The Twentieth Session of the Scientific Advisory Committee
on the Acid Deposition Monitoring Network in East Asia
23-24 September 2020, Virtual Meeting

National Monitoring Plans (NMPs) of the Participating Countries

Network Center for EANET

I. Background

1. National Monitoring Plan (NMP) includes the information on monitoring sites, monitoring methods, monitoring frequency etc. in participating countries. This information is crucial for QA/QC activities in the EANET. First summarization of the NMP was prepared in November 2001. The NMP is required to be submitted when the participating countries submit its annual monitoring data to the Network Center (NC). Additionally, when the participating countries make some revision, the revised NMP shall be submitted to the NC as soon as possible. The NMP has been prepared using the template which was provided in the Quality assurance/Quality control (QA/QC) Guidebook for Acid Deposition Monitoring Network in East Asia -2016 (November 2016, Network Center for EANET).

2. The NMP shall be reviewed every year and shall be revised by each participating country, if necessary, because
   i) The EANET activities shall be carried out according to the NMP; and
   ii) Suitability of the completed activities to the NMP needs to be checked every year.
   Even if there is no point of revision, the existing state of the EANET activities can be re-confirmed periodically and this state should be reported to the NC.

II. Preparation of NMP based on the revised template

3. Revising the unfavorable description, the electronic template (https://www.eanet.asia/wp-content/uploads/2019/04/QAQC_Guidebook_Appendix.doc) of the NMP were newly prepared and distributed to the National QA/QC managers as a part of the QA/QC Guidebook 2016 (https://www.eanet.asia/wp-content/uploads/2019/04/QAQC_Guidebook2016.pdf). The NMP needs to be reviewed and/or revised for the implementation of monitoring by the National QA/QC manager in each participating country. The NC has prepared the final draft template of the NMP as the part of the QA/QC Guidebook (Fig.1).

4. The outcome of the STM21 meeting should be reflected to the secondary revision process for the draft with communication between the NC and the National QA/QC managers in the participating countries. After report at the SAC20, the NC prepares the compiled NMPs submitted by the participating countries, and site information will be updated on the EANET website as appropriate. The participating countries implement their EANET monitoring activities in accordance with their own NMP for each year.

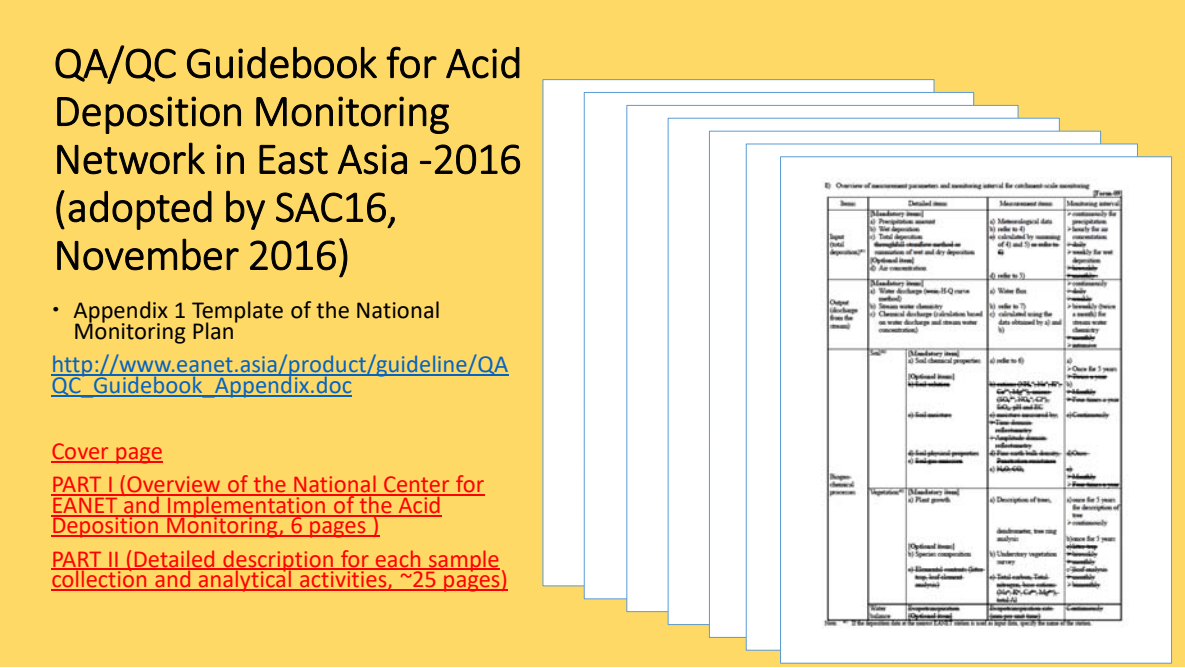

Fig.1 QA/QC Guidebook for EANET -2016

III. Development of NMP in 2020

5. Overview of the NMP in 2020 is shown in Attachment 1, and list of sites and monitoring items are shown in Attachment 2. Maps and trends of number of monitoring sites are summarized in Attachment 3 (Fig.2 to Fig.6). However, the NC has not collected all information from participating countries. Each national QA/QC manager is requested to check the Attachment 1 and 2, and then report to the NC if one finds errors and necessary modifications. The process is very important because the validation of monitoring data 2020 will be done referring the NMP 2020 of each participating country. The summary of the NMP in 2020 will be submitted to the SAC20 meeting held on 23-24 September, 2020.

