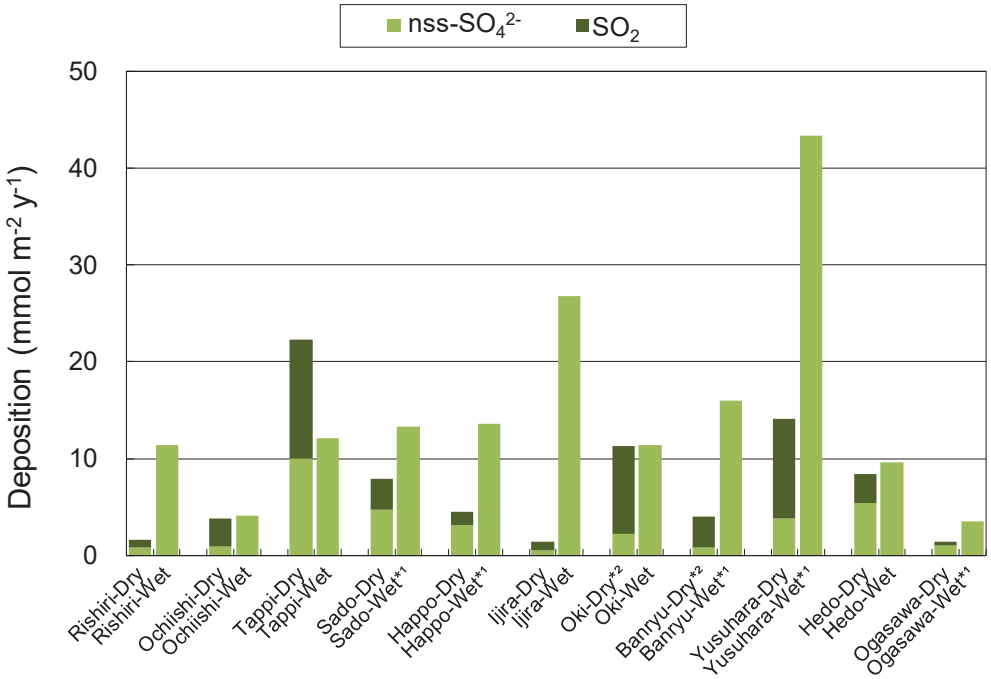



**Appendix Fig. 1-8 Levels of annual $O_3$ concentrations at EANET monitoring sites in 2017.**

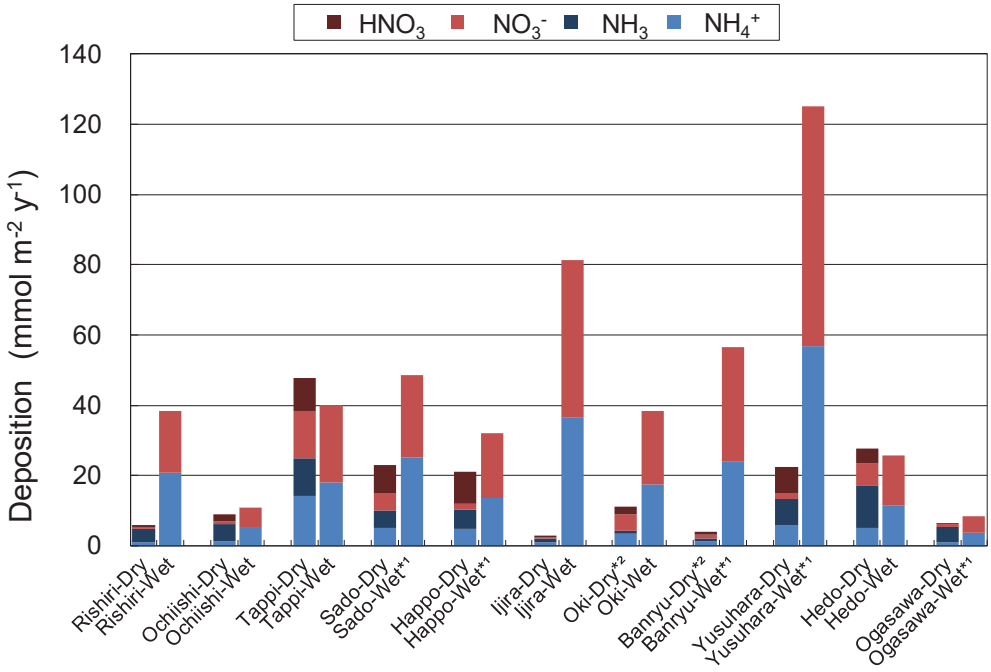



**Appendix Fig. 1-9 Levels of annual $PM_{10}$ concentrations at EANET monitoring sites in 2017.**

**Appendix Fig. 1-10 Levels of annual $PM_{2.5}$ concentrations at EANET monitoring sites in 2017.**




**Appendix Fig. 1-11 Annual dry and wet deposition amount of sulfur compounds at EANET sites in 2017.**




**Appendix Fig. 1-12 Annual dry and wet deposition amount of nitrogen compounds at EANET sites in 2017.**

*1 The data completeness of wet deposition monitoring was less than 80% (EANET criteria).
*2 The data completeness of filter pack was less than 70% (EANET criteria).

# Appendix 2

# Meteorological Statistics at the Monitoring Sites

**Appendix Table 2-1 Meteorological statistics at the monitoring site**
**Site : Xi'an, China**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 2.7 | 5.6 | 9.8 | 17.0 | 22.2 | 26.1 | 30.5 | 26.6 | 21.3 | 13.7 | 8.8 | 3.0 |
| | max.daily mean | 12.5 | 21.0 | 21.4 | 30.7 | 36.4 | 37.2 | 41.8 | 39.1 | 30.6 | 22.2 | 22.3 | 4.4 |
| | min.daily mean | -4.6 | -4.4 | 0.5 | 6.2 | 11.8 | 15.2 | 20.0 | 15.2 | 13.5 | 6.7 | -0.3 | -5.4 |
| Relative humidity (%) | monthly mean | 55 | 51 | 52 | 55 | 52 | 55 | 54 | 67 | 77 | 82 | 60 | 45 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | min.daily mean | 12 | 6 | 9 | 5 | 9 | 13 | 18 | 15 | 34 | 35 | 12 | 14 |
| Mean wind speed (m/s) | | 2.1 | 2.2 | 2.4 | 2.3 | 2.2 | 2.3 | 2.4 | 2.3 | 2.0 | 2.1 | 2.0 | 1.8 |
| Most frequent wind direction (bearings) | | ENE | ENE | ENE | NE | SW | ENE | NE | ENE | ENE | NE | SSW | NNE |
| Precipitation amount (mm/month) | | 4 | 11 | 51 | 56 | 64 | 72 | 83 | 65 | 99 | 140 | 6 | 0 |
| Sunshine duration (hours/month) | | 107 | 163 | 162 | 196 | 232 | 216 | 291 | 180 | 104 | 34 | 122 | 159 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-2 Meteorological statistics at the monitoring site**
**Site : Zhuhai, China**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 17.7 | 16.3 | 19.0 | 22.7 | 25.6 | 28.9 | 28.6 | 29.3 | 28.9 | 26.0 | 21.4 | 17.4 |
| | max.daily mean | 20.5 | 19.3 | 21.6 | 25.6 | 28.1 | 31.9 | 31.3 | 32.4 | 31.9 | 28.6 | 24.1 | 20.4 |
| | min.daily mean | 15.7 | 14.0 | 17.2 | 20.6 | 23.8 | 27.0 | 26.6 | 26.7 | 26.6 | 23.9 | 19.5 | 15.2 |
| Relative humidity (%) | monthly mean | 78 | 74 | 84 | 84 | 85 | 83 | 84 | 82 | 80 | 70 | 75 | 60 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | min.daily mean | 37 | 30 | 19 | 41 | 46 | 52 | 50 | 45 | 46 | 36 | 32 | 22 |
| Mean wind speed (m/s) | | 1.9 | 2.5 | 2.5 | 2.4 | 2.3 | 2.6 | 2.7 | 2.9 | 2.8 | 3.2 | 2.4 | 2.5 |
| Most frequent wind direction (bearings) | | ENE | ENE | ESE | ESE | ESE | SW | ESE | SW | ESE | ENE | ENE | ENE |
| Precipitation amount (mm/month) | | 18 | 29 | 82 | 125 | 223 | 213 | 321 | 343 | 431 | 142 | 24 | 0 |
| Sunshine duration (hours/month) | | 141 | 136 | 79 | 132 | 106 | 202 | 194 | 234 | 193 | 227 | 105 | 161 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-3 Meteorological statistics at the monitoring site**
**Site : Serpong, Indonesia**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 26.8 | 26.1 | 27.1 | 27.3 | 27.6 | 27.1 | 27.2 | 27.6 | 27.6 | 26.9 | 26.8 | 26.3 |
| | max.daily mean | 34.1 | 35.4 | 35.9 | 36.3 | 36.1 | 35.2 | 35.7 | 35.8 | 37.7 | 35.8 | 35.7 | 34.3 |
| | min.daily mean | 22.4 | 22.7 | 22.8 | 22.4 | 22.3 | 22.3 | 22.1 | 20.8 | 21.9 | 23.2 | 23.4 | 20.6 |
| Relative humidity (%) | monthly mean | 87 | 91 | 86 | 87 | 87 | 87 | 86 | 80 | 82 | 88 | 89 | 88 |
| | max.daily mean | 99 | 100 | 99 | 99 | 100 | 99 | 100 | 99 | 99 | 99 | 99 | 99 |
| | min.daily mean | 60 | 57 | 47 | 52 | 52 | 52 | 43 | 35 | 39 | 54 | 51 | 57 |
| Mean wind speed (m/s) | | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Most frequent wind direction (bearings) | | W | WSW | W | W | WSW | ENE | W | W | SW | SW | WSW | WSW |
| Precipitation amount (mm/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-4 Meteorological statistics at the monitoring site**
**Site : Bandung, Indonesia**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 24.2 | 23.1 | 23.7 | 23.9 | 24.6 | 24.1 | 24.1 | 24.3 | 24.7 | 24.2 | 23.5 | 24.1 |
| | max.daily mean | 30.4 | 30.1 | 30.6 | 30.8 | 32.2 | 31.8 | 31.3 | 31.8 | 33.5 | 33.0 | 32.9 | 30.9 |
| | min.daily mean | 20.3 | 19.8 | 19.2 | 19.8 | 19.4 | 19.1 | 17.8 | 17.3 | 18.9 | 18.7 | 19.3 | 19.5 |
| Relative humidity (%) | monthly mean | 78 | 85 | 83 | 85 | 79 | 81 | 76 | 72 | 74 | 82 | 85 | 80 |
| | max.daily mean | 96 | 97 | 97 | 96 | 97 | 96 | 95 | 94 | 97 | 97 | 97 | 97 |
| | min.daily mean | 51 | 55 | 47 | 54 | 40 | 46 | 43 | 29 | 28 | 35 | 21 | 43 |
| Mean wind speed (m/s) | | 2.7 | 2.4 | 1.5 | 1.2 | 1.4 | 1.2 | 1.7 | 1.9 | 1.6 | 1.2 | 1.6 | 2.1 |
| Most frequent wind direction (bearings) | | WNW | W | W | WNW | WNW | ENE | ENE | ESE | SE | ESE | W | W |
| Precipitation amount (mm/month) | | 45 | 104 | 269 | 5425 | 183 | 47 | 27 | 30 | 59 | 178 | 279 | 82 |
| Sunshine duration (hours/month) | | 4 | 3 | 4 | 4 | 5 | 5 | 6 | 7 | 6 | 5 | 3 | 5 |
| Solar radiation ($MJ/m^2$/month) | | 524 | 392 | 455 | 345 | 358 | 303 | 362 | 442 | 434 | 427 | 370 | 485 |

