

The Eighth Senior Technical Managers' Meeting  
of the Acid Deposition Monitoring Network in East Asia  
1-3 August 2007, Bogor, Indonesia

## **REPORT OF THE MEETING**

### **I. Introduction**

1. The Eighth Senior Technical Managers' Meeting (STM8) of the Acid Deposition Monitoring Network in East Asia (EANET) was held in Bogor, Indonesia on 1-3 August 2007. The objective of the meeting is for the senior technical managers responsible for monitoring of acid deposition in countries participating in EANET to report, review and discuss monitoring activities and consider other scientific and technical issues for further development of EANET. The meeting was organized by the Network Centre (NC) of EANET in collaboration with the Secretariat for EANET and the Ministry of Environment, Republic of Indonesia.
2. Senior technical managers from thirteen countries participating in EANET, namely Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand, and Viet Nam, who are responsible for technical issues on EANET activities in each country participated in the meeting.
3. A representative from the Chemical Coordinating Center (CCC) of the Co-operative Programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe (EMEP) and two experts from Japanese universities and research institutes also participated as resource persons. Representatives of host country government and researchers from relevant organizations in Indonesia also attended the meeting as observers. The List of Participants is attached as Annex I.

### **II. Opening of the Meeting (Agenda Item 1)**

4. Mr. Arief Yuwono, Executive Secretary to the Minister of Environment, Indonesia, welcomed the participants to Bogor, Indonesia and highlighted the importance of accurate and continuous monitoring data from the participating countries for assessing the state of acid deposition in the region. He also stressed the need to involve the participation and

5. Ms Adelaida Roman, Programme Officer of the Secretariat of EANET, delivered the opening speech on behalf of the Secretariat of EANET. She highlighted the need to strengthen policy development of EANET in the future with further consideration of developing a sound scientific basis.
6. In his introductory speech, the Director General of NC of EANET, Dr. Hiromasa Ueda, emphasized the importance of the meeting to discuss important technical issues which would consolidate the ongoing monitoring activities and set the new direction of monitoring activities for the next step of the regular phase of EANET operations.

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

7. Ms. Novy Farhani, Head of Environment Laboratory Service Division, Environment Management Center, Ministry of Environment, Indonesia, Mr. Zheng Haohao, Engineer, Department of Air Quality Monitoring, China National Environmental Monitoring Center (CNEMC), and Ms. Leonita Diano Baetiong, Supervising Environmental Management Specialist, Environmental Management Bureau, Department of Environment and Natural Resources, Philippines, were elected as Co-chairpersons of the meeting.

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

8. The Session adopted the Agenda as proposed by the NC (EANET/STM 8/3/1).

### **V. Review of recent activities since the Seventh Senior Technical Managers' Meeting (STM7) (Agenda Item 4)**

9. The NC made a brief presentation on Report on the Scientific and Technical Activities of EANET since the Seventh Senior Technical Managers' Meeting (EANET/STM 8/4/1). The presentation included the progress of EANET activities focusing on scientific and technical aspects, as well as outcomes of the Sixth Session of the Scientific Advisory Committee (SAC6), the implementation of activities to strengthen technical capacity in the participating countries, and activities related to training and research. The results of the questionnaire

survey on the national training activities in the participating countries in 2006 were also presented.

10. Major clarifications and suggestions were as follows:

- NC and the Secretariat of EANET provided further information on the Strategy on EANET Development (2006-2010), including the priorities of activities and the recommendations and decisions made at SAC6 and Eighth Session of the Intergovernmental Meeting (IG8).
- It was clarified that the current monitoring activities should be continued as appropriate but new directions including modeling, promotion of emission inventories and assessments and studies on the effects of other related pollutants should also be discussed as they are activities in line with the Strategy on EANET Development.
- It was explained that many activities mentioned in the Strategy have already been started, and their progress will be reported in greater detail at Fifth Session of the Working Group on Future Development of EANET (WGFD5) and Seventh Session of the Scientific Advisory Committee (SAC7).

11. The Secretariat briefed the meeting on the Outcomes of the Eighth Session of the Intergovernmental Meeting (IG8) and the Fourth Session of the Working Group on Future Development of EANET (WGFD4) held in Bangkok, Thailand on 4-6 June 2007 (EANET/STM 8/4/2). Among the important outcomes from IG8 were the adoptions of the Terms of Reference of the Working Group on Future Development of EANET for 2007-2008, the Strategy on EANET Development (2006-2010), and the work program and budget in 2007 for EANET. A draft text of the Instrument to provide a sound basis for contribution to EANET was discussed at WGFD4.

12. Major clarifications and suggestions were as follows:

- The procedure for preparation of project proposals for submission to potential donors was explained. Concept papers on four priority projects identified at WGFD4 will be prepared for discussion at WGFD5.
- A question was raised whether there is a time frame for preparing concept papers on project proposal for securing funds from donor agencies. The Secretariat clarified that there is no time frame. However, IG8 decided that the Secretariat and NC shall prepare

