

The Sixth Session of the Scientific Advisory Committee
on Acid Deposition Monitoring Network in East Asia
25-27 October 2006, Pathumthani, Thailand

REPORT OF THE SESSION

(final)

I. Introduction

1. The Sixth Session of the Scientific Advisory Committee (hereinafter referred to as SAC) on the Acid Deposition Monitoring Network in East Asia (EANET) was held in Pathumthani, Thailand on 25–27 October 2006. The Session was organized by the Secretariat for EANET and the Network Center for EANET (NC).
2. The Session was attended by the members of SAC and their alternates nominated by the following participating countries: Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand and Viet Nam.
3. The Session was also attended by the expert from the Chemical Coordinating Center of the Co-operative Programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe (EMEP-CCC) under the UN ECE Convention on Long-Range Transboundary Air Pollution (CLRTAP).
4. The list of participants is attached as Annex 1.

II. Opening of the Session (Agenda Item 1)

5. The Session was opened with welcome address by Mr. Mylvakanam Iyngararasan, Acting Coordinator of the Secretariat for EANET.

III. Election of the officers (Agenda Item 2)

6. The Secretariat reminded the Session on the results of the discussion on extension of the term for SAC bureau members at the Fourth Session of SAC (SAC4) and the Sixth Session of the Intergovernmental Meeting (IG6) in 2004. It was proposed to follow the recommendation of the IG6 to make re-election of SAC bureau members for next term if the Session of SAC may wish to do so.
7. Prof. Muhamad Bin Awang, Malaysia was elected as Chairperson. Prof. Cho Seog-Yeon, Republic of Korea and Dr. Pojanie Khummongkol, Thailand were elected as Vice-Chairpersons and Ms. Bulgan Tumendemberel, Mongolia as Rapporteur of the Session.

IV. Adoption of the agenda (Agenda Item 3)

8. Upon the clarification on necessity to endorse of the Periodic Report the title of the Agenda item 5 was changed into "Consideration of the Periodic Report on the State of the Acid Deposition in East Asia (PRSAD)". It was also clarified that the Working Group for Future Development (WGFD) will have no session before IG8 and SAC might have comments and suggestions on MTP without any decision on endorsement of MTP. The Session adopted the agenda with correspondent modification of the documents EANET/SAC 6/3/1 and EANET/SAC 6/3/2.

V. Review of the EANET activities since SAC5/IG7 from scientific and technical viewpoints and the financial report in 2005 (Agenda Item 4)

9. The Secretariat and NC presented a brief report describing the scientific and technical activities of EANET since SAC5 (September 2005) and IG7 (November 2005) held in Niigata, Japan including the financial report in 2005. The progress and important achievements of EANET were observed including capacity building activities, joint research projects with the selected participating countries and public awareness activities. Some clarifications and suggestions were made as follows:

- It was announced that Ms. Leong Chow Peng, Malaysia was selected as the final candidate for new Deputy Director General of Acid Deposition and Oxidant Research Center (ADORC) in charge of the Network Center.
- It was clarified that the results of the fellowship research studies in NC had not been published yet in the scientific journal but preparation of the manuscript for publication was highly recommended.
- The lists of authors and contributors were suggested to be clearly credited in the respective reports of EANET for possible contacts of the readers.

VI. Consideration of the Periodic Report on the State of the Acid Deposition in East Asia (PRSAD) (Agenda Item 5)

10. The progress on development of the Periodic Report on the State of Acid Deposition in East Asia (PRSAD) since SAC5 was presented by NC together with information on completion of Chapters and National Assessments. The preparation process was reminded with overview of outcomes of relevant meetings of the Drafting Committee (DC) for PRSAD. The Session agreed on the following suggestions on further process as follows:

- PRSAD should be finalized by Lead Authors based on the comments from SAC6, National Focal Points (NFPs) and external reviewers prior to submission to IG8 accordingly.
- The National Assessments are expected to be approved by the respective NFPs of participating countries which had been prepared by scientists and the respective governmental experts in consultation with NFPs.
- National Assessments should be printed as the second volume of PRSAD and finalized later than Part I (volume one) with endorsement by DC on behalf of SAC.

