

The Twentieth Senior Technical Managers' Meeting
on the Acid Deposition Monitoring Network in East Asia
4-5 September 2019, Kuala Lumpur, Malaysia

MINUTES OF THE MEETING

I. Introduction

1. The Twentieth Senior Technical Managers' Meeting (STM20) on the Acid Deposition Monitoring Network in East Asia (EANET) was held in Kuala Lumpur, Malaysia, on 4 – 5 September 2019. 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. The List of Participants is attached as Annex.

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

3. The opening ceremony was organized by the Malaysian Meteorological Department (MET Malaysia) in cooperation with the NC and the Secretariat for the EANET.
4. Mr. Tomi Haryadi, Coordinator, Secretariat for the EANET delivered the Welcome Remark. He congratulated the Participating Countries for the achievements that they have made collectively in bringing positive impacts to the region through EANET. He informed the Meeting that contribution of EANET in improving air quality is fully recognized at a global level. In the report of Progress in the Implementation of Resolution 3/8 on Preventing and Reducing Air Pollution to Improve Air Quality Globally at Fourth United Nations Environment Assembly, the Session recognized EANET's contribution through its monitoring and assessment activities.
5. Dr. Tsuyoshi Ohizumi, Head of Data Management Department, ACAP, as the QA/QC Manager of the EANET, made the introductory remarks. In his remarks, the STM was introduced as an important EANET meeting, because it has shared technical experience, emphasized QA/QC, contributed to high quality data generation and improved national monitoring activities in each country. And, deep appreciation was also delivered to the national center and related organizations of Malaysia for organizing and hosting STM20 with excellent arrangement.
6. Mr. Jailan Bin Simon, Director General of MET Malaysia, delivered Officiating Remarks as the representative of the host country. He informed that it was the second time for them to host the STM meeting in Malaysia and MET Malaysia has been continuously supporting EANET in combating

acid deposition both in the national and regional level. He pointed out that acid deposition was a potentially critical environmental threat in fast-growing economies and highly dependent on fossil fuel consumption. Possibility of negative impacts of acid deposition on ecosystems and human health was mentioned, too. Malaysia is also affected by air pollution from haze caused by open burning of forests and peat bogs. It was informed that the Department of Environment (DOE) has enhanced the calculation of air pollutant index (API) by using PM_{2.5} since 16th August 2018 to strengthen Malaysia's efforts towards environmental sustainability. In addition, importance of interrelationship between air pollution and climate change were addressed. EANET's main activity is monitoring the acid-forming pollutants in East Asia. Therefore, the capital development of monitoring officers and researchers in its member countries is vital. EANET have been conducting various capacity development programmes through trainings, joint research programs, research fellowship and workshops. Finally, he emphasized that this meeting would further assist in increasing the capacity and expertise of local officials as well as expanding network connectivity between officials and experts.

III. Election of the Officers (Agenda Item 2)

7. Mr. Mohd Firdaus Jahaya, MET Malaysia, Malaysia, and Mr. Pichaid Atipakya, Pollution Control Department, Thailand were elected as Co-chairpersons of the Meeting.

IV. Adoption of the Agenda (Agenda Item 3)

8. The Agenda was adopted as proposed (EANET/STM 20/3/1).

V. Report on Progress of the Acid Deposition Monitoring Network in East Asia (EANET) since the Nineteenth Senior Technical Managers' Meeting (STM19) (Agenda Item 4)

9. The Secretariat and the NC reported the EANET activities since the Nineteenth Senior Technical Managers' Meeting (STM19) from scientific and technical viewpoints. The report includes the outcomes of the Eighteenth Session of the Scientific Advisory Committee (SAC18) and the Twentieth Session of the Intergovernmental Meeting (IG20). The meeting was invited to review and comment on the documents.

10. Major discussion on this agenda included the following:

- i. The NC made an additional explanation on the new data download site of the EANET.

VI. Overview of the Preliminary Draft Data Report 2018 (Agenda Item 5)

11. The NC presented the Preliminary Draft Data Report 2018 (EANET/STM 20/5), 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 2018 and related information submitted by the participating countries. The meeting was invited to discuss and provide comments, as appropriate.