**Appendix Table 2-5 Meteorological statistics at the monitoring site**
**Site : Rishiri, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | -4.5 | -3.3 | -0.3 | 5.0 | 10.4 | 12.3 | 18.1 | 19.1 | 15.8 | 9.1 | 2.4 | -3.5 |
| | max.daily mean | 0.1 | 2.7 | 2.8 | 9.7 | 14.3 | 17.2 | 20.6 | 22.2 | 19.6 | 15.2 | 10.9 | 0.7 |
| | min.daily mean | -11.5 | -9.4 | -5.9 | 1.4 | 6.0 | 6.7 | 14.3 | 14.6 | 11.2 | 3.6 | -7.6 | -8.3 |
| Relative humidity (%) | monthly mean | 75 | 75 | 74 | 79 | 83 | 90 | 96 | 86 | 82 | 72 | 73 | 70 |
| | max.daily mean | 94 | 95 | 98 | 96 | 100 | 100 | 100 | 99 | 100 | 96 | 99 | 84 |
| | min.daily mean | 59 | 62 | 54 | 54 | 62 | 69 | 85 | 62 | 55 | 46 | 53 | 56 |
| Mean wind speed (m/s) | | 3.0 | 3.0 | 2.6 | 2.5 | 2.0 | 2.1 | 1.3 | 2.3 | 2.5 | 2.8 | 3.7 | 3.6 |
| Most frequent wind direction (bearings) | | N | NNW | NW | NW | WSW | ENE | NW | E | E | NW | NW | NW |
| Precipitation amount (mm/month) | | 56 | 29 | 34 | 89 | 27 | 87 | 155 | 64 | 134 | 49 | 103 | 105 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 127 | 204 | 419 | 382 | 513 | 588 | 356 | 529 | 414 | 264 | 111 | 84 |

**Appendix Table 2-6 Meteorological statistics at the monitoring site**
**Site : Ochiishi, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | -5.4 | -4.6 | -2.8 | 0.8 | 5.2 | 7.4 | 13.7 | 14.4 | 13.6 | 8.8 | 4.0 | -2.1 |
| | max.daily mean | 0.0 | 0.2 | -0.9 | 4.4 | 9.1 | 11.6 | 17.7 | 17.6 | 15.9 | 14.2 | 9.9 | 3.0 |
| | min.daily mean | -10.5 | -9.9 | -6.1 | -2.1 | 0.6 | 3.9 | 9.2 | 11.4 | 10.8 | 3.4 | -3.4 | -6.2 |
| Relative humidity (%) | monthly mean | 71 | 73 | 79 | 86 | 90 | 96 | 97 | 98 | 91 | 77 | 69 | 65 |
| | max.daily mean | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 99 | 90 |
| | min.daily mean | 38 | 52 | 49 | 59 | 68 | 81 | 83 | 84 | 70 | 56 | 45 | 40 |
| Mean wind speed (m/s) | | 7.3 | 8.1 | 6.6 | 7.8 | 6.3 | 6.6 | 4.7 | 5.5 | 7.2 | 7.7 | 9.4 | 9.2 |
| Most frequent wind direction (bearings) | | NNW | NNW | NNW | WSW | WSW | WSW | WSW | E | WSW | NW | WNW | WNW |
| Precipitation amount (mm/month) | | 3 | 19 | 18 | 41 | 47 | 117 | 121 | 28 | 151 | 130 | 41 | 80 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 220 | 299 | 472 | 494 | 556 | 512 | 541 | 426 | 373 | 287 | 245 | 207 |

**Appendix Table 2-7 Meteorological statistics at the monitoring site**
**Site : Tappi, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | -0.4 | 0.0 | 2.7 | 8.1 | 12.5 | 14.5 | 21.6 | 20.0 | 18.7 | 13.0 | 6.9 | 0.7 |
| | max.daily mean | 3.6 | 6.5 | 6.6 | 12.4 | 17.4 | 19.4 | 25.7 | 23.5 | 21.7 | 20.0 | 15.2 | 6.1 |
| | min.daily mean | -5.6 | -6.1 | -1.7 | 3.5 | 8.4 | 10.4 | 17.3 | 17.3 | 12.7 | 7.8 | -0.6 | -4.7 |
| Relative humidity (%) | monthly mean | 83 | 87 | 83 | 86 | 93 | 97 | 98 | 97 | 91 | 85 | 85 | 89 |
| | max.daily mean | 94 | 98 | 96 | 99 | 100 | 100 | 100 | 100 | 100 | 99 | 96 | 97 |
| | min.daily mean | 71 | 75 | 68 | 58 | 69 | 92 | 87 | 82 | 74 | 67 | 72 | 78 |
| Mean wind speed (m/s) | | 8.0 | 8.2 | 6.6 | 6.5 | 5.9 | 5.0 | 4.4 | 6.4 | 5.3 | 6.0 | 9.0 | 10.5 |
| Most frequent wind direction (bearings) | | W | W | W | W | W | W | W | E | W | W | W | W |
| Precipitation amount (mm/month) | | 43 | 51 | 24 | 65 | 79 | 115 | 106 | 135 | 112 | 111 | 162 | 108 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 127 | 163 | 376 | 484 | 561 | 511 | 522 | 455 | 445 | 267 | 97 | 79 |