11. Lead Authors and NC made presentations on the contents of each chapter of Part I – Regional Assessment. Comments and suggestions are prepared in the Annex II to be used for finalization of Part I. This Annex II will be sent to SAC members, NFPs and all relevant persons within one week after SAC6 together with Report of the Session. The other major suggestions were agreed as follows:

- Some participants expressed intentions to include information on air quality standard of their countries in the I-Appendix (Overview of national/regional criteria, standards or guidelines, National Air Quality Standard of Participating Countries of EANET), it was announced that they should submit this information to the Lead Author of the Appendix and NC as soon as possible.
- Executive Summary prepared by DC will be circulated among SAC members for comment prior to submission to IG8.

VII. Review of the Data Report on Acid Deposition Monitoring in 2005 (Agenda Item 6)

12. NC presented a draft Data Report on the Acid Deposition in the East Asian Region 2005. Major explanations and discussions on this document included the following:

- i. Wet deposition monitoring data
 - It was pointed out that detailed procedures on the weekly sampling, such as the use of refrigerator and addition of biocide, should be clarified by countries as one of information for experts.
- ii. Dry deposition (air concentration) monitoring data
 - NC presented results of air concentration monitoring for 2005 with a preliminary analysis of seasonal variations and ion balances of aerosols. The information will be used for the preparation of the next Periodic Report.
 - Tables 4.21-4.23 with additional calculation of Medians for data of air concentrations at some sites in Japan will be excluded from the Data Report.
- iii. Soil and vegetation monitoring data
 - It was clarified that soil type of the site in Mongolia would be identified soon, while “Chernozems” was described with a bracket tentatively as a possible soil type in the Data Report 2005.
- iv. Inland aquatic environment monitoring data
 - It was suggested that data to show temporal changes would be included in the future Data Reports.

VIII. Review of QA/QC activities in the participating countries (Agenda Item 7)

13. NC presented draft reports on Inter-laboratory Comparison Projects on wet deposition, dry deposition, soil, and inland aquatic environment in 2005. Major discussions on this topic are as follows:

i. Project on wet deposition

- Low concentration caused increasing the number of flagged data on potassium analysis. It was clarified that the sample concentrations of components were decided considering the actual rainwater composition. However, potassium concentration may increase sometime by the effects of biomass burning. It was suggested that the composition of samples should be decided taking various cases into account.

ii. Project on dry deposition

- The first attempt for dry deposition (air concentration by filter pack method) monitoring was conducted in 2005 with participation of 19 laboratories from 9 countries. Around 75% of analytical results were within the allowable range for data quality criteria of EANET.
- It was suggested that the calibration standards should be prepared according to the sample concentrations to be analyzed.

iii. Project on soil

- The inter-laboratories precisions were improved for most parameters, however, some systematic errors still occurred in a few laboratories.
- It was pointed out that concentrations of the samples might affect the inter-laboratories precisions.

iv. Project on inland aquatic environment

- Concentrations of the samples may affect accuracies of NH_4^+ analysis, although relationships between the concentrations and flagged data/RSD were not clear for most parameters. It was pointed out that appropriate methods on data analysis should be considered to reflect the actual situation for improvement of data accuracy.

IX. Consideration of updated national monitoring plans of the participating countries (Agenda Item 8)

14. NC presented an overview of national monitoring plans in the participating countries based on updated/confirmed plans after SAC5 and the information of presentation at STM7. Information on new sites of Myanmar, Thailand, and Philippines on wet/dry deposition and three monitoring sites on inland aquatic environment were included. NC distributed CD with the latest information on the national monitoring plans of the participating countries. Major comments and discussions on the presented overview included the following:

- It was pointed out that not only revision of the national monitoring plan but also continuation of the current plan should be clearly recorded in the document.
- It was confirmed that China would start the filter-pack-method monitoring in Xiamen this year.