12. Major discussion on this agenda included the following:

(Wet deposition)

- i. No comment.

(Dry deposition)

- i. It was clarified that currently dry deposition fluxes were calculated by the NC only for Japan, since hourly meteorological data and land use data were necessary for calculation. If these data are submitted with air concentration data by other countries, the NC will also calculate the fluxes for them.
- ii. It was also suggested that monthly meteorological data are not appropriate to calculate the fluxes because of its large uncertainty.
- iii. Actual situations on the monitoring activities were confirmed for the following countries
 - In Cambodia, although the air pump for the filter-pack (FP) monitoring had a problem, the pump has been fixed just before STM20. Availability of 2018 monitoring data at Phnom Penh are needed to be confirmed.
 - In China, the FP data in 2018 at Hongwen are not available because of an instrumental problem.
 - In Lao PDR, FP monitoring at Vientiane has been stopped because of an instrumental problem. The automatic monitor is now being fixed. Data in 2018 are not available.
 - In Malaysia, the submitted data may need to be checked again. Data will be corrected as appropriate, if necessary.
 - In the Philippines, FP data at Mt. Sto. Tomas were still to be submitted by EMB-CAR to the national center. Also, PM_{2.5} data at Metro Manila site were still for submission.
 - In ROK PM_{2.5} Data at Kanghwa, Cheju will be submitted later.
 - In Russia, the O₃ data at Mondy, Listvyanka, Irkutsk were still under compilation by the national center
 - In Thailand, there are 2 monitoring stations in Kanchanaburi province measuring automatic data. The site name of these stations should be separated.

(Soil and Vegetation)

- i. Indonesia informed that soil monitoring has been conducted in 2019.
- ii. Trees for observation should be marked by numbering to identify the respective trees for the

continuous monitoring. If the location of the observation plot was lost and all trees were newly selected, the plot name should be changed into different one.

(Inland aquatic environment)

- i. Malaysia is planning to replace Semenyih Dam and Tembaling River by new ones, due to development of the watershed and the accessibility, respectively. The NC was requested to dispatch a technical mission to give technical/scientific assistance for selection of the new monitoring sites as appropriate.
- ii. The NC informed that the research data collected at a river in the Danum Valley area from 2008 to 2012 could be shared with MET Malaysia. It was suggested that the study river could be a candidate for replacement of Tembaling River.
- iii. Technical manual for inland aquatic environment monitoring was revised in 2010, which included revision of the sampling frequency for river monitoring and new analytical items. It was clarified that contents of the revised manual were almost same as those of the previous manual. It was also suggested that the current monitoring be continued at the first and then new subjects in the revised manual be tried step by step.

(Catchment-scale)

- i. No comment.

13. The draft Data Report 2018 will be submitted to the Scientific Advisory Committee for adoption at its Nineteenth Session of (SAC19).

VII. Evaluation for the Results of the Inter-laboratory Comparison (ILC) Projects 2018 (Agenda Item 6)

14. The NC presented the preliminary draft Report on the Inter-laboratory Comparison Projects in 2018 for wet deposition, dry deposition (filter pack method), soil and inland aquatic environment (EANET/STM 20/6). 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 2018 ILC data were requested to submit the data as soon as possible, so as to complete the ILC Project Report 2018 for adoption at the SAC18. The meeting was invited to discuss and provide comments.

15. Major discussion on this agenda included the following:

(Wet deposition)

- i. No comment.

(Dry deposition)

- i. No comment.

(Soil)

- i. No comment

(Inland Aquatic Environment)

- i. Some laboratories produced many of the outliers. However, at the moment, no clear reason was identified.

VIII. Consideration of follow-up action on Inter-laboratory Comparison (ILC) project (Agenda Item 7)

16. The NC presented Consideration of follow-up action on Inter-laboratory Comparison (ILC) project (EANET/STM 20/7) in order to improve quality assurance and quality control (QA/QC) of acid deposition monitoring. The meeting was invited to consider effective way of follow-up action and improvement of QA/QC.
17. Major discussion on this agenda included the following:
 - i. Reanalysis of the ILC samples was recommended to check the analytical quality regularly. It was suggested that the main cause of problems should be identified at the first.
 - ii. When the contamination or change in quality of the sample was concerned, use of system and method to keep the sample in cool temperature should be considered during sample transportation and storage.