Attachment 1

Overview of the National Monitoring Plan 2020

Underlined descriptions show new information

Country	Items	Monitoring sites	Classification	Monitoring interval	Measurement Parameters	Remarks (Start time)	Available Data (2019)
<Cambodia>	Wet	Phnom Penh	Urban	weekly	All required items	JAN 2005	
		Siem Reap	Urban	weekly	All required items	OCT 2011	
	Dry	Phnom Penh	Urban	AT(hourly) FP(biweekly)	$PM_{2.5}$, O_3(AUG 2019-) SO_2,HNO_3,HCl,NH_3,PMC	FEB 2010	
	Inland	Sras Srang Lake	Remote	2 times/y	Water quality	2012	
<China>	Wet	Chongqing -Haifu	Urban	daily	All required items + F^-	JAN 2008	✓
		Chongqing -Jinyunshan	Rural	daily	All required items + F^-	APR 1999	✓
		Xi'an -Shizhan	Urban	daily	All required items	APR 1999	✓
		Xi'an-Jiwozi	Remote	daily	All required items	APR 1999	✓
		Xiamen-Hongwen	Urban	daily	All required items + F^-	APR 1999	✓
		Xiamen-Xiaoping	Remote	daily	All required items + F^-	APR 1999	✓
		Zhuhai-Xiangzhou	Urban	daily	All required items + F^-	APR 1999	✓
		Zhuhai-Zhuxiandong	Urban	daily	All required items + F^-	DEC 1999	✓
		Wuzhishan-Wuzhishan	Remote	daily	All required items + F^-	JAN 2019	✓
		Lijang-Lijang	Remote	daily	All required items + F^-	JAN 2019	✓
	Dry	Chongqing -Jinyunshan	Rural	AT(Daily)	SO_2, NO, NO_x, PM_{10}	JAN 2001	✓
		Xiamen-Hongwen	Urban	AT(Daily)	SO_2,NO_2,PM_{10},	JAN 2000	✓
		Zhuhai-Haibin-Park	Urban	AT(Daily)	SO_2,NO_2, PM_{10}	2014	✓
		Wuzhishan-Wuzhishan	Remote	AT(Daily)	SO_2,NO_2, PM_{10}	JAN 2019	✓
		Lijang-Lijang	Remote	AT(Daily)	SO_2,NO_2, PM_{10}	JAN 2019	✓
	Soil & vegetation	Chongqing -Jinyunshan	Rural	Every 5 years	Tree decline, Abnormalities of leaves and branches(Ions		✓
		Xi'an-Jiwozi	Remote	Every 5 years	Tree decline, Abnormalities of leaves and branches(Ions etc.in soil)		✓
		Xiamen-Xiaoping	Remote	Every 5 years	Tree decline, Abnormalities of leaves and branches(Ions etc.in soil)		✓
		Zhuhai-Zhuxiandong	Urban	Every 5 years	Tree decline, Abnormalities of leaves and branches(Ions etc.in soil)		
	Inland	Chongqing-Jinyunshan Lake	Rural	4 times/y	Water quality	2001	✓
		Xi'an-Jiwozi River	Remote	4 times/y	Water quality	2001	✓
		Xiamen-Xiaoping Dam	Remote	4 times/y	Water quality	2001	✓
		Zhuhai-Zhuxiandong Stream	Urban	4 times/y	Water quality	2004	✓
<Indonesia>	Wet	Jakarta	Urban	weekly	All required items	APR 1998	✓
		Serpong	Rural	daily	All required items	APR 1998	✓
		Kototabang	Remote	weekly	All required items	APR 1998	✓
		Bandung	Urban	daily	All required items	JAN 1999	✓
		Maros	Rural	weekly	All required items	JAN 2008	✓
		Jambrana	Rural	event	All required items		✓
		Lombok	Rural	weekly	All required items		✓
	Dry	Serpong	Rural	FP(bi-weekly)	SO_2,HNO_3,HCl,NH_3,PMC	JUL 2001	✓
		~~Kototabang~~	~~Remote~~	~~PS~~	~~SO_2,NO_2~~	~~JAN 2007~~	
		Jakarta	Urban	FP(bi-weekly)	SO_2,HNO_3,HCl,NH_3,PMC	2014	
		Jakarta	Urban	PS	SO2,NO_2	2007	✓
		Jakarta	Urban	AT(hourly)	$PM_{2.5}$	2017	✓
		Bandung	Urban	FP(bi-weekly)	SO_2,HNO_3,HCl,NH_3,PMC	2014	✓
		Bandung	Urban	PS	NO_2	2008	✓
		Bandung	Urban	AT(hourly)	O_3		✓
	Soil and vegetation	Darmaga-Bogor	Rural	once/5 years	Decline, K etc. in leaves & ions in soil	2002	
	Inland	Patenggang Lake	Rural	4 times/y	Water quality	2001	✓
		Gunung Lake	Rural	4 times/y	Water quality	2007	✓

<Japan>	Wet	Rishiri	Remote	daily	All required items	APR 1998	✓
		Ochiishi	Remote	daily	All required items	APR 2003	✓
		~~Tappi(-MAR 2019)~~	~~Remote~~	~~daily~~	~~All required items~~	~~APR 1998~~	
		Niigata-Maki(APR 2019-)	Rural	daily	All required items	APR 2019	✓
		Ogasawara	Remote	daily	All required items	MAY 1999	✓
		Sado-seki	Remote	daily	All required items + HCO_3^-	APR 1999	✓
		Happo	Remote	daily	All required items	APR 1998	✓
		Oki	Remote	daily	All required items	APR 1998	✓
		Yusuhara	Remote	daily	All required items + F^-, NO_2^-, PO_4^{3-}	DEC 1999	✓
		Tsushima(APR 2019-)	Remote	daily	All required items	APR 2019	✓
		Hedo	Remote	daily	All required items	DEC 1999	✓
		Ijira	Rural	weekly	All required items	JUN 1999	✓
		~~Banryu(-MAR 2019)~~	~~Urban~~	~~weekly~~	~~All required items +F-, NO2-~~	~~MAY 1999~~	
		Tokyo	Urban	daily	All required items F^-, NO_2^-	APR 2007	✓
	Dry	Rishiri	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3, HCl,NH_3,PMC	AT FP JAN 2002	✓
		Ochiishi	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	FP: 2008	✓
		~~Tappi(-MAR 2019)~~	~~Remote~~	~~AT(hourly) FP(biweekly)~~	~~SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC~~	~~FP: 2003~~	
		Niigata-Maki(APR 2019-)	Rural	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	AT(PM)&FP: 2020	✓
		Ogasawara	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	FP: 2003	✓
		Sado-seki	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3, HCl,NH_3,PMC	FP: 2003	✓
		Happo	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	FP: 2003	✓
		Oki	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3, HCl,NH_3,PMC	FP: 2002	✓
		Tsushima(APR 2019-)	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	AT(exPM&O_3)&FP: 2020	✓
		Yusuhara	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	FP: 2003	✓
		Hedo	Remote	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	FP: 2003	✓
		Ijira	Rural	AT(hourly) FP(biweekly)	SO_2,NO,NO_{x*},O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	FP: 2003	✓
		~~Banryu(-MAR 2019)~~	~~Urban~~	~~AT(hourly) FP(biweekly)~~	~~SO2,NO,NOx,O3,PM10/2.5 HNO3,HCl,NH3,PMC~~	~~FP: 2003~~	
		Tokyo	Urban	FP(biweekly)	SO_2,HNO_3,NH_3, PMC	FP: 2007	✓
	Soil and vegetation	Ijira	Rural	Once in 5 years	All required items		✓
		Sekido-san, Horyu-san(APR 2019-)	Rural	Once in 5 years	All required items	2019	
		~~Banryu(-MAR 2019)~~	~~Urban~~	~~Once in 5 years~~	~~All required items~~		
	Inland	Ijira Lake	Rural	4 times/y	Water quality	2001	✓
		Futago-ike(APR 2019-)	Remote	4 times/y	Water quality	2019	
		~~Banryu Lake(-MAR 2019)~~	~~Urban~~	~~4 times/y~~	~~Water quality~~	~~2001~~	
	Catchment-scale	Ijira	Rural	1 times/y	Input, output, biochemical process		✓
<Lao PDR>	Wet	Vientiane	Urban	daily	All required items	OCT 2003	
	Dry	Vientiane	Urban	FP(weekly) AT(hourly)	SO_2,HNO_3,HCl,NH_3, PMC NO,NO_2,PM_{10}, $PM_{2.5}$		
	Inland	Nam Houm Lake	Urban	4 times/y	Water quality	SEP 2009	