15. Some participating countries informed on changing of their national monitoring plans of EANET activities and made presentation on current monitoring activities. Major comments and discussions on presented revisions included the following:

- i. Indonesia
 - It was pointed out that the sampling period on wet deposition monitoring should be clearly recorded to avoid possible confusions.
- ii. Mongolia
 - It was informed that the filter-pack method in Terej station, Mongolia, has been carried out based on biweekly sampling since the beginning of the year 2006.
- iii. Myanmar
 - It was pointed out that NC would send equipment for wet deposition monitoring, such as a wet-only sampler, as soon as adoption of the MOA.
- iv. Viet Nam
 - The proposed national monitoring plan is expected to be approved by the government. It was clarified that the new national monitoring plan including increase of monitoring sites would be approved officially in the next year.

X. Consideration of improvement of monitoring methodologies (Agenda Item 9)

16. NC presented a review of existing methods and activities on measurements of dry deposition in order to establish the estimation method for dry deposition. The inferential method was introduced as the most suitable for a routine monitoring in EANET. Major clarifications and discussions are as follows:
 - It was suggested to start discussion among the Task Force members on Dry Deposition Monitoring after SAC6 including the possibility of the application of several methods.
 - It is important for now to estimate dry deposition amounts. The estimation method and obtained result can be modified by direct measurement done by EANET/Experts step by step.
17. Dr. Kjetil Torseth, expert from EMEP-CCC presented various approaches and techniques for assessing dry deposition fluxes. The recent development of the Conditional Time Average Gradient (COTAG) method was introduced as a useful low cost alternative comparing with traditional micrometeorological techniques. He also gave an overview of current and planned activities within Europe related to dry deposition measurements.
18. NC made a presentation on activities in line with the Strategy Paper for Future Direction of Soil and Vegetation Monitoring of EANET. Major points on this topic included the following:
 - NC introduced the revised draft sub-manual on EANET forest vegetation monitoring as the final draft, which was prepared by Task Force (TF) on Soil and Vegetation Monitoring of EANET.
 - The sub-manual recommends carrying out “survey of tree decline” at least once a year. It was suggested that frequent observations, such as seasonal observations, might be more informative to discuss effects of acid deposition/air pollution.
 - It was clarified that the editorial works such as language check would be carried out after endorsement by SAC.

- The Session expressed an appreciation to ICP-Forest and its experts for cooperation in the reviewing process.
- The Session endorsed the sub-manual on EANET forest vegetation monitoring with a few modifications on terminology.

XI. Consideration of the Revised Draft Five-Year Medium Term Plan (MTP) for EANET from scientific and technical viewpoints (Agenda Item 10)

19. NC made a presentation on development and revisions of the draft Five-Year Medium Term Plan (MTP) for EANET done after SAC5. The process of revision by WGFD in 2005-2006 was explained with reference to documents provided to the participants of SAC6. Taking into account the result of consideration on methodologies to estimate dry depositions (Agenda Item 9) the particular recommendation was done as follows:

- The implementation period of task (3) “Development and application of monitoring methods for dry deposition considering country-specific monitoring methodology” should be postponed for Output 1 (Technical Manual for dry deposition fluxes estimation) to 2008-2010, for Output 2 (Estimation of dry deposition fluxes at the selected monitoring sites in selected EANET countries) to 2009-2010.

XII. Consideration of future development of EANET through outcomes of WGFD3 and WGFD-S2 from scientific and technical viewpoints (Agenda Item 11)

20. The Secretariat made an overview of the Outcomes of the Sessions of WGFD held in 2006. The documents that have been developed and further revised by WGFD at its Second Special Session (WGFD-S2) were briefly introduced including, among others: the new Terms of Reference (TOR) of WGFD (2007-2008); Components of the Instrument to Provide a Sound Basis for Contribution to EANET (preliminary draft); discussion on the Revised Draft MTP and Relevant Budget Information for Its Implementation; discussion on the Review of the RRC.AP/AIT system and establishment of a trust fund for EANET as well as on the Revision of Procedures and Guidelines for Contribution to EANET. These documents are prepared for consideration of the Eighth Session of the Intergovernmental Meeting (IG8) to be held in November 2006.