**Appendix Table 2-8 Meteorological statistics at the monitoring site**
**Site : Sado-seki, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 2.7 | 2.8 | 5.5 | 11.1 | 16.6 | 17.8 | 25.3 | 26.2 | 21.8 | 16.3 | 9.8 | 3.5 |
| | max.daily mean | 8.1 | 8.9 | 8.9 | 16.1 | 21.8 | 23.3 | 30.3 | 31.1 | 24.0 | 21.3 | 17.3 | 10.6 |
| | min.daily mean | -3.4 | -0.4 | 1.1 | 5.7 | 12.5 | 12.0 | 20.7 | 20.7 | 16.1 | 9.7 | 2.2 | -1.3 |
| Relative humidity (%) | monthly mean | 72 | 69 | 64 | 63 | 66 | 75 | 79 | 76 | 71 | 70 | 67 | 75 |
| | max.daily mean | 93 | 85 | 82 | 95 | 94 | 90 | 97 | 95 | 90 | 92 | 84 | 90 |
| | min.daily mean | 54 | 55 | 46 | 33 | 36 | 55 | 60 | 61 | 58 | 51 | 47 | 54 |
| Mean wind speed (m/s) | | 7.2 | 8.5 | 5.3 | 5.2 | 3.5 | 3.8 | 3.0 | 3.0 | 4.5 | 4.1 | 6.0 | 8.5 |
| Most frequent wind direction (bearings) | | WNW | W | W | WSW | WSW | WSW | WSW | ENE | WSW | ENE | W | W |
| Precipitation amount (mm/month) | | 78 | 54 | 27 | 78 | 25 | 29 | 287 | 88 | 94 | 167 | 80 | 106 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 104 | 156 | 363 | 468 | 647 | 544 | 557 | 430 | 456 | 245 | 161 | 65 |

**Appendix Table 2-9 Meteorological statistics at the monitoring site**
**Site : Happo, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | -8.0 | -7.7 | -4.9 | 2.4 | 9.6 | 11.4 | 16.7 | 15.9 | 10.7 | 6.8 | -0.1 | -7.5 |
| | max.daily mean | -0.9 | -1.9 | -0.6 | 8.7 | 18.1 | 16.3 | 18.2 | 18.0 | 14.2 | 12.7 | 8.1 | -1.4 |
| | min.daily mean | -14.9 | -13.2 | -11.1 | -4.5 | 3.0 | 6.5 | 15.1 | 12.4 | 7.6 | -2.1 | -8.1 | -13.0 |
| Relative humidity (%) | monthly mean | 85 | 82 | 76 | 68 | 74 | 83 | 95 | 96 | 86 | 84 | 69 | 81 |
| | max.daily mean | 98 | 97 | 98 | 98 | 97 | 99 | 99 | 99 | 99 | 98 | 94 | 93 |
| | min.daily mean | 22 | 56 | 45 | 35 | 45 | 57 | 84 | 82 | 38 | 32 | 12 | 39 |
| Mean wind speed (m/s) | | 6.5 | 6.9 | 5.2 | 4.8 | 2.7 | 2.1 | 1.6 | 1.9 | 2.3 | 2.3 | 3.2 | 5.6 |
| Most frequent wind direction (bearings) | | NNW | NW | NW | S | S | SSE | SSE | SSE | SSE | SSE | SSE | NW |
| Precipitation amount (mm/month) | | 194 | 162 | 53 | 152 | 155 | 193 | 279 | 446 | 302 | 391 | 205 | 188 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 268 | 377 | 577 | 630 | 654 | 467 | 262 | 322 | 353 | 234 | 254 | 238 |

**Appendix Table 2-10 Meteorological statistics at the monitoring site**
**Site : Ijira, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 1.5 | 2.1 | 5.2 | 11.6 | 17.1 | 19.1 | 24.2 | 24.3 | 20.0 | 15.2 | 8.1 | 2.6 |
| | max.daily mean | 5.5 | 6.8 | 9.3 | 15.3 | 21.3 | 22.1 | 26.1 | 25.6 | 23.0 | 20.2 | 13.5 | 6.0 |
| | min.daily mean | -2.3 | -1.1 | 0.5 | 6.3 | 13.4 | 14.9 | 22.3 | 21.8 | 15.4 | 8.9 | 3.1 | -0.2 |
| Relative humidity (%) | monthly mean | 95 | 91 | 85 | 84 | 82 | 83 | 96 | 96 | 91 | 96 | 96 | 96 |
| | max.daily mean | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |
| | min.daily mean | 80 | 77 | 70 | 61 | 55 | 62 | 81 | 79 | 71 | 83 | 88 | 90 |
| Mean wind speed (m/s) | | 0.3 | 0.4 | 0.5 | 0.6 | 0.5 | 0.6 | 0.3 | 0.4 | 0.5 | 0.4 | 0.3 | 0.3 |
| Most frequent wind direction (bearings) | | Calm | Calm | Calm | Calm | Calm | Calm | Calm | Calm | Calm | Calm | Calm | Calm |
| Precipitation amount (mm/month) | | 133 | 120 | 118 | 393 | 113 | 221 | 343 | 479 | 278 | 524 | 90 | 110 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 184 | 226 | 367 | 400 | 513 | 544 | 401 | 388 | 382 | 208 | 190 | 154 |

**Appendix Table 2-11 Meteorological statistics at the monitoring site**
**Site : Oki, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 5.6 | 5.6 | 7.5 | 13.4 | 18.0 | 19.2 | 25.3 | 25.7 | 21.5 | 16.8 | 12.2 | 6.3 |
| | max.daily mean | 11.6 | 11.7 | 10.7 | 18.1 | 21.4 | 23.7 | 28.8 | 30.7 | 23.4 | 21.2 | 18.3 | 11.2 |
| | min.daily mean | -0.2 | 0.5 | 2.6 | 7.7 | 14.3 | 15.3 | 22.4 | 23.0 | 17.7 | 11.9 | 6.1 | 1.9 |
| Relative humidity (%) | monthly mean | 74 | 76 | 74 | 76 | 76 | 85 | 91 | 87 | 83 | 84 | 74 | 74 |
| | max.daily mean | 87 | 94 | 91 | 98 | 97 | 97 | 98 | 97 | 96 | 97 | 82 | 90 |
| | min.daily mean | 64 | 60 | 57 | 49 | 52 | 67 | 80 | 70 | 64 | 65 | 57 | 62 |
| Mean wind speed (m/s) | | 6.8 | 6.2 | 5.4 | 5.9 | 4.9 | 4.3 | 5.2 | 4.7 | 4.9 | 5.6 | 7.0 | 7.0 |
| Most frequent wind direction (bearings) | | N | N, NNW | N | S | S | S | S | NNE | NNE | NNE | SW | W |
| Precipitation amount (mm/month) | | 63 | 129 | 31 | 69 | 11 | 54 | 61 | 117 | 192 | 139 | 37 | 81 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 172 | 216 | 389 | 539 | 656 | 638 | 514 | 537 | 442 | 297 | 219 | 136 |

**Appendix Table 2-12 Meteorological statistics at the monitoring site**
**Site : Banryu, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 5.4 | 5.9 | 7.6 | 14.1 | 18.3 | 20.2 | 26.7 | 26.4 | 21.2 | 16.8 | 11.5 | 5.7 |
| | max.daily mean | 8.6 | 12.6 | 12.3 | 20.7 | 22.0 | 24.5 | 28.4 | 28.9 | 23.8 | 21.6 | 17.0 | 9.5 |
| | min.daily mean | 1.8 | 1.4 | 3.3 | 6.3 | 14.1 | 17.0 | 23.4 | 23.8 | 17.4 | 11.4 | 7.1 | 2.0 |
| Relative humidity (%) | monthly mean | 76 | 75 | 74 | 76 | 76 | 83 | 89 | 88 | 89 | 91 | 79 | 74 |
| | max.daily mean | 97 | 94 | 95 | 98 | 93 | 97 | 96 | 96 | 98 | 98 | 97 | 90 |
| | min.daily mean | 58 | 59 | 54 | 37 | 50 | 71 | 81 | 76 | 80 | 74 | 56 | 61 |
| Mean wind speed (m/s) | | 3.3 | 3.4 | 2.9 | 2.3 | 2.1 | 2.2 | 1.8 | 2.1 | 2.2 | 2.6 | 2.7 | 3.1 |
| Most frequent wind direction (bearings) | | S | S | S | S | S | S | SSE | S | S | S | S | S |
| Precipitation amount (mm/month) | | 90 | 117 | 82 | 123 | 33 | 153 | 178 | 132 | 243 | 262 | 24 | 39 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 212 | 242 | 415 | 523 | 678 | 624 | 607 | 596 | 413 | 299 | 259 | 152 |