<Malaysia>	Wet	Petaling Jaya	Urban	weekly	All required items+Organic acid	APR 1998	
		Tanah Rata	Rural	weekly	All required items+Organic acid	JAN 1999	
		Danum Valley	Remote	weekly	All required items+Organic acid	JAN 2006	
		Kuching	Urban	weekly	All required items+Organic acid		
	Dry	Petaling Jaya	Urban	FP(weekly)	SO_2,HNO_3,HCl,NH_3, PMC		
		Tanah Rata	Rural	FP(weekly)	SO_2,HNO_3,HCl,NH_3, PMC	FP: 2001	
		Danum Valley	Remote	FP(biweekly)	SO_2,HNO_3,HCl,NH_3, PMC	FP: 2006	
	Soil and vegetation	Pasoh Reserve Forest	Urban	Every 3-5 years	Tree decline, description tree & ions in soil etc.	2014	
		Universiti Putra Malaysia Bintulu Rehabilitated Forest	Urban	Every 3-5 years	Tree decline, description tree & ions in soil etc.	2009	
	Inland	~~Semenyih Dam~~	~~Urban~~	~~4 times/y~~	~~Water quality~~	~~FEB 2005~~	
		Kuala Tahan	Remote	4 times/y	Water quality		
		Tembaling River	Remote	4 times/y	Water quality	MAR 2007	
<Mongolia>	Wet	Ulaanbaatar	Urban	daily	All required items	AUG 1998	✓
		Terelj	Remote	daily	All required items	SEP 1998	✓
	Dry	Ulaanbaatar	Urban	AT+ FP(biweekly)	SO_2,NO,NO_2,O_3,$PM_{10/2.5}$ HNO_3,HCl,NH_3,PMC	2014	✓
		Terelj	Remote	FP(biweekly)	SO_2,HNO_3,HCl,NH_3,PMC		✓
	Soil and vegetation	Ulaanbaatar(Bogdkhan mountain)	Urban/Ecolog	Every 3-5 years	PH(H_2O),pH(KCl),Exchangeable acidity, Tree decline, description tree	2002	
	Inland	Terelj River	Remote	4-5 times/y	Water quality	2002	✓
<Myanmar>	Wet	Yangon	Urban	weekly	All required items	JUN 2007	✓
	Dry	Yangon	Urban	FP(biweekly), AT	SO_2,HNO_3,HCl,NH_3, PMC, $PM_{2.5}$	NOV 2011 MAR 2018	✓
		Mandalay	Urban	AT	$PM_{2.5}$	MAY 2015	✓
<Philippines>	Wet	Metro Manila	Urban	weekly	All required items	APR 1999	
		Los Banos	Rural	weekly	All required items	APR 1999	
		Mt. St. Tomas	Remote	weekly	All required items	OCT 2006	
	Dry	Metro Manila	Urban	AT+ FP(weekly)	SO_2,NO,NO_2,O_3,$PM_{10/2.5}$ SO_2,HNO_3,HCl,NH_3,PMC	2015	
		Los Banos	Rural	FP(weekly)	SO_2,HNO_3,HCl,NH_3,PMC		
		Mt. St. Tomas	Remote	FP(weekly)	SO_2,HNO_3,HCl,NH_3,PMC	OCT 2006	
	Soil and vegetation	Los Banos	Rural	Once in 3 years	(Tree decline, description tree & ions in soil etc.)	2001	
		UP Quezon- Laguna Land Grant	Rural	Once in 3 years	(Tree decline, description tree & ions in soil etc.)		
		Metro Manila(La Mesa Dam Watershed)	Urban	Once in 3 years	(Tree decline, description tree & ions in soil etc.)	NOV 2007	
		Boneco Long Term Ecological Research Site	Remote	Once in 3 years	(Tree decline, description tree & ions in soil etc.)	APR 2008	
	Inland	Pandin Lake	Rural	4 times/y	Water quality	2004	
		Ambulalakao Lake	Remote	4 times/y	Water quality	2005	
<Republic of Korea>	Wet	Kanghwa	Rural	daily	All required items	MAR 1999	
		Cheju(Kosan)	Remote	daily	All required items	APR 1999	
		Imsil	Rural	daily	All required items	JAN 2001	
	Dry	Kanghwa	Rural	AT + FP(5 days a month)	SO_2, NO_2, O_3, $PM_{10/2.5}$, Ions in $PM_{2.5}$	2001	
		Cheju(Kosan)	Remote	AT + FP(5 days a month)	SO_2, NO_2, O_3, $PM_{10/2.5}$, Ions in $PM_{2.5}$	2001	
		Imsil	Rural	AT + FP(5 days a month)	SO_2, O_3, PM_{10}, Ions in $PM_{2.5}$	2001	
	Soil and vegetation	~~Imsil(Mt.Naejang)~~	~~Rural~~	~~Every 3 years~~	~~(Tree decline, description tree & ions in soil)~~	~~2001~~	

