

The Nineteenth Senior Technical Managers' Meeting  
on the Acid Deposition Monitoring Network in East Asia  
4-5 September 2018, Niigata, Japan

## MINUTES OF THE MEETING

### I. Introduction

1. The Nineteenth Senior Technical Managers' Meeting (STM19) on the Acid Deposition Monitoring Network in East Asia (EANET) was held in Niigata, Japan, on 4 – 5 September 2018. The Meeting was organized by the Network Center (NC) for the EANET in collaboration with the Secretariat for the EANET.
2. Senior technical officials involved in the EANET monitoring activities from Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand and Viet Nam participated in the Meeting. The Secretariat of the EANET and the representatives of the NC attended the Meeting as well as experts from Japan. The List of Participants is attached as Annex.

### II. The opening of the Meeting (Agenda Item 1)

3. The meeting was opened by Dr. Erdenebat Eldevochir, Deputy Director General of the Asia Center for Air Pollution Research (ACAP).
4. Dr. Kazuhiko Sakamoto, Director General of the ACAP, made introductory remarks. He welcomed the participants and appreciated the support, efforts and cooperation of all participating countries, which have led to the success of the EANET. He emphasized the importance of the data quality and therefore the importance of the STM meeting for this purpose. He also pointed out that interrelationship between air pollution and climate change should be taken into consideration and so-called Short Lived Climate Pollutants (SLCPs) co-benefit co-control policy should be more seriously pursued particularly in Asia. In relation to the discussion on the expansion of the scope of EANET, he emphasized the importance of monitoring PM<sub>2.5</sub> and ozone related to SLCPs. In conclusion, he expressed hope that STM would contribute to monitor PM<sub>2.5</sub> and ozone concentration with high quality by the respective EANET participating countries in the near future.
5. Mr. Tomi Haryadi, Coordinator of Secretariat of the EANET, UN Environment, Asia and Pacific Office made a welcome speech. He expressed his gratitude for the continuous support of the participating countries. He also congratulated the participants for being at the important meeting to highlight results of EANET monitoring activities, a core activity of EANET and make the future plan. Referring to the words from the Regional Director and Representative of the Bangkok

office, he explained uniqueness and advantage of the EANET; since not only policymakers but also scientists and researchers are involved in the EANET framework, the EANET has created a synergy in finding the best possible solution for the region. The EANET also has been continuously strengthening the capacity of participating countries through training, research fellowship, public awareness raising workshop, joint research, and many more, aiming to increase mutual understanding of designated stakeholders on relevant issues. This could only be done by having strong science as the evidence of the shared information. He also introduced recent EANET contributions to various regional and international works such as contribution to the development of the report of the United Nations Environment Assembly, active participation of EANET during 2018 Asia Pacific Clean Air Partnership Joint Forum, and participation at the 2017 Asia Pacific Ministerial Summit on Environment. In particular, the recent collaboration with Global Atmospheric Watch of the World Meteorological Organization will help the EANET to increase its visibility and let more and more people and countries benefit from the network. Finally, he expressed his biggest appreciation to all the participants in making EANET a meaningful network in the region in almost two decades.

### **III. Election of the Officers (Agenda Item 2)**

6. Dr. Chanthya Meas, Ministry of Environment, Cambodia and Ms. Zamuna Binti Zainal, Malaysian Meteorological Department, Malaysia were elected as Co-chairpersons of the Meeting.

### **IV. Adoption of the Agenda (Agenda Item 3)**

7. The Agenda was adopted as proposed (EANET/STM 19/3/1).

### **V. Report on Progress of the Acid Deposition Monitoring Network in East Asia (EANET) since the Eighteenth Senior Technical Managers' Meeting (STM18) (Agenda Item 4)**

8. The Secretariat and the NC reported the EANET activities since the Eighteenth Senior Technical Managers' Meeting (STM18) from scientific and technical viewpoints. The report includes the outcomes of the Seventeenth Session of the Scientific Advisory Committee (SAC17) and the Nineteenth Session of the Intergovernmental Meeting (IG19). The meeting was invited to review and comment on the documents.
9. Major discussion on this agenda included the following:

- i. No comment.

### **VI. Overview of the Preliminary Draft Data Report 2017 (Agenda Item 5)**

10. The NC presented the Preliminary Draft Data Report 2017 (EANET/STM 18/5), which contains wet deposition, dry deposition (air concentration), soil and vegetation, inland aquatic environment and catchment-scale monitoring including a summary of the monitoring data in 2017 and related information submitted by the participating countries. The meeting was invited to discuss and provide comments, as appropriate.

