

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

Progress Report on the activities of the Task Force on Monitoring for Dry Deposition

Chair and Secretariat of the Task Force on Monitoring for Dry Deposition

I. Background

1. The Task Force on Dry Deposition Monitoring for the Acid Deposition Monitoring Network in East Asia (EANET) was first established in 1998 by the First Session of the Interim Scientific Advisory Group (ISAG1) of EANET to carry out the following functions:
 - i) to prepare a draft QA/QC program for the first priority chemicals and particles during the preparatory phase, for consideration and adoption by ISAG, and
 - ii) to develop a strategy paper for future direction of dry deposition monitoring of EANET, for consideration of ISAG.

2. The Task Force subsequently produced the 4 important documents as follows. These documents describe the future direction on air concentration monitoring methodologies and dry deposition flux estimation.
 - *Strategy Paper for Future Direction of Dry Deposition Monitoring of EANET*, endorsed by ISAG in September 1999
 - *Strategy Paper for Future Direction of Dry Deposition Monitoring of EANET (Second Edition)* endorsed by the Fifth Session of the Scientific Advisory Committee (SAC5) of EANET in September 2005
 - *Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2011-2015)* endorsed by the Tenth Session of the Scientific Advisory Committee (SAC10) of EANET in October 2010
 - *Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2016-2020)* endorsed by the Fifteenth Session of the Scientific Advisory Committee (SAC15) of EANET in October 2015

3. The Task Force previously hold 4 meetings. The major issues of the previous meetings are summarized as follows.
 - i) 1st meeting held in Hanoi, Vietnam, October 2008
 - Consideration of the new Terms of Reference (TOR) for the Task Force
 - Change the name of the Task Force to “Task Force on Monitoring for Dry Deposition”

- ii) 2nd meeting held in Tsukuba, Japan, October 2009
 - Consideration on the first draft of the Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2011-2015)
 - iii) 3rd meeting held in Niigata, Japan, July 2010
 - Consideration on the final draft of the Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2011-2015) that was adopted by the Tenth Session Scientific Advisory Committee (SAC10)
 - iv) 4th meeting held in Niigata, Japan, August 2015
 - Review on the current status of dry deposition flux estimation and air concentration monitoring in EANET
 - Consideration on the draft of the Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2016-2020) that was adopted by the Fifteenth Session of the Scientific Advisory Committee (SAC15)
 - Consideration on the revisions of TOR of the Task Force
 - Proposal on the establishment of Expert Groups which will consider revision of the Technical Manual on Dry Deposition Flux Estimation in East Asia and the Technical Manual for Air Concentration Monitoring in East Asia.
4. When the Chair of the Task Force and Expert Group resigned a SAC member in 2018, the alternative Chair was elected among the SAC members. The Eighteenth Session of the Scientific Advisory Committee (SAC18) approved Prof. Fan Meng, Chinese Research Academy of Environmental Sciences, China was nominated the Chair of the Task Force on Monitoring for Dry Deposition (TFMDD), and Dr. Patcharawadee Suwanathada, Pollution Control Department, Thailand was nominated the Chair of the Expert Group on revision of the Technical Manuals for Dry Deposition Flux Estimation and Air Concentration Monitoring (EGRTM).

II. Activities

II-1. Terms of reference (TOR) and the membership of the Task Force (TFMDD)

5. The TFMDD will conduct activities under the following revised Terms of Reference (TOR) of the Task Force adopted by SAC15 in 2015. The TFMDD is promoting activities according to the TOR.
- i) To further develop and elaborate the strategy for dry deposition evaluation in the region
 - ii) To discuss on future direction of dry deposition evaluation and provide guidance on relevant activities based on the strategy
 - iii) To improve the Technical Manuals for Air Concentration Monitoring and Dry Deposition Flux Estimation
6. The current member was listed below. Besides the Chair, one member from each EANET

participating country has been nominated as the TFMDD member. Because some members of the Task Force in EANET participant countries are inactive, the member list has been renewed in consultation with the National Focal Point.