<Russia>	Wet	Mondy	Remote	daily	All required items(+F., NO_2^-, Br^-, HCO_3^-)	MAY 1999	
		Listvyanka	Rural	daily	All required items(+F., NO_2^-, Br^-, HCO_3^-)	JAN 2000	✓
		Primorskaya	Rural	daily	All required items	FEB 2002	✓
		Irkutsk	Urban	daily	All required items(+F., NO_2^-, Br^-, HCO_3^-)	JAN 2001	✓
	Dry	Mondy	Remote	AT(hourly)+ FP(biweekly) +PS	SO_2,HNO_3,HCl,NH_3,PMC O_3	2001 2016	✓
		Listvyanka	Rural	FP(biweekly) +PS	SO_2,HNO_3,HCl,NH_3,PMC O_3, SO_2, No_x	2001	✓
		Primorskaya	Rural	FP(biweekly)	SO_2,HNO_3,HCl,NH_3,PMC	2001	✓
		Irkutsk	Urban	FP(biweekly) + PS	SO_2,HNO_3,HCl,NH_3,PMC O_3	2001 2016	✓
	Soil and vegetation	Mondy	Remote	Once/3-5 years	Tree decline, description tree & ions in soil	2001	
		Listvyanka (Bolshie Koty)	Rural	Once/3-5 years	Tree decline, description tree & ions in soil	2001	
		Irkutsk	Urban	Once/3-5 years	Tree decline, description tree & ions in soil	2001	
		Primorskaya	Rural	Once/3-5 years	Tree decline, description tree & ions in soil	2002	
	Inland	Pereemnaya River	Rural	4 times/y	Water quality	2004	✓
		Komarovka River	Rural	5 times/y	Water quality	2005	✓
<Thailand>	Wet	Bangkok	Urban	daily	All required items+Organic acid, Phosphate	APR 1999	✓
		Samutprakarn	Urban	daily	All required items+Organic acid, Phosphate	JAN 2000	✓
		Patumthani	Rural	daily	All required items+Organic acid, Phosphate	MAR 1999	✓
		Khanchnaburi (Vachiralongkorn Dam)	Remote	daily	All required items+Organic acid, Phosphate	APR 1999	✓
		~~Chiang Mai(Mae Hia)~~	~~Rural~~	~~daily~~	~~All required items+Organic acid, Phosphate~~	~~JAN 2001~~	
		~~Sakaerat(Nakhon Ratchasima)~~	~~Rural~~	~~daily~~	~~All required items+Organic acid, Phosphate~~	~~JAN 2006~~	
	Dry	Bangkok	Urban	AT(hourly,Daily)+ FP(10 days)	NO,NO_2,O_3,PM_{10},$PM_{2.5}$, HNO_3,HCl,NH_3,PMC		✓
		Samutprakarn	Urban	AT	SO_2,NO,NO_2,O_3,PM_{10},$PM_{2.5}$		✓
		~~Patumthani~~	~~Rural~~	~~FP~~	~~SO_2,HNO_3,HCl, NH_3,PMC~~		
		Khanchnaburi (Vachiralongkorn Dam)	Remote	AT+ FP(10 days)	SO_2,NO,NO_2,O_3,PM_{10}, HNO_3,HCl,NH_3,PMC		✓
		~~Chiang Mai(Mae Hia)~~	~~Rural~~	~~FP(10 days)~~	~~SO2,HNO3,HCl, NH3,PMC~~		
		~~Chiang Mai (Chang Phueak)~~	~~Urban~~	~~AT(hourly,Daily)~~	~~SO2,NO,NO2,PM10,PM2.5,O3~~		
		~~Chiang Mai (Si Phum)~~	~~Urban~~	~~AT(hourly,Daily)~~	~~SO2,NO,NO2,PM10,PM2.5,O3~~		
		~~Sakaerat~~	~~Rural~~	~~FP(10 days)~~	~~SO2,HNO3,HCl,NH3,PMC~~	~~JAN 2006~~	
		~~Nai Mueang~~	~~Urban~~	~~AT~~	~~SO2,NO,NO2,O3,PM10~~		
	Soil and vegetation	Vachiralongkorn Dam	Remote	Once/3-5 years	Tree decline, description of trees, pH & ions in soil		
		Vachiralongkorn Puye	Remote	Once/3-5 years	Tree decline, description of trees, pH & ions in soil		
	Inland	Vachiralongkorn Dam	Remote	4 times/y	Water quality		✓

<Viet Nam>	Wet	Hanoi	Urban	weekly	All required items + F^-	AUG 1999	✓
		Hoa Binh	Rural	weekly	All required items + F^-	AUG 1999	✓
		Cuc Phuong	Remote	weekly	All required items + F^-, HCO_3^-	JAN 2010	✓
		Da Nang	Urban	weekly	All required items+HCO_3^-	JAN 2010	✓
		Can Tho	Rural	weekly	All required items + F^-	APR 2014	✓
		Ho Chi Minh	Urban	weekly	All required items + F^-	JAN 2014	✓
		Yen Bai	Rural	weekly	All required items + F^-	MAY 2015	✓
	Dry	Hanoi	Urban	FP(weekly)	SO_2,HNO_3,HCl,NH_3,PMC		✓
		Hoa Binh	Rural	AT(hourly) FP(weekly)	$PM_{2.5}$ SO_2,HNO_3,HCl,NH_3,PMC	FEB 2015	✓
		Can Tho	Rural	FP	SO_2,HNO_3,HCl,NH_3,PMC		✓
		Ho Chi Minh	Urban	FP	SO2,HNO3,HCl,NH3,PMC		✓
		Yen Bai	Rural	FP	SO2,HNO3,HCl,NH3,PMC	MAY 2015	✓
	Soil and vegetation	Cuc Phuong	Rural	Once/3-5 years	Tree decline, description tree & ions in soil		
	Inland	Hoa Binh Reservoir	Rural	4 times/y	Water quality	1999	✓