11. Major discussion on this agenda included the following:

(Wet deposition)

- i. No comment

(Dry deposition)

- i. It was informed that the data from the Republic of Korea would be submitted to the NC within this month.
- ii. NC supposed that possible mistakes were found for the air volume data of the filter-pack monitoring. It was informed that Malaysia would revise the mistaken data on air volume after the STM19 meeting.

(Soil and Vegetation)

- i. No comment.

(Inland aquatic environment)

- i. No comment

(Catchment-scale)

- i. The Philippines is preparing to start the regular catchment monitoring in La Mesa Watershed. It was informed that NC would dispatch the technical mission to the Philippines to assist them technically for the regular catchment monitoring there.

12. According to the agreed procedures, the participating countries are requested to submit their data and information to the NC before the deadline, by the end of June every year, after they have been compiled, checked, stored and analyzed. Specifically, the participating countries which have not submitted the 2017 data were requested to submit the data as soon as possible, so as to complete the Data Report 2017 for adoption at the Eighteenth Session of the Scientific Advisory Committee (SAC18).

**VII. Evaluation for the Results of the Inter-laboratory Comparison (ILC) Projects 2017 (Agenda Item 6)**

13. The NC presented the preliminary draft Report on the Inter-laboratory Comparison Projects in 2017 for wet deposition, dry deposition (filter pack method), soil and inland aquatic environment (EANET/STM 19/6). The participating countries were requested to submit the results of the Inter-laboratory Comparison (ILC) Projects by the deadline, the end of February every year. Also, it was notified that the participating countries which have not submitted the 2017 ILC data were requested to submit the data as soon as possible, so as to complete the ILC Project Report 2017 for adoption at the SAC18. The meeting was invited to discuss and provide comments.

14. Major discussion on this agenda included the following:

(Wet deposition)

- i. No comment

(Dry deposition)

- i. No comment

(Soil)

No comment

(Inland Aquatic Environment)

- i. Number of staff and/or year of analysts' experience may affect the analytical precision/accuracy. In general, different persons may have different analytical skills and the experience may improve analytical skills. However, it was pointed out that no clear relationship between the data quality and these conditions was found in the inter-laboratory comparison projects.

**VIII. Consideration of the National Monitoring Plans (NMPs), Current Monitoring Activities for the EANET and Overall Air Concentration Monitoring Status of the Participating Countries (Agenda Item 7)**

15. All of the participating countries made presentations on their NMPs including current capacities and future plan for the improvement of the monitoring activities in their countries, and on the current activities for the EANET monitoring including technical problems encountered throughout the monitoring activities (EANET/STM 19/7). The NC also made a presentation on a summary of the EANET activities. The meeting was invited to review the above issues and to discuss with their experiences and knowledge to solve the problems for their future innovation.

16. Major discussion on this agenda included the following:

i Cambodia

- The location on wet deposition monitoring site in Siem Reap has been moved. However, the rain sampler is still not working well due to the problem of the rain sensor. The NC was requested to support them to restart the monitoring in Siem Reap.
- It was clarified that the automatic station operated in Phnom Penh for EANET is only one station for continuous air quality monitoring in Cambodia. However, additionally, mobile air quality stations are operated several times a year, which is supported by Thailand.
- The inland aquatic monitoring in Sras Srang Lake is carried out twice a year, although the technical manual recommends conducting the survey four times a year for the lake. It was pointed out that there are difficulties in increasing the sampling frequency due to the distance of the sites and the limited number of staff and limited budget.
- There is a need to support Cambodia through training on technical issues. Although individual training has been provided, it is still not enough to cover all technical matters needed in Cambodia.

ii China

- The National Monitoring Plan in 2018 included two new sites, Wuzhishan and Lijiang, for wet and dry deposition monitoring. The new sites will be operated for the EANET officially from January 2019, and the data will be submitted to EANET in 2020.
- The Secretariat appreciated China's decision to add two new monitoring sites as it showed strong support of countries to EANET.
- It was clarified that local staff/researchers have been accumulated enough experience on acid deposition monitoring and the related studies. Moreover, it was informed that the national training program would be held in October/November 2018 for the staff from two new sites.
- It was clarified that meteorological measurements have not been included in two new sites.

iii Indonesia

- The Secretariat suggested Indonesia as well as other participating countries to inform the EANET if they had any plans to conduct national public awareness activities on acid deposition and air pollution so synergy could be made with existing EANET program and support could be provided accordingly.
- It was clarified that no monitoring was done for soil and vegetation in 2017 due to the change in the institutional arrangement for the monitoring activities.
- Air quality stations operated by other agencies are located mainly in urban areas. It was suggested that these air quality station might not be suitable for the EANET monitoring.