**Appendix Table 2-13 Meteorological statistics at the monitoring site**
**Site : Yusuhara, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 1.6 | 1.7 | 4.0 | 11.1 | 15.4 | 17.7 | 22.6 | 23.1 | 18.4 | 14.4 | 8.0 | 0.9 |
| | max.daily mean | 8.2 | 8.7 | 10.3 | 16.9 | 21.0 | 21.1 | 24.4 | 25.0 | 21.5 | 18.8 | 13.4 | 7.8 |
| | min.daily mean | -5.2 | -5.3 | -2.3 | 3.3 | 11.8 | 14.3 | 20.1 | 21.1 | 15.6 | 8.0 | 1.2 | -3.9 |
| Relative humidity (%) | monthly mean | 87 | 83 | 82 | 82 | 78 | 84 | 96 | 94 | 91 | 94 | 92 | 91 |
| | max.daily mean | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 99 | 98 |
| | min.daily mean | 61 | 57 | 54 | 41 | 42 | 57 | 86 | 81 | 66 | 78 | 71 | 76 |
| Mean wind speed (m/s) | | 2.6 | 2.6 | 2.2 | 1.6 | 1.5 | 1.3 | 1.1 | 1.3 | 1.5 | 1.9 | 1.8 | 2.5 |
| Most frequent wind direction (bearings) | | N | N | N | N | NNW | NNW | NNW | NNW | NNW | N | N | N |
| Precipitation amount (mm/month) | | 71 | 139 | 105 | 277 | 130 | 254 | 287 | 340 | 370 | 487 | 84 | 51 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 294 | 318 | 432 | 504 | 612 | 525 | 522 | 537 | 376 | 306 | 273 | 264 |

**Appendix Table 2-14 Meteorological statistics at the monitoring site**
**Site : Hedo, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 17.7 | 16.5 | 17.6 | 21.4 | 23.9 | 26.5 | 30.7 | 30.3 | 27.9 | 26.1 | 21.9 | 17.3 |
| | max.daily mean | 22.0 | 20.5 | 21.8 | 24.2 | 27.6 | 30.7 | 32.9 | 31.9 | 29.6 | 28.4 | 24.4 | 20.6 |
| | min.daily mean | 13.9 | 11.9 | 14.5 | 15.8 | 19.9 | 20.3 | 28.7 | 28.9 | 24.8 | 21.3 | 18.4 | 15.0 |
| Relative humidity (%) | monthly mean | 77 | 75 | 76 | 80 | 87 | 91 | 82 | 84 | 82 | 79 | 74 | 66 |
| | max.daily mean | 95 | 98 | 97 | 98 | 99 | 99 | 90 | 95 | 94 | 95 | 89 | 91 |
| | min.daily mean | 61 | 53 | 55 | 51 | 64 | 80 | 78 | 75 | 60 | 58 | 54 | 54 |
| Mean wind speed (m/s) | | 5.1 | 5.4 | 5.0 | 4.5 | 4.1 | 4.1 | 2.4 | 4.0 | 3.7 | 6.3 | 5.8 | 5.9 |
| Most frequent wind direction (bearings) | | NNW | NNW | NW, NNW | ESE | ENE | S | SSE | SW | S | ENE | ENE | NNE |
| Precipitation amount (mm/month) | | 54 | 95 | 67 | 105 | 84 | -- | -- | -- | -- | -- | -- | -- |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 248 | 258 | 290 | 484 | 524 | 516 | 768 | 673 | 517 | 415 | 261 | 218 |

**Appendix Table 2-15 Meteorological statistics at the monitoring site**
**Site : Ogasawara, Japan**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 15.5 | 15.2 | 16.1 | 19.1 | 22.4 | 24.2 | 25.9 | 26.8 | 26.0 | 25.3 | 21.6 | 17.8 |
| | max.daily mean | 19.1 | 18.5 | 19.4 | 22.5 | 25.1 | 27.1 | 27.0 | 27.8 | 27.0 | 26.5 | 24.6 | 22.7 |
| | min.daily mean | 12.3 | 12.2 | 13.8 | 15.2 | 18.5 | 19.5 | 24.4 | 25.3 | 24.4 | 21.8 | 18.3 | 15.8 |
| Relative humidity (%) | monthly mean | 86 | 85 | 88 | 85 | -- | 96 | 91 | 90 | 93 | 95 | 88 | 87 |
| | max.daily mean | 99 | 99 | 99 | 99 | -- | 99 | 93 | 94 | 97 | 97 | 97 | 97 |
| | min.daily mean | 71 | 70 | 73 | 71 | -- | 79 | 87 | 86 | 89 | 81 | 74 | 70 |
| Mean wind speed (m/s) | | 1.4 | 1.4 | 1.5 | 1.8 | 1.8 | 1.5 | 1.4 | 1.4 | 1.3 | 1.6 | 1.5 | 1.3 |
| Most frequent wind direction (bearings) | | WSW | WSW | WSW | NE | SSW | SSW | SW | WSW | SW | NE | NE | ENE |
| Precipitation amount (mm/month) | | 72 | 46 | 26 | 77 | 284 | 261 | 113 | 269 | 134 | 117 | 181 | 166 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 413 | 359 | 482 | 393 | 485 | 504 | 611 | 486 | 493 | 443 | 305 | 247 |

**Appendix Table 2-16 Meteorological statistics at the monitoring site**
**Site : Mondy, Russia**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | -18.1 | -14.6 | -5.4 | 2.5 | 8.9 | 14.9 | 15.6 | 13.0 | 6.4 | -2.3 | -9.5 | -11.2 |
| | max.daily mean | -9.4 | -4.4 | 3.3 | 10.4 | 18.3 | 23.9 | 23.7 | 20.3 | 13.8 | 5.6 | -2.2 | -5.8 |
| | min.daily mean | -25.0 | -23.2 | -13.8 | -6.2 | -0.3 | 5.8 | 8.0 | 7.1 | 0.4 | -8.4 | -15.3 | -16.8 |
| Relative humidity (%) | monthly mean | 64 | 59 | 58 | 47 | 50 | 62 | 72 | 76 | 70 | 69 | 57 | 57 |
| | max.daily mean | 74 | 74 | 79 | 73 | 76 | 89 | 93 | 93 | 89 | 87 | 73 | 70 |
| | min.daily mean | 48 | 38 | 34 | 26 | 28 | 34 | 44 | 51 | 44 | 40 | 36 | 46 |
| Mean wind speed (m/s) | | 1.8 | 1.9 | 2.4 | 3.4 | 3.2 | 2.5 | 2.0 | 2.3 | 2.4 | 1.8 | 2.8 | 3.6 |
| Most frequent wind direction (bearings) | | W | W | W | W | E | E | W | E | E, W | W | W | W |
| Precipitation amount (mm/month) | | 4 | 3 | 3 | 6 | 9 | 35 | 83 | 117 | 33 | 12 | 0 | 4 |
| Sunshine duration (hours/month) | | 154 | 194 | 277 | 302 | 291 | 291 | 268 | 209 | 181 | 195 | 139 | 98 |
| Solar radiation ($MJ/m^2$/month) | | 114 | 191 | 385 | 537 | 599 | 571 | 574 | 438 | 285 | 235 | 122 | 247 |

**Appendix Table 2-17 Meteorological statistics at the monitoring site**
**Site : Listvyanka, Russia**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | -14.3 | -11.9 | -5.8 | 2.5 | 6.7 | 12.3 | 15.6 | 13.6 | 8.3 | 2.3 | -6.5 | -10.1 |
| | max.daily mean | -10.0 | -7.5 | -0.3 | 9.7 | 13.8 | 18.5 | 20.6 | 18.0 | 13.6 | 6.5 | -1.7 | -6.2 |
| | min.daily mean | -17.8 | -16.1 | -10.5 | -1.3 | 3.0 | 8.0 | 11.6 | 9.8 | 4.5 | -1.2 | -10.0 | -13.0 |
| Relative humidity (%) | monthly mean | 81 | 80 | 75 | 65 | 70 | 77 | 80 | 82 | 77 | 74 | 75 | 83 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | min.daily mean | 68 | 67 | 57 | 44 | 49 | 59 | 64 | 66 | 55 | 58 | 61 | 74 |
| Mean wind speed (m/s) | | 3.4 | 2.9 | 2.7 | 3.0 | 3.3 | 2.2 | 2.2 | 2.5 | 3.3 | 3.5 | 4.5 | 4.9 |
| Most frequent wind direction (bearings) | | N | N | N, S | N | N | -- | -- | -- | N | N | N | N |
| Precipitation amount (mm/month) | | 6 | 8 | 9 | 18 | 38 | 25 | 47 | 65 | 34 | 14 | 9 | 35 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-18 Meteorological statistics at the monitoring site**
**Site : Irkutsk, Russia**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | -16.4 | -11.8 | -2.3 | 6.0 | 11.5 | 18.4 | 19.3 | 16.3 | 9.3 | 2.0 | -8.2 | -12.7 |
| | max.daily mean | -11.1 | -5.2 | 4.5 | 13.4 | 19.8 | 26.6 | 26.3 | 23.1 | 15.4 | 7.6 | -3.3 | -8.6 |
| | min.daily mean | -20.6 | -17.1 | -8.1 | -0.5 | 4.7 | 11.4 | 13.7 | 10.9 | 4.5 | -1.9 | -12.4 | -16.1 |
| Relative humidity (%) | monthly mean | 76 | 73 | 59 | 52 | 54 | 60 | 68 | 72 | 72 | 70 | 73 | 82 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | min.daily mean | 64 | 55 | 37 | 28 | 32 | 36 | 45 | 49 | 48 | 50 | 59 | 73 |
| Mean wind speed (m/s) | | 1.7 | 1.6 | 1.8 | 2.1 | 2.2 | 1.7 | 1.5 | 1.6 | 1.8 | 1.9 | 1.9 | 1.5 |
| Most frequent wind direction (bearings) | | SE | SE | SE | SE | SE | SE | SE | WNW | WNW SE | SE | ENE, SE,N | NW |
| Precipitation amount (mm/month) | | 14 | 12 | 10 | 34 | 65 | 14 | 107 | 68 | 50 | 23 | 15 | 50 |
| Sunshine duration (hours/month) | | 137 | 170 | 265 | 273 | 305 | 304 | 295 | 236 | 184 | 177 | 96 | 60 |
| Solar radiation ($MJ/m^2$/month) | | 140 | 225 | 448 | 551 | 628 | 657 | 640 | 501 | 344 | 260 | 109 | 86 |