PMC; Particulate matter components
PS; Passive sampler

Attachment 2

List of sites and monitoring items

Underlined descriptions show new information

Table 1. Wet Deposition Monitoring

Country	Monitoring sites	Classification	Monitoring interval	Mandatory items: pH	EC	SO_4^{2-}	NO_3^-	Cl^-	Na^+	K^+	Ca^{2+}	Mg^{2+}	NH_4^+	Optional items:	Meteorology
<Cambodia>	Phnom Penh	Urban	weekly	x	x	x	x	x	x	x	x	x	x		
	Siem Reap	Urban	weekly	x	x	x	x	x	x	x	x	x	x		
<China>	[Chongqing]														
	Haifu	Urban	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	Jinyunshan	Rural	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	[Xi'an]														
	Shizhan	Urban	daily	x	x	x	x	x	x	x	x	x	x		x
	Jiwozi	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	[Xiamen]														
	Hongwen	Urban	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	Xiaoping	Remote	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	[Zhuhai]														
	Xiang Zhou	Urban	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	Zhuxiandong	Urban	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	[Wuzhishan]														
	Wuzhishan	Remote	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
	[Lijang]														
	Lijang	Remote	daily	x	x	x	x	x	x	x	x	x	x	F^-	x
<Indonesia>	Jakarta	Urban	weekly	x	x	x	x	x	x	x	x	x	x		x
	Serpong	Rural	daily	x	x	x	x	x	x	x	x	x	x		x
	Kototabang	Remote	weekly	x	x	x	x	x	x	x	x	x	x		
	Bandung	Urban	daily	x	x	x	x	x	x	x	x	x	x		
	Maros	Rural	weekly	x	x	x	x	x	x	x	x	x	x		
	Jambrana	Rural	event	x	x	x	x	x	x	x	x	x	x		
	Lombok	Rural	weekly	x	x	x	x	x	x	x	x	x	x		
<Japan>	Rishiri	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	Ochiishi	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	~~Tappi(-MAR 2019)~~	~~Remote~~	~~daily~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~		~~x~~
	Niigata-Maki	Rural													
	(APR 2019-)		daily	x	x	x	x	x	x	x	x	x	x		x
	Ogasawara	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	Sado-seki	Remote	daily	x	x	x	x	x	x	x	x	x	x	HCO_3^-	x
	Happo	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	Oki	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	Yusuhara	Remote	daily	x	x	x	x	x	x	x	x	x	x	F^-, NO_2^-, PO_4^{3-}	x
	Tsushima (APR	Remote													
	2019-)		daily	x	x	x	x	x	x	x	x	x	x		x
	Hedo	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	Ijira	Rural	weekly	x	x	x	x	x	x	x	x	x	x		x
	~~Banryu(-MAR 2019)~~	~~Urban~~	~~weekly~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~F^-, NO_2^-~~	~~x~~
	Tokyo	Urban	daily	x	x	x	x	x	x	x	x	x	x	F^-, NO_2^-	
<Lao PDR>	Vientiane	Urban	daily	x	x	x	x	x	x	x	x	x	x		
<Malaysia>	Petaling Jaya	Urban	weekly	x	x	x	x	x	x	x	x	x	x		x
	Tanah Rata	Rural	weekly	x	x	x	x	x	x	x	x	x	x	Formic,Acetic, and Oxalic acids	x
	Danum Valley	Remote	weekly	x	x	x	x	x	x	x	x	x	x		
	Kuching	Urban	weekly	x	x	x	x	x	x	x	x	x	x		
<Mongolia>	Ulaanbaatar	Urban	daily	x	x	x	x	x	x	x	x	x	x	HCO_3^-	x
	Terelj	Remote	daily	x	x	x	x	x	x	x	x	x	x	HCO_3^-	x
<Myanmar>	Kaha-Aya, Yangon	Urban	weekly	x	x	x	x	x	x	x	x	x	x		x
<Philippines>	Metro Manila	Urban	weekly	x	x	x	x	x	x	x	x	x	x	PO_4^{3-}	x
	Los Banos	Rural	weekly	x	x	x	x	x	x	x	x	x	x	PO_4^{3-}	x
	Mt. Sto. Tomas	Remote	weekly	x	x	x	x	x	x	x	x	x	x		x
<Republic of Korea>	Kanghwa	Rural	daily	x	x	x	x	x	x	x	x	x	x		x
	Cheju(Kosan)	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	Imsil	Rural	daily	x	x	x	x	x	x	x	x	x	x		x
<Russia>	Mondy	Remote	daily	x	x	x	x	x	x	x	x	x	x	F^-, NO_2^-, Br^-, HCO_3^-	x
	Listvyanka	Rural	daily	x	x	x	x	x	x	x	x	x	x	F^-, NO_2^-, Br^-, HCO_3^-	x
	Irkutsk	Urban	daily	x	x	x	x	x	x	x	x	x	x	F^-, NO_2^-, Br^-, HCO_3^-	x
	Primorskaya	Rural	daily	x	x	x	x	x	x	x	x	x	x	F^-, NO_2^-, Br^-, HCO_3^-	x
<Thailand>	Bangkok	Urban	daily	x	x	x	x	x	x	x	x	x	x		x
	Samuyprakan	Urban	daily	x	x	x	x	x	x	x	x	x	x	Formic, Acetic, and Phosphoric acids	x
	Patumthani	Rural	daily	x	x	x	x	x	x	x	x	x	x		x
	Khanchanaburi (Vachralongkorn Dam)	Remote	daily	x	x	x	x	x	x	x	x	x	x		x
	~~Chiang Mai(Mae Hia)~~	~~Rural~~	~~daily~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~		~~x~~
	~~Sakaerat~~	~~Rural~~	~~daily~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~		~~x~~
<Viet Nam>	Hanoi	Urban	weekly	x	x	x	x	x	x	x	x	x	x	F^-	x
	Hoa Binh	Rural	weekly	x	x	x	x	x	x	x	x	x	x	F^-	x
	Cuc Phuong	Remote	weekly	x	x	x	x	x	x	x	x	x	x	HCO_3^-	x
	Da Nang	Urban	weekly	x	x	x	x	x	x	x	x	x	x	HCO_3^-	x
	Can Tho	Rural	weekly	x	x	x	x	x	x	x	x	x	x	F^-	x
	Ho Chi Minh	Urban	weekly	x	x	x	x	x	x	x	x	x	x	F-	
	Yen Bai	Rural	weekly	x	x	x	x	x	x	x	x	x	x	F-	