IX. 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 8)

18. All 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 20/8). 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.
19. Major discussion on this agenda included the following:
 - i. Cambodia
 - Due to the personnel changes in charge of the monitoring activities, it may need a time to

check the actual conditions of the data in 2018. (The actual conditions of the data in 2018 could not provide as we did not have any data in hand because as you know air pump and auto sensor not work since the previous person who is, a SAC member, responsible for this task as he told me. Thus, the next task starting from 1st June 2019 it is on my responsible. I am starting to solve problems next step I am in a SAC member instead of him.)

- It was informed that the instruments for wet deposition monitoring and dry deposition monitoring have just been fixed. The monitoring is expected to be restarted soon.
- However, it was also informed that the ion chromatograph for anion analysis had a problem (leakage of the suppressor). It should be fixed as soon as possible.
- A new ozone monitor has just been installed in August 2019 in cooperation with the ACAP. It was suggested that ozone monitoring be included in the National Monitoring Plan.
- It was clarified that capacity building were planned for enhancement of the local monitoring network.
- It is pointed out that public awareness is important and suggested to share information with the Secretariat.

ii. China

- The increasing rate of R1 and R2 within EANET criteria in recent years would be caused by experienced laboratory operators.
- The possibility of increasing monitoring parameters at the EANET station was discussed.

iii. Indonesia

- Wet deposition monitoring has already started in two new sites. It was clarified that the analytical quality was being checked for the collected data. These sites, namely Lombok and Jembrana, will be added in the National Monitoring Plan 2019.
- The Secretariat congratulated for increase of the monitoring sites. It was suggested that inclusion of the new sites would be reported to SAC properly.

iv. Japan

- It was informed that the deposition monitoring at Tappi and Banryu and ecological impact monitoring at Banryu was stopped in March 2019. Niigata-Maki and Tsushima for deposition monitoring and Sekidozan-Horyuzan and Futagoike for ecological impact monitoring are designated as new EANET sites in April 2019.

v. Lao PDR

- The new PM2.5 monitors will be installed at 3 stations in Vientiane Capital and 1 station in Luangprabang Province. It was clarified that the data collected in these new stations would be submitted to the EANET.
- The locations for wet deposition monitoring and dry deposition monitoring in Vientiane has already changed to other places. It was suggested that the site names should be changed in

such cases.

vi Malaysia

- FP monitoring and PM_{2.5} monitoring are newly planned in the term from 2021 to 2125 in 4 sites, respectively.
- It was clarified that on-site capacity building of the detailed key points for wet/dry deposition monitoring in Malaysia would be necessary.
- Soil and vegetation monitoring at the UPM Bintulu Campus is currently inactive due to personnel changes in charge of the monitoring there. It was suggested that fate of the inactive site be discussed with relevant organizations including Forest Research Institute of Malaysia (FRIM).

vii Mongolia

- It was clarified that training would be necessary for new technical staff of the EANET monitoring.
- Ozone concentrations are high in summer, while other major pollutants, such as SO₂ and NO_x, are high in winter. It was suggested that inversion layer was low and atmospheric condition was very stable in cold winter. Moreover, emissions of the pollutants significantly increased in winter. Therefore, it was suggested that such conditions largely contributed to high SO₂ and NO_x concentrations in winter, while active photochemical reactions contributed to high ozone concentrations in summer.
- It was pointed out that automatic monitoring of gas and PM have not been included in the National Monitoring Plan.

viii Myanmar

- The rain sensor of the wet-only sampler and the pH electrode have been broken at Yangon site. It was suggested that NC could assist them to purchase the spare part, if the budget was secured in their country.
- The Secretariat requested to provide sufficient information regarding the public awareness workshop in 2020.

ix Philippines

- It was informed that Air Quality and Monitoring Section of Environmental Management Bureau is responsible for emission inventory in Philippines.
- The Philippines has started the regular catchment-scale monitoring in La Mesa Watershed. It was suggested that technical assistance of experts in relevant study fields from University of the Philippines Los Baños and from the Manila Observatory would be important for its successful monitoring.
- At Los Baños site, deposition monitoring activities (on wet and dry) did not yet resume due to the long process involved in the purchase of sampling equipment (for replacement of the

worn-out sampler) coupled with the non-availability of local suppliers for such equipment particularly on the wet only sampler.