**Appendix Table 2-19 Meteorological statistics at the monitoring site**
**Site : Primorskaya, Russia**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | -13.9 | -9.6 | -0.9 | 6.7 | 12.7 | 16.0 | 21.9 | 20.0 | 14.8 | 6.4 | -4.4 | -15.3 |
| | max.daily mean | -6.2 | -1.9 | 5.7 | 14.5 | 21.0 | 22.2 | 28.6 | 26.1 | 22.3 | 13.7 | 2.4 | -7.6 |
| | min.daily mean | -20.2 | -17 | -6.7 | -0.1 | 5.8 | 11.5 | 17 | 16 | 9.4 | 0.9 | -9.5 | -21.4 |
| Relative humidity (%) | monthly mean | 65 | 60 | 61 | 62 | 67 | 77 | 78 | 80 | 76 | 66 | 68 | 65 |
| | max.daily mean | 83 | 80 | 94 | 94 | 90 | 88 | 96 | 89 | 85 | 86 | 89 | 80 |
| | min.daily mean | 47 | 38 | 37 | 34 | 42 | 57 | 57 | 62 | 50 | 43 | 44 | 46 |
| Mean wind speed (m/s) | | 1.0 | 1.3 | 1.0 | 1.3 | 1.2 | 0.9 | 0.8 | 0.7 | 1.0 | 1.1 | 1.2 | 1.0 |
| Most frequent wind direction (bearings) | | E | Calm, E | Calm, E | Calm, E | Calm, E | Calm, SE | E | Calm, SE | E | E | E | E |
| Precipitation amount (mm/month) | | 6 | 14 | 19 | 36 | 43 | 80 | 153 | 97 | 82 | 31 | 38 | 13 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | 255 | 329 | 506 | 508 | 629 | 617 | 616 | 502 | 502 | 331 | 214 | 200 |