XIII. Consideration of research activities on acid deposition including collaboration with initiatives on emission inventory and numerical modeling (Agenda Item 12)

21. NC introduced the on-going research activities on acid deposition being conducted as joint research projects with Mongolia on plant sensitivity to acid deposition, with Republic of Korea on aerosol monitoring, with Russia on evaluation of atmospheric environment in East Siberia and Primorsky Region, with Thailand on dry deposition flux, on gas monitoring and on catchment analysis as well as independent research activity on catchment analysis in Niigata, Japan and the Model Inter-comparison Study (MICS-Asia). In particular the joint research with Thailand (catchment) was presented with more details. Major discussions included the following:

- It was pointed out that extension of the catchment study to other tropical regions would be informative for future EANET monitoring, although it depended on funds.
 - The pH of the stream water was very low, approximately 5.7, in the study plot. It was clarified that high-weathered acidic soil might affect the stream water chemistry.
22. NC presented Proposal on promotion of future research and monitoring activities of EANET by SAC and NC. Major discussions included the following:
- It was pointed out that the special “associate member” status could be established for experts representing other monitoring networks and initiatives which closely involved into cooperation and coordination with EANET.
 - It was stressed that ad hoc groups on data analysis and research coordination should be established as expert groups with elaboration of their name by the SAC bureau and NC.

XIV. Cooperation with other international programs on acid deposition (Agenda Item 13)

23. The representative of EMEP Dr. Torseth presented a general overview of current EMEP activities relevant for EANET. Assessment of pollutant transport to the Arctic was explained based on the recent scientific studies. The aims and key questions addressed in the Particulate Matter Assessment Report (to be completed in 2007) were introduced. Updated information was provided on on-going preparation of the 2007 TF HTAP Interim Assessment Report on the importance of intercontinental fluxes. The cooperation with regional networks and importance of their monitoring data for the support of hemispheric transport investigation were highlighted in line with mentioned issues. He also presented an initiative related to comparison of methods for air concentration monitoring between EMEP, US and Canadian networks.

XV. Consideration of the Work Program and Budget in 2007 for EANET from scientific and technical viewpoints (Agenda Item 14)

24. Revised Draft Work Program and Budget in 2007 for EANET was presented by the Secretariat and NC for the comments on the document from scientific and technical viewpoints. The document was prepared for consideration and adoption by IG8. The major discussions and clarification were done on the following items:
- Clarification was provided by the Secretariat on the budget for the WGFD meetings with reference to a number of Sessions in 2007.
 - An overall observation and concern were made on the following topics: (a) sustainability of the future EANET activities with respect to the financial support is based on voluntary basis of respective stakeholders and the participating countries. There should be key performance indicators and a proper mechanism to be placed in order to maintain the EANET activities sustainability; (b) in-kind contribution provided by the participating countries should be reflected in the annual budget; (c) future joint research programs among the participating countries should be considered accordingly in order to provide a wider participation.

- Contents of prepared budget for assistance and technical support to individual countries, research for monitoring methodologies and support for Task Force were clarified with reference to revised draft MTP.
- It was expressed that initiation of joint research with participating countries are desirable for implementation of research activities proposed in MTP with the identified intention by countries on possible cooperation.
- It was mentioned that research coordination would be organized by SAC and proposed ad hoc group with advices how to apply for research funds.

XVI. Other issues raised by SAC members or the participating countries (Agenda Item 15)

25. The Secretariat informed the Session on the upcoming national workshops on public awareness for acid deposition to be held in Lao PDR and Cambodia on 10 November and 13 November 2006, respectively. The National workshops will be conducted based on decision of the IG6 in 2004 using the saving money of the Secretariat.
26. NC informed that JICA will carry out the Questionnaire Survey for the ex-participants of the training course on EANET in order to evaluate conducted training course.

XVII. Consideration and adoption of the Report of the Session (Agenda Item 16)

27. The Report of the Session was considered and adopted.

XVIII. Closing of the Session (Agenda Item 17)

28. All the participants expressed their gratitude and appreciation for the efforts made by the Secretariat and NC to organize this meeting.
29. The Meeting was officially closed by the Vice Chairperson of SAC.