Table 2. Dry Deposition Monitoring

Country	Monitoring sites	Classification	Monitoring method	Priority of the chemical species												
				SO_2	O_3	NO	NO_2, NOx	PM_{10}	$PM_{2.5}$	HNO_3	HCl	NH_3	SO_4^{2-}	NO_3^-	NH_4^+	Ca^{2+}
<Cambodia>	Phnom Penh	Urban	AT, FP	x	x				x	x	x	x	x	x	x	x
<China>	[Chongqing]															
	Jinyunshan	Rural	AT	x		x	x	x								
	[Xiamen]															
	Hongwen	Urban	AT	x			x	x								
	[Zhuhai]															
	Haibin Park	Urban	AT	x			x	x								
	[Wuzhishan]															
	Wuzhishan	Remote	AT	x			x	x								
	[Lijang]															
	Lijang	Remote	AT	x			x	x								
<Indonesia>	Jakarta	Urban	AT, FP, PS	x			x		x	x	x	x	x	x	x	x
	Serpong(EMC)	Rural	FP, PS	x			x			x	x	x	x	x	x	x
	~~Kototabang~~	~~Remote~~	~~PS~~	~~x~~			~~x~~									
	Bandung	Urban	AT, FP, PS	x	x		x			x	x	x	x	x	x	x
<Japan>	Rishiri	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Ochiishi	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	~~Tappi (MAR 2019)~~	~~Remote~~	~~AT,FP~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
	Niigata-Maki (APR 2019	Rural	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Ogasawara	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Sado-seki	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Happo	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Oki	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Yusuhara	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Tsushima (APR 2019-)	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Hedo	Remote	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Ijira	Rural	AT,FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	~~Banryu (MAR 2019)~~	~~Urban~~	~~AT,FP~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
	Tokyo	Urban	FP	x						x	x	x	x	x	x	x
<Lao PDR>	Vientiane	Urban	AT, FP	x		x	x	x	x	x	x	x	x	x	x	x
<Malaysia>	Petaling Jaya	Urban	FP	x						x	x	x	x	x	x	x
	Tanah Rata	Rural	FP	x						x	x	x	x	x	x	x
	Danum Valley	Remote	FP	x						x	x	x	x	x	x	x
<Mongolia>	Ulaanbaatar	Urban	AT, FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Terelj	Remote	FP	x						x	x	x	x	x	x	x
<Myanmar>	Yangon	Urban	FP	x					x	x	x	x	x	x	x	x
	Mandalay	Urban	AT						x							
<Philippines>	Metro Manila	Urban	AT, FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Los Banos	Rural	FP	x						x	x	x	x	x	x	x
	Mt. Sto. Tomas	Remote	FP	x						x	x	x	x	x	x	x
<Republic of Korea>	Kanghwa	Rural	AT,FP	x	x		x	x	x	x	x	x	x	x	x	x
	Cheju(Kosan)	Remote	AT,FP	x	x		x	x	x	x	x	x	x	x	x	x
	Imsil	Rural	AT,FP	x	x		x	x		x	x	x	x	x	x	x
<Russia>	Mondy	Remote	AT, FP, (PS)	x	x					x	x	x	x	x	x	x
	Listvyanka	Rural	AT, FP, PS	x	x	x	x			x	x	x	x	x	x	x
	Irkutsk	Urban	FP, PS	x	x					x	x	x	x	x	x	x
	Primorskaya	Rural	FP	x						x	x	x	x	x	x	x
<Thailand>	Bangkok	Urban	AT, FP	x	x	x	x	x	x	x	x	x	x	x	x	x
	Samutprakarn	Urban	AT	x	x	x	x	x	x							
	~~Pathumthani~~	~~Rural~~	~~FP~~	~~x~~						~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
	Khanchanaburi	Remote	AT,FP	x	x	x	x	x		x	x	x	x	x	x	x
	(Vachralongkorn Dam)															
	~~Chiang Mai (Mae Hia)~~	~~Rural~~	~~FP~~	~~x~~						~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
	~~Chiang Mai~~	~~Urban~~	~~AT~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~							
	~~(Chang Phueak)~~															
	~~Chiang Mai (Si Phum)~~	~~Urban~~	~~AT~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~							
	~~Sakaerat~~	~~Rural~~	~~FP~~	~~x~~						~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
	~~Nai Mueang~~	~~Rural~~	~~AT~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~								
<Viet Nam>	Hanoi	Urban	FP	x						x	x	x	x	x	x	x
	Hoa Binh	Rural	AT, FP	x					x	x	x	x	x	x	x	x
	Can Tho	Rural	FP	x						x	x	x	x	x	x	x
	Ho Chi Minh	Urban	FP	x						x	x	x	x	x	x	x
	Yen Bai	Rural	FP	x						x	x	x	x	x	x	x

AT: Automatic Monitor, FP: Filterpack, PS: Passive Sampler

Table 3 Soil & Vegetation monitoring

Country/items	Monitoring sites	Classifi-cation	Monitoring interval (Soil)	Monitoring interval (Forest)	Soil											Forest monitoring				
					Mandatory items:							Opetinal items			Voluntary item	mandatory item (3-5years)		Every year	Optional items	
					Moisture contents	pH (H_2O)	pH (KCl)	Ex-base cations (Ca, Mg, K, and Mg)	Ex-Acidity	Effective cation ex-capacity (ECEC)	Carbonate contents	Ex-acid cations (AL, H)	TC	TN	Available Phosphate/ Sulfate	Description of trees	Understory vegetation survey	Observation of tree decline	Photographic record of tree decline	Estimation of decline causes
<China>	[Chongqing]																			
	Jinyunshan	Rural	Once/5years	Once/5years	x	x	x	x	x	x	x	x				x	x	x		
	[Xi'an]																			
	Jiwozi	Remote	Once/5years	Once/5years	x	x	x	x	x	x	x	x	x	x	x	x				
	[Xiamen]																			
	Xiaoping	Remote	Once/5years	Once/5years	x	x	x	x	x	x	x	x	x	x	x	x				
	[Zhuhai]																			
	Zhuxiandong	Urban	Once/5years	Once/5years	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
<Indonesia>	Bogor Research Forest (Darmage Experimental Forest)	Rural	Once/5years	Once/5years		x	x	x		x	x	x	x	x	x	x		x		
<Japan>	Ijira	Rural	Once/5years	Once/5year	x	x	x	x	x	x		x				x	x	x	x	x
	Sekido-san, Horyu-san(APR 2019-)	Rural	Once/6years	Once/6year	x	x	x	x	x	x		x				x	x	x	x	x
	~~Banryu(-MAR 2019)~~	~~Urban~~	~~Once/5years~~	~~Once/5year~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~		~~x~~	~~x~~	~~x~~	~~Phosphate~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~
<Malaysia>	Pasoh Reserve Forest	~~Urban~~ Remote	Once/3-5years		x	x	x	x	x			x	x	x	x	x		x		x
	Universiti Putra Malaysia Bintulu Rehabilitated Forest	~~Urban~~ Remote	Once/3-5years		x	x	x	x	x							x		x		
<Mongolia>	Ulaanbaatar (Bogdkhan mountain)	Urban	Once/3-5years	Once/3-5years	x	x	x	x	x	x	x	x	x	x	Phosphate	x		x		
<Philippines>	Los Banos Laguna (Makiling Forest Reserve)	Rural	Once/3years	Once/3years	x	x	x	x	x	x		x	x	x		x	x	x	x	
	UP Quezon-Laguna Land Grant	Rural	Once/3years	Once/3years	x	x	x	x	x	x		x	x	x		x	x	x	x	
	Metro Manila (La Mesa Dam Watershed)	Urban	Once/3years	Once/3years	x	x	x	x	x	x		x	x	x		x	x	x	x	
	Mt. Sto. Tomas (Boneco Long Term Ecological Research)	Remote	Once/3years	Once/3years	x	x	x	x	x	x		x	x	x		x	x	x	x	
<Republic of Korea>	~~Imsil (Mt.Naejang)~~	~~Rural~~	~~Once/3years~~	~~Once/3years~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~		~~x~~				~~x~~	~~x~~	~~x~~		
<Russia>	Mondy	Remote	Once/5years	Once/3-5years	x	x	x	x	x	x	x	x	x	x		x		x		
	Listvyanka	Rural	Once/5years	Once/3-5years	x	x	x	x	x	x	x	x	x	x		x		x		
	Primorskaya	Rural	Once/5years	Once/3-5years	x	x	x	x	x	x	x	x	x	x		x		x		
	Irkutsk	Urban	Once/5years	Once/3-5years	x	x	x	x	x	x	x	x	x	x		x		x		
<Thailand>	Vachiralongkorn Dam	Remote	Once/3-5years	Once/3-5years	x	x	x	x	x	x						x		x		
	Vachiralongkorn Puye	Remote	Once/3-5years	Once/3-5years	x	x	x	x	x	x						x		x		
<Viet Nam>	Cuc Phuong	Rural	Once/3-5years	Once/3-5years		x	x	x		x								x		