**Appendix Table 2-20 Meteorological statistics at the monitoring site**
**Site : Bangkok, Thailand**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 27.3 | 28.4 | 30.0 | 30.5 | 29.0 | 29.3 | 28.3 | 28.4 | 28.6 | 27.5 | 27.1 | 25.9 |
| | max.daily mean | 29.1 | 30.1 | 31.4 | 32.4 | 31.9 | 31.4 | 30.5 | 30.4 | 30.9 | 29.5 | 28.5 | 28.9 |
| | min.daily mean | 24.6 | 25.7 | 25.9 | 27.5 | 26.1 | 27.6 | 26.5 | 25.7 | 26.0 | 25.1 | 24.7 | 19.4 |
| Relative humidity (%) | monthly mean | 62 | 53 | 64 | 64 | 80 | 72 | 75 | 78 | 78 | 82 | 61 | 61 |
| | max.daily mean | 95 | 68 | 82 | 84 | 95 | 86 | 87 | 93 | 92 | 96 | 71 | 98 |
| | min.daily mean | 45 | 42 | 47 | 49 | 63 | 56 | 65 | 66 | 63 | 56 | 45 | 37 |
| Mean wind speed (m/s) | | 0.6 | 0.6 | 0.9 | 0.7 | 0.3 | 0.5 | 0.6 | 0.5 | 0.4 | 0.4 | 0.7 | 0.6 |
| Most frequent wind direction (bearings) | | N | N | SSW | SSW | SW | WNW | WNW | WNW | WNW | NE | NE | NE |
| Precipitation amount (mm/month) | | 31 | 0 | 36 | 109 | 645 | 192 | 255 | 252 | 356 | 463 | 0 | 15 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-21 Meteorological statistics at the monitoring site**
**Site : Samutprakarn, Thailand**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 27.4 | 27.8 | 29.4 | 30.2 | 29.5 | 29.5 | 28.5 | 29.1 | 29.1 | 27.8 | 27.7 | 26.1 |
| | max.daily mean | 29.2 | 29.5 | 30.5 | 32.1 | 32.0 | 31.5 | 30.7 | 31.4 | 30.9 | 29.5 | 29.4 | 29.3 |
| | min.daily mean | 24.9 | 25.2 | 26.0 | 27.8 | 26.9 | 27.7 | 26.9 | 26.5 | 26.7 | 25.3 | 25.2 | 20.2 |
| Relative humidity (%) | monthly mean | 65 | 61 | 71 | 69 | 78 | 74 | 76 | 75 | 75 | 80 | 69 | 62 |
| | max.daily mean | 93 | 76 | 84 | 82 | 92 | 84 | 87 | 89 | 87 | 93 | 89 | 92 |
| | min.daily mean | 52 | 48 | 56 | 56 | 65 | 60 | 66 | 63 | 64 | 55 | 49 | 39 |
| Mean wind speed (m/s) | | 1.2 | 1.4 | 1.9 | 1.7 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.0 | 1.4 | 1.6 |
| Most frequent wind direction (bearings) | | ENE | S | S | S | S | SSW | SSW | SSW | WNW | WNW | NNW | ENE |
| Precipitation amount (mm/month) | | 43 | 3 | 42 | 71 | 382 | 202 | 167 | 282 | 201 | 390 | 42 | 18 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-22 Meteorological statistics at the monitoring site**
**Site : Pathumthani, Thailand**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 28.8 | 29.4 | 31.4 | 32.3 | 31.3 | 31.1 | 30.2 | 30.6 | 31.3 | 30.5 | 29.2 | 27.3 |
| | max.daily mean | 30.8 | 31.9 | 33.0 | 34.2 | 34.1 | 33.3 | 32.8 | 33.1 | 32.5 | 32.6 | 31.6 | 30.8 |
| | min.daily mean | 26.7 | 26.1 | 27.7 | 29.7 | 28.8 | 29.3 | 28.5 | 28.0 | 29.6 | 28.2 | 26.1 | 20.5 |
| Relative humidity (%) | monthly mean | 69 | 64 | 72 | 71 | 80 | 77 | -- | -- | -- | 78 | 77 | 75 |
| | max.daily mean | 89 | 80 | 84 | 78 | 90 | 90 | -- | -- | -- | 79 | 79 | 79 |
| | min.daily mean | 58 | 55 | 53 | 59 | 70 | 69 | -- | -- | -- | 76 | 74 | 69 |
| Mean wind speed (m/s) | | 2.9 | 3.1 | 3.8 | 3.5 | 3.3 | 3.5 | 3.9 | 3.2 | 3.1 | 2.8 | 3.4 | 3.5 |
| Most frequent wind direction (bearings) | | E, ESE | E | SSW | SSW | SSE | WSW | WSW | WSW | WSW | NE, ENE | NNE | NE |
| Precipitation amount (mm/month) | | 6 | 0 | 46 | 38 | 260 | 250 | 173 | 235 | 57 | 126 | 0 | 9 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-23 Meteorological statistics at the monitoring site**
**Site : Khanchanaburi, Thailand**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | -- | -- | -- | 28.1 | -- | -- | 31.4 | 31.5 | -- | -- | 25.6 | 24.6 |
| | max.daily mean | -- | -- | -- | 29.7 | -- | -- | 31.9 | 31.9 | -- | -- | 27.7 | 25.1 |
| | min.daily mean | -- | -- | -- | 24.7 | -- | -- | 30.9 | 31.2 | -- | -- | 23.9 | 24.4 |
| Relative humidity (%) | monthly mean | -- | -- | -- | -- | -- | -- | 74 | 75 | -- | -- | 81 | 76 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | 79 | 77 | -- | -- | 88 | 78 |
| | min.daily mean | -- | -- | -- | -- | -- | -- | 66 | 68 | -- | -- | 73 | 72 |
| Mean wind speed (m/s) | | -- | -- | -- | 0.9 | -- | -- | 0.8 | 0.5 | -- | -- | 1.5 | 1.6 |
| Most frequent wind direction (bearings) | | -- | -- | -- | NNW | -- | -- | W | NE, ENE | -- | -- | SW | SW |
| Precipitation amount (mm/month) | | -- | -- | -- | 114 | -- | -- | 152 | 61 | -- | -- | 0 | 0 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-24 Meteorological statistics at the monitoring site**
**Site : Chang Phueak, Thailand**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 22.6 | 23.9 | 28.2 | 28.8 | 28.2 | 27.4 | 26.8 | 26.6 | 26.8 | 26.1 | 25.2 | 22.3 |
| | max.daily mean | 25.0 | 26.5 | 30.2 | 32.1 | 32.2 | 29.4 | 29.0 | 28.5 | 28.8 | 27.7 | 27.5 | 26.1 |
| | min.daily mean | 19.6 | 21.9 | 26.0 | 24.3 | 23.4 | 25.9 | 24.9 | 23.9 | 24.6 | 23.7 | 22.6 | 16.4 |
| Relative humidity (%) | monthly mean | 74 | 55 | 42 | 57 | 71 | 79 | 83 | 83 | 82 | 81 | 73 | 70 |
| | max.daily mean | 95 | 65 | 55 | 90 | 94 | 90 | 95 | 97 | 91 | 90 | 82 | 93 |
| | min.daily mean | 61 | 43 | 30 | 44 | 49 | 68 | 71 | 72 | 72 | 62 | 49 | 45 |
| Mean wind speed (m/s) | | 0.5 | 0.5 | 0.8 | 0.7 | 0.7 | 0.6 | 0.5 | 0.4 | 0.4 | 0.5 | 0.6 | 0.6 |
| Most frequent wind direction (bearings) | | N | N | SE | SSE | N | S | SE | NNW | NNW | N | N | N |
| Precipitation amount (mm/month) | | 19 | 1 | 1 | 38 | 228 | 152 | 139 | 239 | 171 | 147 | 51 | 21 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-25 Meteorological statistics at the monitoring site**
**Site : Nai Mueang, Thailand**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 29.1 | 29.4 | 30.6 | 30.6 | -- | -- | -- | -- | -- | -- | -- | 26.5 |
| | max.daily mean | 30.4 | 31.9 | 32.3 | 32.1 | -- | -- | -- | -- | -- | -- | -- | 33.1 |
| | min.daily mean | 28.0 | 27.2 | 28.1 | 28.8 | -- | -- | -- | -- | -- | -- | -- | 19.3 |
| Relative humidity (%) | monthly mean | 32 | 24 | 21 | -- | -- | -- | -- | -- | -- | 63 | -- | 49 |
| | max.daily mean | 65 | 53 | 20 | -- | -- | -- | -- | -- | -- | 89 | -- | 85 |
| | min.daily mean | 16 | 14 | 20 | -- | -- | -- | -- | -- | -- | 46 | -- | 17 |
| Mean wind speed (m/s) | | 0.7 | 0.6 | 0.6 | 0.6 | -- | -- | -- | -- | -- | 0.9 | 1.3 | 1.3 |
| Most frequent wind direction (bearings) | | NE | NE | ESE | NE | -- | -- | -- | -- | -- | SSW | ENE | ENE |
| Precipitation amount (mm/month) | | 5 | 0 | 50 | 0 | -- | -- | -- | -- | -- | -- | -- | 0 |
| Sunshine duration (hours/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-26 Meteorological statistics at the monitoring site**
**Site : Hanoi, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 19.2 | 19.7 | 21.7 | 24.8 | 27.6 | 30.0 | 28.7 | 28.9 | 28.7 | 25.3 | 22.1 | 17.4 |
| | max.daily mean | 22.4 | 23.3 | 24.9 | 28.8 | 31.8 | 34.5 | 32.5 | 32.8 | 32.0 | 28.9 | 25.8 | 20.7 |
| | min.daily mean | 16.9 | 17.1 | 19.5 | 21.9 | 24.4 | 27.1 | 26.2 | 26.3 | 26.1 | 22.9 | 19.7 | 15.0 |
| Relative humidity (%) | monthly mean | 82 | 74 | 85 | 83 | 83 | 83 | 87 | 89 | 90 | 86 | 82 | 91 |
| | max.daily mean | 91 | 85 | 90 | 90 | 91 | 91 | 93 | 95 | 95 | 95 | 92 | 80 |
| | min.daily mean | 72 | 60 | 78 | 73 | 70 | 70 | 78 | 79 | 79 | 72 | 66 | 66 |
| Mean wind speed (m/s) | | 1.1 | 1.7 | 1.6 | 1.7 | 1.6 | 1.3 | 0.8 | 1.2 | 1.0 | 1.2 | 1.6 | 1.0 |
| Most frequent wind direction (bearings) | | NE | SE | SE | SE | SE | SE | SE | SE | NE, SE | NE | NE | N |
| Precipitation amount (mm/month) | | 82 | 5 | 87 | 51 | 109 | 266 | 624 | 283 | 222 | 282 | 5 | 55 |
| Sunshine duration (hours/month) | | 68 | 101 | 53 | 109 | 201 | 165 | 148 | 145 | 129 | 118 | 120 | 96 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-27 Meteorological statistics at the monitoring site**
**Site : Hoa Binh, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 19.2 | 19.6 | 22.3 | 26.0 | 28.3 | 30.7 | 28.5 | 28.6 | 28.4 | 24.8 | 21.8 | 17.1 |
| | max.daily mean | 23.0 | 24.4 | 26.2 | 30.5 | 33.8 | 36.6 | 33.0 | 33.1 | 33.0 | 28.5 | 26.3 | 21.2 |
| | min.daily mean | 16.9 | 16.6 | 19.9 | 23.2 | 25.0 | 26.9 | 25.9 | 25.9 | 25.7 | 22.6 | 19.1 | 14.7 |
| Relative humidity (%) | monthly mean | 84 | 76 | 83 | 81 | 80 | 74 | 85 | 85 | 85 | 85 | 79 | 81 |
| | max.daily mean | 90 | 91 | 90 | 90 | 88 | 80 | 90 | 90 | 89 | 89 | 89 | 90 |
| | min.daily mean | 58 | 60 | 68 | 70 | 65 | 50 | 67 | 67 | 67 | 65 | 67 | 65 |
| Mean wind speed (m/s) | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Most frequent wind direction (bearings) | | N | N | N | NE | SE | SE | SE | N | N | N | N | N |
| Precipitation amount (mm/month) | | 63 | 5 | 23 | 103 | 145 | 93 | 344 | 394 | 186 | 491 | 4 | 43 |
| Sunshine duration (hours/month) | | 57 | 91 | 83 | 121 | 179 | 250 | 486 | 141 | 161 | 100 | 100 | 83 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-28 Meteorological statistics at the monitoring site**
**Site : Cuc Phuong, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tempera-ture (ºC) | monthly mean | 18.0 | 18.1 | 20.5 | 23.8 | 26.0 | 28.5 | 27.3 | 27.6 | 26.4 | 23.6 | 20.8 | 16.2 |
| | max.daily mean | 21.7 | 22.4 | 23.7 | 28.8 | 30.8 | 33.2 | 31.5 | 32.0 | 32.0 | 27.5 | 24.7 | 19.6 |
| | min.daily mean | 15.7 | 15.7 | 18.6 | 21 | 23 | 25.4 | 24.7 | 25.1 | 24.8 | 21.5 | 18.4 | 14.1 |
| Relative humidity (%) | monthly mean | 88 | 83 | 90 | 85 | 85 | 84 | 90 | 88 | 91 | 88 | 80 | 81 |
| | max.daily mean | 97 | 95 | 97 | 97 | 97 | 95 | 98 | 97 | 99 | 97 | 92 | 94 |
| | min.daily mean | 72 | 62 | 77 | 65 | 65 | 65 | 71 | 70 | 70 | 71 | 63 | 63 |
| Mean wind speed (m/s) | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Most frequent wind direction (bearings) | | NNE | SW | NNE | SW | NNE | WSW | NE | WSW | NNE | NE | NE | NE |
| Precipitation amount (mm/month) | | 116 | 13 | 82 | 57 | 92 | 121 | 502 | 160 | 414 | 599 | 38 | 45 |
| Sunshine duration (hours/month) | | 49 | 75 | 34 | 108 | 159 | 132 | 106 | 116 | 142 | 104 | 75 | 70 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-29 Meteorological statistics at the monitoring site**
**Site : DaNang, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 23.1 | 22.6 | 24.9 | 26.9 | 28.6 | 30.3 | 28.6 | 29.7 | 28.9 | 26.7 | 24.9 | 22.2 |
| | max.daily mean | 25.6 | 26.2 | 27 | 30.5 | 30.3 | 32.7 | 31.4 | 32.3 | 30.5 | 28.9 | 27.1 | 26.2 |
| | min.daily mean | 21.4 | 20.5 | 21.9 | 21.9 | 26.2 | 27.9 | 25.6 | 26.1 | 27.3 | 24.9 | 21.2 | 18.3 |
| Relative humidity (%) | monthly mean | 85 | 83 | 85 | 82 | 81 | 74 | 80 | 77 | 79 | 83 | 89 | 84 |
| | max.daily mean | 94 | 91 | 90 | 91 | 90 | 84 | 93 | 93 | 87 | 95 | 96 | 91 |
| | min.daily mean | 73 | 74 | 80 | 72 | 77 | 63 | 72 | 60 | 74 | 69 | 79 | 63 |
| Mean wind speed (m/s) | | 1.0 | 2.0 | 2.0 | 1.0 | 2.0 | 2.0 | 1.0 | 1.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Most frequent wind direction (bearings) | | ENE | E | E | ESE | E | E | E | E | E | E | NW | NW |
| Precipitation amount (mm/month) | | 131 | 60 | 18 | 33 | 76 | 34 | 249 | 179 | 198 | 362 | 777 | 164 |
| Sunshine duration (hours/month) | | 99 | 104 | 180 | 200 | 207 | 286 | 187 | 253 | 244 | 131 | 83 | 53 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-30 Meteorological statistics at the monitoring site**
**Site : Can Tho, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 26.2 | 26.1 | 27.3 | 28.3 | 27.3 | 27.8 | 26.8 | 27.2 | 27.8 | 27.6 | 27.3 | 25.8 |
| | max.daily mean | 30.3 | 31.2 | 32.4 | 33.6 | 32.6 | 32.5 | 31.1 | 31.9 | 32.5 | 32.0 | 31.0 | 29.7 |
| | min.daily mean | 23.7 | 23.1 | 24.3 | 25.2 | 25.2 | 25.6 | 24.8 | 24.9 | 25.4 | 25.2 | 25.2 | 23.4 |
| Relative humidity (%) | monthly mean | 84 | 82 | 80 | 83 | 91 | 88 | 90 | 90 | 88 | 86 | 85 | 83 |
| | max.daily mean | 95 | 95 | 93 | 95 | 98 | 97 | 97 | 97 | 97 | 95 | 94 | 92 |
| | min.daily mean | 68 | 64 | 61 | 63 | 78 | 74 | 77 | 75 | 70 | 70 | 69 | 69 |
| Mean wind speed (m/s) | | 1.5 | 1.5 | 2.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 0.8 | 1.0 | 1.0 | 1.0 |
| Most frequent wind direction (bearings) | | NE | NE | SE | SE | SW | SW | SW | SW | SW | NE | NE | NE |
| Precipitation amount (mm/month) | | -- | 124 | 37 | 123 | 380 | 161 | 218 | 186 | 178 | 340 | 92 | 67 |
| Sunshine duration (hours/month) | | 158 | 173 | 182 | 213 | 114 | 149 | 109 | 158 | 149 | 1456 | 129 | 165 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-31 Meteorological statistics at the monitoring site**
**Site : Ho Chi Minh, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 28.9 | 28.5 | 28.4 | 31.1 | 31.3 | 29.3 | 29.4 | 29.6 | 28.9 | 28.1 | 28.4 | 27.8 |
| | max.daily mean | 30.5 | 30.7 | 30.8 | 33.7 | 33.8 | 33.4 | 33.0 | 32.8 | 31.1 | 30.3 | 31.1 | 29.2 |
| | min.daily mean | 26.8 | 25.1 | 28.5 | 28.8 | 28.4 | 27.1 | 26.6 | 27.2 | 26.8 | 26.7 | 26.2 | 24.8 |
| Relative humidity (%) | monthly mean | 76 | 74 | 73 | 73 | 73 | 73 | 74 | 77 | 79 | 79 | 77 | 70 |
| | max.daily mean | 99 | 99 | 96 | 97 | 98 | 97 | 93 | 98 | 97 | 95 | 93 | 93 |
| | min.daily mean | 51 | 49 | 47 | 48 | 48 | 51 | 55 | 57 | 59 | 59 | 57 | 50 |
| Mean wind speed (m/s) | | 1.0 | 1.1 | 1.0 | 1.2 | 1.2 | 1.1 | 1.0 | 1.0 | 1.2 | 1.1 | 1.0 | 1.2 |
| Most frequent wind direction (bearings) | | SE | SE | SE | SE | SE | SW | W | W | W | W | SW | SE |
| Precipitation amount (mm/month) | | 124 | 224 | 69 | 76 | 264 | 421 | 258 | 229 | 748 | 565 | 393 | 72 |
| Sunshine duration (hours/month) | | 175 | 214 | 189 | 186 | 180 | 175 | 187 | 202 | 182 | 190 | 185 | 200 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Appendix Table 2-32 Meteorological statistics at the monitoring site**
**Site : Yen Bai, Vietnam**