List of Participants

Participating Countries

Cambodia

Mr. Hang Dara
Vice Chief of Air Quality, Noise and Vibration Management Office
Department of Environmental Pollution Control
Ministry of Environment

Ms. Peou Phalla
Meteorology Officer
Department of Meteorology
Ministry of Water Resources and Meteorology

China

Prof. Wang Ruibin
Director, Department of Air Quality Monitoring
China National Environmental Monitoring Center (CNEMC)

Dr. Xing He
Senior Engineer
Department of Air Quality Monitoring
China National Environmental Monitoring Center (CNEMC)

Indonesia

Prof. Dr. R.T.M. Sutamihardja
Lecturer, Bogor Agricultural University and University of Indonesia
Graduate School
Bogor Agricultural University

Dr. Esrom Hamonangan
Air Pollution Researcher
Monitoring Division
Environmental Impact Management Facilities (PUSARPEDAL)

Japan

Prof. Hiroshi Hara
Professor, Field Science Center
Faculty of Agriculture
Tokyo University of Agriculture and Technology

Dr. Tomoyuki Hakamata
Advisor
Hamamatsu Photonics K.K.
Tsukuba Research Laboratory

Ms. Reiko Sodeno
Deputy Director, Global Environment Issues Division
Global Environment Bureau
Ministry of the Environment

Lao PDR

Ms. Sisouphanh Luangrath
Director of Environment Quality Monitoring Centre
Environment Research Institute
Science Technology and Environment Agency

Ms. Phakkavanh Phissamay
Technical Officer of Environment, Policy and Legal Division
Department of Environment
Science Technology and Environment Agency

Malaysia

Prof. Muhamad bin Awang
Professor
Department of Environmental Sciences
Universiti Putra Malaysia

Dr. Elizabeth M.P. Philip
Senior Research Officer
Forestry and Conservation Division
Forest Research Institute of Malaysia (FRIM)

Mongolia

Dr. Erdenebat Eldev-Ochir
Director
International Cooperation Division
National Agency for Meteorology, Hydrology and
Environment Monitoring of Mongolia (NAMHEM)

Ms. Bulgan Tumendemberel
Engineer
Central Laboratory of Environment & Metrology

Myanmar

Mr. Aung Maung
Assistant Director
Division of Lower Myanmar
Department of Meteorology and Hydrology
Mayangon Post Office, 11061

Mr. Maung Maung Soe
Assistant Director
Division of Aeronautical Meteorology
Department of Meteorology and Hydrology

Philippines

Dr. Wilfredo M. Carandang
Director, Institute of Agroforestry
College of Forestry and Natural Resources
University of the Philippines Los Baños

Ms. Lerma L. Dimayuga
Head, Air Laboratory Unit
Laboratory Services Section
Research and Development Division
Environmental Management Bureau

Republic of Korea

Prof. Cho Seog-Yeon
Professor, Department of Environmental Engineering
Inha University

Russia

Dr. Mikhail Semenov
Senior Researcher
Laboratory of Hydrochemistry and Atmospheric Chemistry
Limnological Institute of the Russian Academy of Sciences

Dr. Sergey Paramonov
Head of Sector
Background Monitoring Department
Institute of Global Climate and Ecology

Thailand

Dr. Jesada Luangjame
Director of Silvicultural Research Division
Royal Forest Department

Dr. Pojanie Khummongkol
Associate Professor
Environmental Technology Division
King Mongkut's University of Technology Thonburi

Dr. Hathairatana Garivait
Chief of Air Pollution Research and Development Section
Environmental Research and Training Center
Department of Environmental Quality Promotion
Ministry of Natural Resources and Environment

Vietnam

Mr. Nguyen Dinh Luong
Deputy Director
The Center for Hydrometeorological and Environmental
Station Network (HYMENET)
National Hydrometeorological Service
Ministry of Natural Resources and Environment

Dr. Tran Hong Thai
Head, Environmental Prediction Division
Center for Environmental Research
Institute of Meteorology and Hydrology

International Organizations etc.