Table 4 Inland Aquatic Environment monitoring

Country	Monitoring sites	Classifi-cation	Monitoring interval	Mondatory items (4times/year)												Mondatory items(Once/year)					Optional								
				W.T	pH	EC	Alkalinity	SO_4^{2-}	NO_3^-	Cl^-	Na^+	K^+	Ca^{2+}	Mg^{2+}	NH_4^+	Transparency	water color	DOC (COD)	NO^{2-}	PO_4^{3-}	T-N	T-P	TOC	diss-Al	Si	Fe	Mn	Chlorophyll a	DO
<Cambodia>	Sras Srang Lake	Remote	2 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x									
<China>	[Chongqing]																												
	Jinyunshan Lake	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x									
	[Xi'an]																												
	Jiwozi River	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x									
	[Xiamen]																												
	Xiaoping Dam	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x									
	[Zhuhai]																												
	Zhuxiandong Stream	Urban	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x									
<Indonesia>	Patenggang Lake	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x														
	Gunung Lake	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x														
<Japan>	Ijira Lake	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					x		x	x	
	Futago-ike (APR 2019-)	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					x		x	x	
	~~Banryu Lake(- MAR 2019)~~	~~Urban~~	~~4 times/year~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~		~~x~~	~~x~~			
<Lao-PDR>	Nam Houm Lake	Urban	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		x											x
<Malaysia>	~~Semenyih Dam~~	~~Urban~~	~~4 times/year~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	~~x~~			~~x~~		~~x~~										
	Kuala Tahan	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x			x		x									
	Tembaling River	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x			x		x									
<Mongolia>	Terelj River	Remote	4-5 times/year	x	x	x	x	x	x	x	x	x	x	x	x				x	x									
<Philippines>	Pandin Lake	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		BOD5	x	x									x
	Ambulalakao River	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x		BOD5	x	x									x
<Russia>	Pereemnaya River	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					x				
	Komarovka River	Rural	5 times/year	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x					x	x			x
<Thailand>	Vachiralongkorn Dam	Remote	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x														
<Viet Nam>	Hoa Binh Reservoir	Rural	4 times/year	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x									