**2017**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 18.6 | 19 | 20.8 | 23.2 | 27 | 28.7 | 27.9 | 28.1 | 28.1 | 24.6 | 21.5 | 16.6 |
| | max.daily mean | 21.7 | 22.4 | 23.7 | 27.1 | 30.9 | 33.0 | 31.8 | 31.7 | 32.0 | 28.0 | 25.4 | 20.3 |
| | min.daily mean | 16.5 | 16.5 | 18.9 | 21.7 | 23.8 | 25.7 | 25.5 | 25.6 | 25.5 | 22.5 | 19.0 | 14.3 |
| Relative humidity (%) | monthly mean | 89 | 82 | 90 | 87 | 83 | 85 | 88 | 89 | 88 | 88 | 84 | 85 |
| | max.daily mean | 100 | 98 | 99 | 99 | 98 | 98 | 99 | 99 | 98 | 99 | 99 | 98 |
| | min.daily mean | 75 | 66 | 78 | 76 | 67 | 71 | 74 | 76 | 72 | 72 | 66 | 66 |
| Mean wind speed (m/s) | | 1.0 | 1.0 | 1.0 | 1.0 | 2.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Most frequent wind direction (bearings) | | ESE | ESE | ESE | SE | NW | E | NW | SE | ESE | NW | NW | NW |
| Precipitation amount (mm/month) | | 137 | 14 | 116 | 80 | 143 | 228 | 569 | 437 | 341 | 260 | 9 | 64 |
| Sunshine duration (hours/month) | | 40 | 60 | 37 | 67 | 166 | 130 | 139 | 136 | 161 | 101 | 100 | 83 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

# Appendix 3

# Corrigenda of Wet Deposition Monitoring Data in 2016

## Corrigenda to Data Report 2016

The wet deposition monitoring data of Vientiane in Lao PDR were revised. The data from August were rejected due to balk samples.
The page and table number correspond to those of Data Report 2016.

**Page 52 (Error)**

**Table 3.34 Monthly results** **Site: Vientiane** **Country: Lao PDR**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2016 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | µmol $L^{-1}$ | | mS $m^{-1}$ | mm $month^{-1}$ or mm $year^{-1}$ |
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| May | 4.09 | 3.95 | 7.92 | 5.90 | 5.80 | 2.40 | 1.58 | 2.60 | 2.55 | 0.700 | 0.525 | 6.28 | 0.800 | 57.3 |
| June | 3.54 | 3.45 | 5.14 | 4.61 | 9.01 | 1.40 | 1.06 | 1.69 | 1.66 | <0.3 | 0.146 | 6.83 | 0.668 | 190 |
| July | 3.64 | 3.56 | 2.18 | 5.68 | 6.66 | 1.38 | 0.713 | 2.55 | 2.52 | <0.3 | 0.102 | 6.99 | 0.766 | 223 |
| Aug | 2.95 | 2.83 | 2.81 | 4.26 | 6.78 | 1.87 | 1.28 | 3.85 | 3.81 | 0.590 | 0.725 | 6.14 | 0.543 | 131 |
| Sept | 5.41 | 5.21 | 5.86 | 4.96 | 5.56 | 3.37 | 3.27 | 2.89 | 2.81 | 2.39 | 0.134 | 6.87 | 0.608 | 112 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Annual | 3.80 | 3.69 | 4.12 | 5.04 | 7.07 | 1.87 | 1.38 | 2.62 | 2.58 | 0.666 | 0.267 | 6.57 | 0.677 | 713 |
| Max. | 6.50 | 6.36 | 7.92 | 6.50 | 10.2 | 4.30 | 5.60 | 5.50 | 5.49 | 2.60 | 1.66 | 7.76 | 2.77 | |
| Min. | 2.30 | 2.23 | 2.10 | 2.25 | 4.60 | 0.460 | <0.3 | 1.10 | 1.07 | <0.3 | 0.0174 | 5.78 | 0.250 | |