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| 1. | Prof. Fan Meng
(Chair) | Chinese Research Academy of Environmental Sciences,
China |
| 2. | Ms. Loch Sokleang | Ministry of Environment, Cambodia |
| 3. | Dr. Li Jianjun | China National Environmental Monitoring Center,
China |
| 4. | Ms. Rina Aprishanty | Environment Management Center, Ministry of
Environment, Forest and Climate Change, Indonesia |
| 5. | Dr. Shiro Hatakeyama | Asia Center for Air Pollution Research, Japan |
| 6. | Mr. Thilakone Sisouphanh | Natural resource and environment Research institute,
Ministry of Natural Resources and Environment, Lao
PDR |
| 7. | Dr. Ahmad Fairudz Jamaluddin | Malaysian Meteorological Department (MMD),
Malaysia |
| 8. | Ms. Bold Altantuya | Central Laboratory for Environment and Metrology
(CLEM), Mongolia |
| 9. | Dr. Kyu Kyu Sein | Department of Meteorology and Hydrology, Ministry of
Transport and Communications, Myanmar |
| 10. | Engr. Jundy del Socorro | Environmental Management Bureau, Department of
Environment and Natural Resources, Philippines |
| 11. | Prof. Taehyoung Lee | Hankuk University of Foreign Studies, Republic of
Korea |
| 12. | Dr. Sergey A. Gromov | Institute of Global Climate and Ecology of Roshydromet
and Russian Academy of Sciences, Russia |
| 13. | Dr. Patcharawadee Suwanathada | Pollution Control Department, Ministry of Natural
Resources and Environment, Thailand |
| 14. | Dr. Le Ngoc Cau | Vietnam Institute of Meteorology, Hydrology and
Climate Change, Ministry of Natural Resources and
Environment, Vietnam |

II-2. Terms of reference (TOR) and membership of the Expert Group on revision of the Technical Manuals for Dry Deposition Flux Estimation and Air Concentration Monitoring (EGRTM)

7. According to the decision by SAC15, the TFMDD considered the TOR and the membership of the Expert Group on revision of the Technical Manuals for Dry Deposition Flux Estimation and Air Concentration Monitoring (EGRTM) as follows. The TOR and the membership of the EGRTM was approved by the Sixteenth Session of the Scientific Advisory Committee (SAC16).

(TOR of the EGRTM)

- i) To review the current Technical Manual on Dry Deposition Flux Estimation in East Asia and Technical Manual for Air Concentration Monitoring in East Asia
- ii) Identification of elaborated methods of dry deposition flux estimation and air concentration monitoring methods in East Asia
- iii) Preparation of the revised version of Technical Manual on Dry Deposition Flux Estimation in East Asia and Technical Manual for Air Concentration Monitoring in East Asia

(Membership of the EGRTM)

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| 1. | Dr. Patcharawadee Suwanathada
(Chair) | Director, Ambient Air Quality Division, Air Quality and Noise Management Bureau, Pollution Control Department, Thailand |
| 2. | Prof. Min Hu | Professor, College of Environmental Sciences, Peking University, China |
| 3. | Prof. Kazuhide Matsuda | Professor, Department of Environmental Science on Biosphere, Graduate School of Agriculture, Tokyo University of Agriculture and Technology, Japan |
| 4. | TBD | Environmental Management Bureau, Philippines |
| 5. | Prof. Cho Seog-Yeon | Professor, Department of Environmental Engineering, Inha University, Republic of Korea |
| 6. | Dr. Le Ngoc Cau | Director, Center for Environmental Research, Vietnam Institute of Meteorology, Hydrology, and Environment, Vietnam |

II-3. Results of the 1st meeting of EGRTM

8. The First meeting of the EGRTM (EGRTM1) was held at the virtual meeting on 23 April 2020. The minutes of EGRTM1 is attached as **Annex 1**. In the EGRTM1, the current Technical Manual for Air Concentration Monitoring in East Asia and the Technical Manual on Dry Deposition Flux Estimation in East Asia was reviewed. The Network Center (NC) explained revision points and comments for each Chapter and then the EGRTM members gave comments and suggestions. The major discussions are shown as follows.

(Technical Manual for Air Concentration Monitoring in East Asia)

- The contents of technical manuals should follow the Guidelines for Acid Deposition Monitoring in East Asia, not the Strategy Paper. The Guidelines need to update at first, and then the technical manual should be revised following the Guidelines.
- It was pointed out that there is no particle size classifier in EANET monitoring and only TSP monitoring is conducted. Chemical composition measurement of PM₁₀ and PM_{2.5} monitoring is the future direction. The difference of the particle size in filter pack method could be put in the footnote.
- The measurement of the dry deposition is recommended to conduct at the same site of wet deposition monitoring site as described in the Guideline.
- At the beginning of each section of automatic monitoring, some general descriptions of monitoring technology need to be shown. Then, specific monitoring techniques should be described. The newly applied methods could be also added in the additional section or appendix.
- One of the advantages of the manual method is lower concentration can be determined than the automatic method. The Data Quality Objectives (DQOs) of air pollutant monitoring need to be shown for both the manual method and the automatic method respectively.
- The goal of DQO and data completeness should be clear. How to achieve the goal of DQO can be suggested in this chapter. The DQO depends on the monitoring purpose. The objective of EANET monitoring is to estimate the long-term trends.