Attachment 3

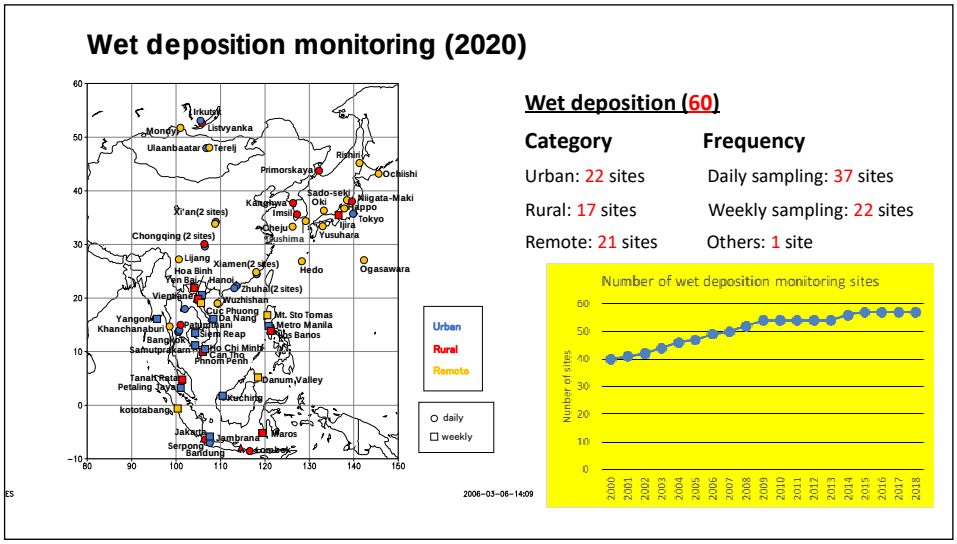

Fig. 2 Wet deposition sites planned in 2020

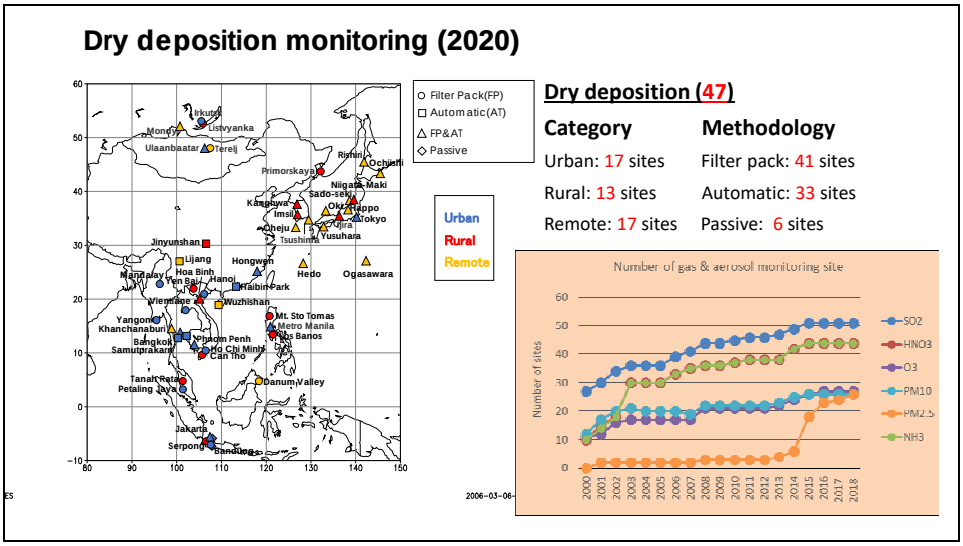

Fig. 3 Dry deposition (Gas and Aerosol) sites planned in 2020

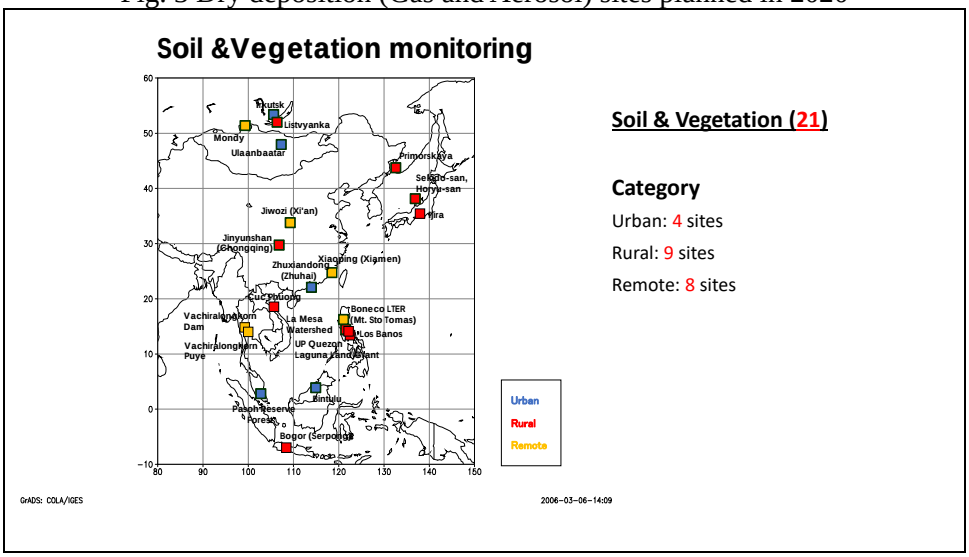

Fig. 4 Soil and vegetation sites

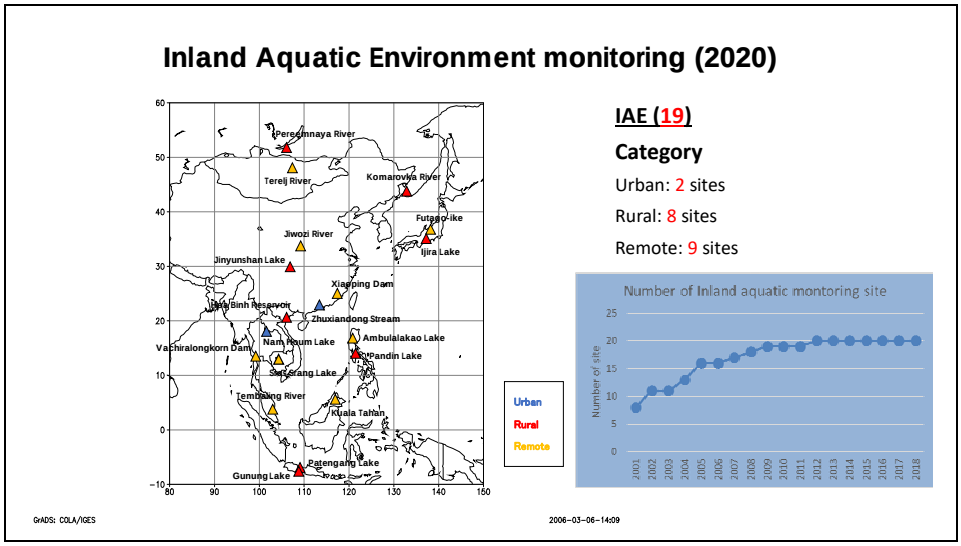

Fig. 5 Inland aquatic environment sites planned in 2020

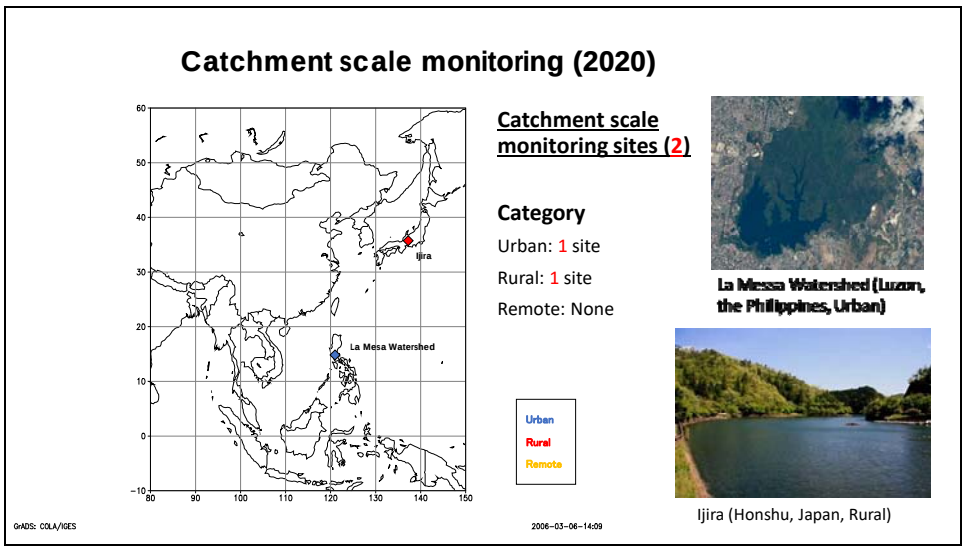

Fig. 6 Catchment scale monitoring sites planned in 2020