**Wet deposition amount**

| 2016 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.234 | 0.226 | 0.454 | 0.338 | 0.332 | 0.138 | 0.0905 | 0.149 | 0.146 | 0.0401 | 0.0301 |
| June | 0.674 | 0.657 | 0.978 | 0.878 | 1.71 | 0.267 | 0.201 | 0.321 | 0.315 | 0.0469 | 0.0278 |
| July | 0.813 | 0.794 | 0.486 | 1.27 | 1.49 | 0.309 | 0.159 | 0.570 | 0.564 | 0.0434 | 0.0228 |
| Aug | 0.385 | 0.370 | 0.367 | 0.556 | 0.885 | 0.244 | 0.167 | 0.503 | 0.497 | 0.0770 | 0.0946 |
| Sept | 0.603 | 0.580 | 0.653 | 0.553 | 0.620 | 0.376 | 0.364 | 0.322 | 0.314 | 0.267 | 0.0149 |
| Oct | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nov | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dec | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Annual** | 2.71 | 2.63 | 2.94 | 3.59 | 5.04 | 1.33 | 0.982 | 1.86 | 1.84 | 0.474 | 0.190 |

**Data completeness**

| 2016 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %PCL |
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sept | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Oct | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Nov | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Dec | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

**(Correction)**

**Table 3.34 Monthly results** **Site: Vientiane** **Country: Lao PDR**

**Precipitation amount-weighted average concentration/ Precipitation amount**

| 2016 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | μmol $L^{-1}$ | | mS $m^{-1}$ | mm $month^{-1}$ or mm $year^{-1}$ |
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0 |
| May | 4.09 | 3.95 | 7.92 | 5.90 | 5.80 | 2.40 | 1.58 | 2.60 | 2.55 | 0.700 | 0.525 | 6.28 | 0.800 | 57.3 |
| June | 3.54 | 3.45 | 5.14 | 4.61 | 9.01 | 1.40 | 1.06 | 1.69 | 1.66 | <0.3 | 0.146 | 6.83 | 0.668 | 190 |
| July | 3.64 | 3.56 | 2.18 | 5.68 | 6.66 | 1.38 | 0.713 | 2.55 | 2.52 | <0.3 | 0.102 | 6.99 | 0.766 | 223 |
| Aug | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Sept | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Oct | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Nov | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Dec | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Annual | 3.66 | 3.56 | 4.07 | 5.28 | 7.50 | 1.52 | 0.958 | 2.21 | 2.18 | <0.3 | 0.171 | 6.77 | 0.730 | 471 |
| Max. | 5.30 | 5.20 | 7.92 | 6.50 | 10.2 | 2.40 | 4.80 | 4.10 | 4.07 | 1.00 | 0.525 | 7.76 | 2.77 | |
| Min. | 2.30 | 2.23 | 2.10 | 2.69 | 5.70 | 0.960 | 0.500 | 1.10 | 1.07 | <0.3 | 0.0174 | 6.28 | 0.250 | |

**Wet deposition amount**

| 2016 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ | mmol $m^{-2}$ |
| Jan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Feb | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mar | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Apr | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| May | 0.234 | 0.226 | 0.454 | 0.338 | 0.332 | 0.138 | 0.0905 | 0.149 | 0.146 | 0.0401 | 0.0301 |
| June | 0.674 | 0.657 | 0.978 | 0.878 | 1.71 | 0.267 | 0.201 | 0.321 | 0.315 | 0.0469 | 0.0278 |
| July | 0.813 | 0.794 | 0.486 | 1.27 | 1.49 | 0.309 | 0.159 | 0.570 | 0.564 | 0.0434 | 0.0228 |
| Aug | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Sept | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Oct | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Nov | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| Dec | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** |
| **Annual** | 1.72 | 1.68 | 1.92 | 2.48 | 3.53 | 0.713 | 0.451 | 1.04 | 1.02 | 0.130 | 0.0807 |

**Data completeness**

| 2016 | $SO_4^{2-}$ | nss-$SO_4^{2-}$ | $NO_3^-$ | $Cl^-$ | $NH_4^+$ | $Na^+$ | $K^+$ | $Ca^{2+}$ | nss-$Ca^{2+}$ | $Mg^{2+}$ | $H^+$ | pH | EC | Precip. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %TP | %PCL |
| Jan | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Feb | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Mar | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| Apr | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| May | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| June | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| July | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Aug | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Sept | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Oct | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Nov | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| Dec | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | ** | 0 |
| **Annual** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **58.2** |

# Appendix 4

# Corrigenda of Meteorological Statistics in 2016

## Corrigenda to Data Report 2016

There was an error in meteorological statistics at Xi'an, China.
The page and table number correspond to those of Data Report 2016.

**Page 293 (Error)**

**Appendix Table 2-1 Meteorological statistics at the monitoring site**
**Site : Xi'an, China**

**2016**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 0.3 | 4.8 | 11.5 | 18.3 | 20.2 | 26.7 | 28.3 | 28.6 | 22.6 | 15.3 | 8.3 | 4.7 |
| | max.daily mean | 5.0 | 10.7 | 17.0 | 24.2 | 25.9 | 32.7 | 33.9 | 33.6 | 27.6 | 19.1 | 12.9 | 9.2 |
| | min.daily mean | -3.3 | -0.1 | 7.2 | 13.3 | 15.4 | 21.6 | 24.1 | 24.6 | 19.0 | 12.6 | 4.8 | 1.0 |
| Relative humidity (%) | monthly mean | 55 | 40 | 45 | 55 | 56 | 56 | 64 | 64 | 66 | 78 | 72 | 62 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | min.daily mean | 14 | 6 | 10 | 16 | 15 | 12 | 24 | 29 | 17 | 28 | 22 | 19 |
| Mean wind speed (m/s) | | 2 | 2.3 | 2.5 | 2.3 | 2.5 | 2.5 | 2.8 | 3.3 | 1.9 | 2.1 | 1.9 | 2.1 |
| Most frequent wind direction (bearings) | | NNE | NE | ENE | ENE | ENE | ENE | ENE | ENE | NE | ENE | ENE | ENE |
| Precipitation amount (mm/month) | | 7 | 2 | 3 | 23 | 34 | 17 | 37 | 31 | 8 | 34 | 19 | 4 |
| Sunshine duration (hours/month) | | 1112 | 206 | 169 | 212 | 201 | 259 | 232 | 291 | 142 | 89 | 119 | 110 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**(Correction)**

**Appendix Table 2-1 Meteorological statistics at the monitoring site**
**Site : Xi'an, China**

**2016**

| Month / Items | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Temperature (ºC) | monthly mean | 0.3 | 4.8 | 11.5 | 18.3 | 20.2 | 26.7 | 28.3 | 28.6 | 22.6 | 15.3 | 8.3 | 4.7 |
| | max.daily mean | 5.0 | 10.7 | 17.0 | 24.2 | 25.9 | 32.7 | 33.9 | 33.6 | 27.6 | 19.1 | 12.9 | 9.2 |
| | min.daily mean | -3.3 | -0.1 | 7.2 | 13.3 | 15.4 | 21.6 | 24.1 | 24.6 | 19.0 | 12.6 | 4.8 | 1.0 |
| Relative humidity (%) | monthly mean | 55 | 40 | 45 | 55 | 56 | 56 | 64 | 64 | 66 | 78 | 72 | 62 |
| | max.daily mean | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | min.daily mean | 14 | 6 | 10 | 16 | 15 | 12 | 24 | 29 | 17 | 28 | 22 | 19 |
| Mean wind speed (m/s) | | 2 | 2.3 | 2.5 | 2.3 | 2.5 | 2.5 | 2.8 | 3.3 | 1.9 | 2.1 | 1.9 | 2.1 |
| Most frequent wind direction (bearings) | | NNE | NE | ENE | ENE | ENE | ENE | ENE | ENE | NE | ENE | ENE | ENE |
| Precipitation amount (mm/month) | | 7 | 2 | 3 | 23 | 34 | 17 | 37 | 31 | 8 | 34 | 19 | 4 |
| Sunshine duration (hours/month) | | 112 | 206 | 169 | 212 | 201 | 259 | 232 | 291 | 142 | 89 | 119 | 110 |
| Solar radiation ($MJ/m^2$/month) | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

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