## iv Japan

- The automatic monitors for components of PM<sub>2.5</sub>, Kimoto ACSA-14 and Horiba PX-375, are operated in some of the national monitoring sites. It was informed that research papers using the data from the instruments have already been published in an international journal.

## v Lao PDR

- Intensive air quality monitoring by using mobile instrument was conducted in 3 sites in 2017 and in 2 sites in 2018. It was clarified that the air quality monitoring station has been stopped since 2016. As a substitute, Lao PDR has submitted data from mobile monitoring station for the respective site. However, EANET data ideally should be collected from a stationary station, not a mobile station.
- The NC informed that technical mission would be dispatched within the year to discuss and find out a possible solution on the problems.

## vi Malaysia

- It was informed that changes in the institutional arrangement for the EANET in the country, including the names of the National Focal Point and QA/QC manager would be under consideration. The result of the changes will be informed to the EANET after the changes have been finalized.
- It was clarified that one site for inland aquatic environment monitoring has been stopped tentatively.
- The possibility of relocating the sampling point for inland aquatic environment in Danum Valley was presented because of the difficulty in access to the current sampling point. It was suggested that the NC technical mission to be dispatched for technical assistance in locating an alternative sampling point. It was also pointed out that there is one area previously surveyed during a joint research program by NC and MMD and it could be a candidate for new sampling point.

## vii Mongolia

- It was pointed out NO<sub>3</sub><sup>-</sup> concentration is higher in Terelj site than Ulaanbaatar. Although an effect of natural emission sources was suggested, the actual reason has not been clarified.
- It was suggested that the recent change in the consumption amount of coal would change air concentration in Ulaanbaatar.

## viii Myanmar

- It was clarified that two sites, Mandalay and Yangon, have been registered for the EANET as air concentration (for dry deposition) monitoring sites.

- It was clarified that there was no wet deposition data from January to March because of no precipitation.
- It was clarified that hourly data could automatically be recorded in the PM<sub>2.5</sub> monitoring, although the data were collected daily. Therefore, the monitoring interval should be described as “hourly” in the relevant documents.
- The NC dispatched the technical mission in February 2018 to identify the candidate site for the monitoring on inland aquatic and soil/vegetation, although no appropriate site was found finally. It was clarified that possible candidate sites have not been surveyed yet.

#### ix Philippines

- It was clarified that the filter pack system in Metro Manila was transferred adjacent to the air quality monitoring station within the same compound.
- It was clarified that the stream water data in La Mesa Watershed would be submitted for Data Report 2017. However, measurement of stream water flux has not been started yet, since technical assistance from the experts in this study field is necessary. The NC informed that the technical mission would be dispatched to the Philippines within this year or early next year to assist them to promote the regular catchment monitoring in La Mesa Watershed and other EANET relevant activities including PM<sub>2.5</sub> monitoring.
- It was clarified that changes of persons in charge of the EANET activities, including the national QA/QC manager, would be informed to the EANET Secretariat and the NC soon, although many of the staff have been retired or transferred to other works.

#### x Republic of Korea

- It was informed that the meteorological data would be provided by the Korean Meteorological Agency and the data would be disclosed next year.
- It was suggested that the high pH data of wet deposition were caused by building construction and meteorological condition.
- There are some differences of elemental carbon (EC) measurement between different instruments.
- It was pointed out that coal power station was one of the major sources of EC in PM<sub>2.5</sub> in the Seoul Metropolitan area.
- It was informed that speciation analysis of OC was conducted by intensive observation. However, it is difficult to conduct regular monitoring.
- It was suggested that causes of increase in PM<sub>2.5</sub> concentrations at Jeju site were population increase, continental outflow, and a decrease of wind speed.

#### xi Russia

- Increasing and decreasing trends were found for pH in Primorsky and Irkutsk sites, respectively. It was suggested that the increasing trend in Primorsky site could be considered as the regional trend since the similar increasing trends of pH were seen in the

northeastern part of EANET region.