(Technical Manual on Dry Deposition Flux Estimation in East Asia)

- A suitable method to estimate dry deposition flux in EANET countries should be considered. The dry deposition flux estimation using the weather forecast model does not need the meteorological parameters which are not measured in many EANET monitoring stations. If we choose another model, EANET should include the monitoring of the meteorological parameters.
- There are three options to update the current methods, namely, using the current resistance model, updating to the new resistance model, and using the chemical transport model. We should choose the most feasible method considering the situation in EANET countries. It is also recommended to update the new resistance model for estimation of the dry deposition flux of particulate components and gases.
- The US uses the combination method of the monitoring and the chemical transport model (CMAQ). This estimation could also be added in this manual. If there is difficulty to use the model, the updated resistance model based on the MS Excel file can be provided by the EGRM members. Distribution of the excel file would be better because the preparation of the emission inventory etc. is difficult when we use the CMAQ model.

9. The NC explained the future plan of activity. The NC will prepare the 2nd revisions of the Technical Manuals and circulate them to the EGRM members for comments by early 2021. The final draft of the Technical Manuals will be prepared according to the discussion in the 2nd EGRM meeting

to be held in April/May 2021 and the 3rd EGRTM meeting to be held in April/May 2022.

II-4. Results of the 5th meeting of TFMDD

10. The Fifth meeting of the TFMDD (TFMDD5) was held at the virtual meeting on 7 July 2020. The minutes of TFMDD5 is attached as **Annex 2**. In the TFMDD5, the activities of monitoring for dry deposition in EANET from 2015 to 2019 was reviewed. The NC explained the draft Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2021-2025), and then the TFMDD members gave comments and suggestions. The major discussions on the draft Strategy Paper are shown as follows.

- It was pointed out that the Strategy Paper should follow the TOR of the Task Force. If there is no change of TOR, we should keep consistent with the titles of documents. It was recommended to keep the dry deposition in the title because the “dry deposition” is a keyword for this Task Force.
- It was suggested that the deliverables of activities in the Strategy Paper be reviewed by the external group. The additional project-based budget would be applied to implement a part of the activities shown in the Strategy Paper.
- In the current Technical Manual on Dry Deposition Flux Estimation, the NC recommended to use the seasonal category of summer for Southeast Asian countries. The dry deposition estimation was based on four seasons in the current Technical Manual. The seasonal category is not suitable for the tropical region, which should be modified in the revised Technical Manual.

11. The NC explained the main outcomes of the 1st meeting of EGRTM and the purpose and background of the revision of the Guidelines for Acid Deposition Monitoring in East Asia. As a result of the discussion in the 1st meeting of EGRTM, the NC considered to discuss the necessity of the revision of the Guidelines. The NC explained the key points of the Guidelines to be revised. The major discussions on the revision of the Guidelines are shown as follows. After the discussions, the TFMDD agreed to propose the recommendation of the revision of the Guidelines to the 20th Session of Scientific Advisory Committee (SAC20).

- It was pointed out that EANET needs to focus on regional air pollution monitoring because urban air pollution is different issue country by country. The Guidelines is not necessary to be a political description. The introduction should not discuss too much about the emission change in detail, just show briefly technical matters such as how to establish and how to operate the monitoring station. It was noted that the issues of the emission changes should be described carefully because it gives some controversy.

III. Schedule in 2020/2021

12. The work plan of the TFMDD and EGRTM in 2020/2021 is shown as follows.

<u>23 April 2020</u>	<u>1st meeting of the EGRTM</u> to review the 1st revisions of the Technical Manuals
<u>7 July 2020</u>	<u>5th meeting of the TFMDD</u> to discuss the draft Strategy paper (2021-2025) and the outcomes of the 1st meeting of the Expert Group on Expert Group on Revision Technical Manual
<u>August - September 2020</u>	Modify the draft Strategy paper (2021-2025) and circulate the Task Force member to finalize the draft
<u>23-24 September 2020</u>	<u>20th Session of SAC</u> to report the outcomes of the 5th meeting of the Task Force Submit the draft Strategy paper (2021-2025) for adoption
<u>Early 2021</u>	Circulation of the 2nd revisions of the Technical Manuals and ask for comments.
<u>April/May 2021</u>	<u>2nd meeting of the EGRTM</u> to review the 3rd revisions of the Technical Manuals and discuss on elaborated methods of dry deposition flux estimation and air concentration monitoring methods in East Asia
<u>July/August 2021</u>	Report of the activities of the Task Force based on the Strategy paper (2021-2025) by e-mail circulation
<u>September/October 2021</u>	<u>21th Session of SAC</u> to report the activities of the Task Force

IV. Recommendations to SAC20

13. The Twenties Session of the Scientific Advisory Committee of the EANET (SAC20) is invited to consider the report on the activities of the Task Force on Monitoring for Dry Deposition of the EANET by the Chair of the Task Force and the following decisions.

- To endorse the Strategy Paper on Future Direction of Monitoring for Dry Deposition of EANET (2021-2025), attached as **Annex 3**.
- To approve the revision of the Guidelines for Acid Deposition Monitoring in East Asia and review the revised draft by the next Session of SAC.