NILU

Dr. Kjetil Tørseth
Director
Atmospheric and Climate Research
Norwegian Institute for Air Research (NILU)

Secretariat

Network Center

Prof. Hiromasa Ueda
Director General

Dr. Sergey A. Gromov
Deputy Director General

Mr. Jiro Sato
Head
Planning and Training Department

Dr. Tsuyoshi Ohizumi
Head
Atmospheric Research Department

Dr. Hiroyuki Sase
Senior Researcher
Ecological Impact Research Department

Mr. Shinji Nakayama
Head
Data Management Department

Dr. Tatsuya Sakurai
Researcher
Data Management Department

EANET Secretariat

UNEP RRC.AP
c/o Asian Institute of Technology (AIT)
3rd Floor, Outreach Building

Mr. Mylvakanam Iyngararasan
Senior Programme Officer, UNEP RRC.AP

Mrs. Adelaida B. Roman
Programme Officer, EANET Secretariat

Ms. Sumana Ratanasawetwad
Administrative Assistant, EANET Secretariat

Annex 2

Comments and Suggestions for Finalization of
the Periodic Report on the State of Acid Deposition in East Asia (PR SAD)
Part I- Regional Assessment.

The Part I was presented by Lead Authors chapter by chapter. The particular comments and suggestions were as follows:

1. Chapter 1 and 2 (presented by Prof. Hara):
 - A possible elaboration of language and some parts was mentioned by the lead author upon replying to comments by external reviewers
 - Name(s) of the Secretariat officer would be added in the list of contributors to Chapter 1.
2. Chapter 3.2 and 3.3 (presented by Prof. Cho):
 - Section 3.1 Introduction should be prepared in accordance with Contents of the Periodic Report.
 - Correction of captions should be done for the figures 3.2.3 and 3.2.6 with adding names of countries.
 - It was pointed out that the figures of relationship pAi vs pH could show contribution of organic acids, and these results were suggested to be used for improvement of the Technical Manual. A correspondent recommendation should be included in appropriate part of Chapter 3 .
 - The update of figures would be finished with using data of the year 2000 as endorsed by SAC members for the Regional Assessment.
3. Chapter 3.4 (presented by Prof. Awang):
 - The list of reference could be checked to avoid the repetition.
4. Chapter 4 (presented by Dr. Pojanie)
 - The Secretariat activities on communication with donor agencies should be mentioned in correspondent part 4.3.5.
 - A title “Integrity of Data Acquisition and Methodologies” were proposed for second breakdown of Section 4.8 as more appropriate.
5. Chapter 5 (presented by Dr. Gromov on behalf of Dr. Akimoto):

General comments were done with referring to the original idea, i.e., to show the activities of regional scale (including wider collaborative studies similar like LTP, EANET or EMEP):

- to highlight the approaches of initiatives and programs (others than EANET) and usefulness for development of EANET or further cooperation, with more attention to their contents and structures as the regional activities;
- an information on LTP is mostly consisted of general table on operated monitoring sites and brief reflection of the studies on emission inventories and modeling which are not performed by

EANET; the more detail description on goals and recent results are proposed to be included upon receiving from contributors.

- to avoid too much exact numbers and individual results from research papers as well as not to really emphasize specific findings or particular results from researchers or group who used their own methodologies or case studies; the review of papers provided on personal basis should be minimized because of their different methodologies which could not be described in such a brief review and derive the explanation of differences in results as well as the evaluation of their reliability.

The following recommendations were done concerning certain particular results from individual papers reproduced in Chapter 5:

- the data on emissions of Thailand and China in Table 5.5.1 are in contrast with national evaluations of emissions, and DC members were suggested to check them;
- The explanation could be done on application of specific approach and different methodology for estimation of the past emission and its trends in figures 5.4.1, different from those used by China;
- It was suggested to use name 'Taiwan, China' to avoid inappropriate impression of IG and readers of PRSAD in future.

6. Chapter 6 (presented by Dr. Ueda)

After discussion the modifications of content were agreed as follows:

- The part 6.6 and 6.7 are to be excluded as being out of PRSAD scope;
- The modification of title for 6.4 and 6.5 was done by excluding 'necessity', and the correspondent words were included on promotion of mentioned activities in EANET.

It was also suggested as follows:

- An Introduction will be included with brief explanations and reference to experience of other Networks.
- The representatives of the Secretariat would be included as the contributors to 6.8.

7. Appendix (presented by Dr. Pojanie):

- Inclusion of more information on air quality standards were requested by the representatives of some countries upon the further contact with leading author.

8. An Executive Summary will be drafted as soon as possible taking its addressing to policy makers into account. The contributions of all SAC member are desirable for its improvement through circulation.