- It was informed that the ozone monitor at Mondy was moved to Irkutsk for calibration. Therefore, only Listvyanka site was equipped with automatic ozone monitor.

#### xii Thailand

- The station list in the presentation is not consistent with Data Report 2017. It was suggested that the list will be revised as appropriate.
- It was clarified that three stations, namely Songka, Chonburi, and Rayong, were the national monitoring sites. It was suggested that the inclusion of these stations to the EANET would be useful for covering overall Thailand.
- It was informed that PM2.5 monitors from two companies were used in Thailand.

#### xiii Viet Nam

- It was clarified that soil and vegetation monitoring in Cuc Phuong would be started within 2019 and the data would hopefully be submitted in 2020.
- Two sites close to Hoa Binh were previously surveyed for soil and vegetation monitoring and these site names were still included in the list of the monitoring sites in Data Report 2017. It was clarified that the current list should be kept until when the data from Cuc Phuong is submitted.
- It was suggested that PM2.5 monitoring at Hoa Binh be added to the national monitoring plan. It was informed that the current condition of the PM2.5 monitor was fine.
- Although the reason of the increase in pH at Hanoi sites is not clear, it was suggested that lowest pH at Yen Bai were attributable to a higher altitude.

#### xiii Network Center

- The National Monitoring Plan from all the participating countries were summarized in the document EANET/STM 19/7/Summary. The national QA/QC managers were requested to review the document whether the respective plans were reflected as appropriate. If necessary, the corrections should be sent to the NC not later than 14 September 2018.
- It was clarified that starting time/year for the EANET monitoring should be described in the data report and the relevant documents, even if some of the monitoring sites were operated as national monitoring sites before their registrations to the EANET.
- It was clarified that wet deposition monitoring in Siem Reap would be started in 2019 and PM2.5 monitoring in Phnom Penh has started in April 2017.

### **IX. Consideration of the Standard Operating Procedure of each participating country (Agenda 8)**

17. From the recently published QA/QC Guidebook, one of the most important issues, Standard Operating Procedure, will be focused and explained with some examples.

18. Major discussion on this agenda included the following:

- i. No comment.

#### **X. Other Issues (Agenda 9)**

19. A resource person made a presentation on the latest progress of air quality monitoring. In addition, the meeting was invited to discuss and consider other issues or general questions to be raised by the participants, the Secretariat and/or the NC, including, but not limited to, progress reports on technical activities of the EANET.

20. The expert from Green Blue Corporation, Japan, made a presentation on air quality monitoring of PM<sub>2.5</sub> and maintenance of PM<sub>2.5</sub> monitor. At the first, principals and systems of PM<sub>2.5</sub> measurement were explained in the presentation. Then, maintenance items and period were suggested since the periodical maintenance would be essential to obtain the accurate monitoring data. In particular, the following maintenance items were picked up: mass calibration, flow rate calibration, pump maintenance, and inlet cleaning. Moreover, the examples of problems on PM<sub>2.5</sub> monitoring were presented using the actual monitoring data. After the presentation, the on-site instruction and discussion were made using the PM<sub>2.5</sub> monitor on the rooftop of ACAP.

21. Major discussion on this agenda included the following:

- i. It was pointed out that condensation of PM<sub>2.5</sub> monitor was caused by improper temperature control in a shelter.
- ii. It was clarified that allowable voltage range would be shown in the product specification.

#### **XI. Closing of the Meeting (Agenda Item 10)**

21 On behalf of the NC, Dr. Erdenebat expressed their deep appreciations to the participants and presenters for their contributions to the meeting. It was pointed out that some countries have been facing difficulties with the monitoring activities. Therefore, the NC is conducting individual training program, research fellowship program to improve capacity building of the EANET participating countries. Moreover, the NC appreciated China's decision to add two new monitoring sites. Other countries were also encouraged to increase their monitoring sites. Finally, the NC expressed their deep appreciation to two Co-chairpersons, Ms. Zamuna Binti Zainal from Malaysia and Dr. Chanthyda Meas from Cambodia, for their excellent management and guidance of the meeting.

- 22 The Dr. Chanthya Meas, Co-chairperson expressed her deep appreciation to all the participants for their active contribution and cooperation. She also thanked Mrs. Zamuna Binti Zainal, the Co-chair for the productive management of the meeting. On behalf of participants, the grateful greetings were expressed to ACAP (the meeting secretariat) for the excellent preparation and arrangement of the STM 19 meeting. Then, the Meeting was officially closed.

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