- PM_{2.5} sampling equipment at Metro Manila site will be transferred to the La Trinidad Strawberry Valley Hotel in La Trinidad, Benguet. The Air Quality Management Section of EMB Central Office staff who were trained on the proper operation and maintenance of the PM_{2.5} equipment will be in-charge of the said transfer and of giving the training to EMB-CAR personnel who will then undertake the PM_{2.5} monitoring activity at the site.

x Republic of Korea

- NH₄⁺ concentrations were high when the PM concentrations were high. It was suggested that NH₄⁺ concentrations should carefully be monitored with its possible counter anions, such as NO₃⁻ and SO₄²⁻.

xi Russia

- Decreasing trends of ozone can be observed in three monitoring sites. It was suggested that the trends reflected decline of the background concentrations.
- It was clarified that ozone concentrations were measured using passive sampling in three sites, since the automatic monitors were broken in these sites.

xii Thailand

- Air concentration monitoring is conducted in the city area about 80 km apart from Vachiralongkorn Dam. It was suggested that the site name be called a different name, since wet deposition monitoring was conducted in the compound of Vachiralongkorn Dam.
- The wet-only sampler used at PCD site was changed from US to Japanese manufacturer. It was recommended that their collection efficiencies be carefully checked, since they used different diameters of the collection funnels.

Xiii Viet Nam

- Monitoring of soil and vegetation is newly planned in Cuc Phuong. It was clarified that the site for inland aquatic environment monitoring could not be found in this remote area.
- Meteorological parameters of wind speed, wind direction, temperature and humidity are measured at the sites in Vietnam. Vietnam Institute of Meteorology, Hydrology and Climate Change (IMHEN) will develop to assess dry and total deposition

xiii Network Center

- The importance of periodical review and revise of NMP was pointed out because the EANET activities shall be carried out according to the NMP.
- The Secretariat informed that URL of QA/QC Guidebook on the EANET website has been changed due to restructuring of the website. The current link is as follows:
https://www.eanet.asia/wp-content/uploads/2019/04/QAQC_Guidebook2016.pdf

- It was informed that dry deposition monitoring at Pathumthani sites would be retained in the plan although monitoring is currently suspended.
- Since the revised version of the “Overview of the National Monitoring Plan (NMP) in 2019 (EANET/STM20/7)” will be sent to the STM20 participants, each national QA/QC manager is expected to check the Attachment 1 and 2, and then need to report to the NC if errors and necessary modifications are included in the part of each country.

X. Report of the survey on training activities (Agenda 9)

20. The NC reported the results of the questionnaire survey on training activities which was implemented in 2019 to know the training needs in participating countries. The meeting was invited to discuss the future activities of the training to enhance the capacity building of the EANET.

21. Major discussion on this agenda included the following:

- i. No comment.

XI. Other Issues (Agenda 10)

22. No additional agenda.

XII. Closing of the Meeting (Agenda Item 10)

23 On behalf of the NC, Dr. Tsuyoshi Ohizumi 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. The NC expressed their deep appreciation to two Co-chairpersons, Mr. Mohd Firdaus Jahaya, Malaysia, and Mr. Pichaid Atipakya, Thailand, for their excellent management and guidance of the meeting, and also to MET Malaysia for organizing and hosting STM20 with excellent arrangement.

24 Mr. Pichaid Atipakya, Co-chairperson expressed his deep appreciation to all the participants for their active contribution and cooperation. He also thanked Mr. Mohd Firdaus Jahaya, the Co-chair for the productive management of the meeting. On behalf of participants, the grateful greetings were expressed to ACAP (as the meeting secretariat) for the excellent preparation and arrangement of the STM 20 meeting. Then, the Meeting was officially closed.

Participating Countries

Annex

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