- project proposals, obtain endorsement of NFPs before submitting to potential donor.
- It was further clarified that the Secretariat and NC should communicate with potential donors to identify their priorities in funding a certain project, and the application procedures.
  - It was pointed out that the relationship between acid deposition and other environmental issues such as climate change should be mentioned to obtain additional budgets from international donor agencies.
  - Interests in tropospheric ozone have been increasing due to the increase of NO<sub>x</sub> and VOCs emissions in Asia. As ozone could be transported across regions resulting in serious negative impacts on human health and vegetation, it was suggested that inter-regional analysis of ozone should be given further consideration by EANET from now on.
13. The Progress on the Periodic Report on the State of Acid Deposition in East Asia (EANET/STM 8/4/3) with its Executive Summary was reported by the NC. The meeting was informed that the documents are being printed. A CD containing the near-final version of the Executive Summary and Part I: Regional Assessment and Part II: National Assessments were distributed to each participating country for their reference.
14. Major discussions were as follows:
- It was pointed out that data completeness is important for accurate assessments of the monitoring data, and the technical managers should continue to make efforts to improve the completeness of their data sets. Although data quality has improved and some progress has been achieved in terms of techniques, there are still a number of problems existing. It was recommended that if the senior technical managers encounter problems in their monitoring, they should inform their National Focal Points (NFPs) and the NC before submission of the data.
  - It was pointed out that one of the objectives of Senior Technical Managers Meetings is to share knowledge and experiences gained from the monitoring activities among the EANET community and discuss common monitoring problems faced by the participating countries.
  - It was informed that according to the schedule, the two volumes of the Periodic Report of Acid Deposition in East Asia (PR SAD) and the Executive Summary should be ready for distribution in late August.

**VI. National Monitoring Plans of the Participating Countries (Agenda Item 5)**

15. The NC presented an Overview of the National Monitoring Plans of the Participating Countries (EANET/STM 8/5) based on the updated/confirmed national monitoring plans (NMPs) submitted by the participating countries after STM7. The number of nominated monitoring sites was informed. There are 51 wet deposition monitoring sites, 39 dry deposition monitoring sites, 18 soil and vegetation monitoring sites and 15 inland aquatic monitoring sites. Information on new sites in Tokyo, Japan, Mt. Sto. Tomas, Philippines and Nakhon Ratchasima Province, Thailand was presented.
  
16. Major discussions were as follows:
  - NO<sub>x</sub> is very important for the analysis of acid deposition. However the number of monitoring sites for NO<sub>x</sub> is limited compared with SO<sub>2</sub> because NO<sub>x</sub> can be monitored only by automatic monitoring method. It was clarified that less expensive methods such as use of passive sampler should be considered.
  - It was informed that use of passive samplers could be valuable method for evaluation of long-term exposure of air pollutants, particularly for ozone and nitrogen oxides, based on experience in Europe.
  - Meteorological data is necessary to estimate dry deposition flux. Several monitoring stations do not have meteorological monitoring system. It was clarified that the current state of meteorological monitoring in EANET should be investigated and be developed further from now on. Additional meteorological data such as wind direction should be considered to discuss transport of air pollutants.
  - It was clarified that the meteorological data from the respective monitoring sites will be included in the Data Report as an annex.
  
17. The participating countries made presentations on their EANET monitoring activities in their countries. The meeting reviewed the EANET activities implemented by the countries. Major discussions included the following:
  - i. Cambodia
    - It was announced that new monitoring station will be established in the future.

ii. China

- It was announced that air concentration monitoring using the filter pack method had started in Xiamen from March 2007.
- It was reported that due to changes of conditions around the Weishuiyuan rural site, wet and dry deposition monitoring were stopped at this site in 2007. However the monitoring activities at the urban and remote sites are continuing. It was informed that the establishment of sites in other cities with ability to monitor acid rain in the national network is being considered.
- It was informed that relocation of the urban site at Guanyinqiao at Chongqing to a new building at nearby site 10 km from the original site is being considered. It was suggested that parallel sampling for comparison between the current and candidate new sites should be considered before relocation of the samplers.
- Air concentration of nitrogen compounds such as  $\text{HNO}_3$  and  $\text{NH}_3$  have not been available from three cities other than Xiamen. It was suggested to consider the possibility of starting filter pack measurements in other cities as soon as possible.
- It was commented that acid deposition monitoring should also be conducted in the northwest region including desert areas.
- It was informed that the national atmospheric background monitoring site at Wuyishan belonging to the Fujian Environmental Protection Administration uses automatic instruments for atmospheric monitoring. It was suggested that data from this site would be useful for EANET. Efforts will be continued to make this site also an acid deposition monitoring site.

iii. Indonesia

- It was clarified that event sampling meant that samples are collected daily.
- A parabolic antenna was located near the Jayapura monitoring site. The suitability of the monitoring site should be considered taking into account the effects of the parabolic antenna and the siting criteria requirements.
- The Technical Manual on Soil and Vegetation Monitoring recommended that at least two plots for soil sampling should be established in any forest site. It was noted that just one plot was established in the Bogor Forest Research. It was suggested that one more plot should be established in the same forest according to the requirements of the Technical Manual.
- It was clarified that Soil Research Institute (Puslitanak) would analyze soil samples for the

regular monitoring, while EMC as the national center participated in the Inter-laboratory Comparison Project on Soil.

- With regard to the establishment of new sites, it was informed that the implementation of both wet and dry deposition monitoring in the proposed sites will be considered.
- A new site for monitoring inland aquatic environment will be established in the near future.

#### iv. Japan

- It was announced that an international workshop on emission inventory would be held on 9 October 2007 in Manila, Philippines in cooperation with NC.
- Japan has a plan to start a project on ozone monitoring by passive samplers. It was pointed out that experience on investigation of tropospheric ozone in Japan should be shared among the EANET community.
- Ozone monitoring is currently conducted at only 17 monitoring sites in four countries, namely Russia, Japan, Republic of Korea, and Thailand in the EANET network. It was suggested that other participating countries should consider starting ozone monitoring by using less-expensive methods such as passive samplers in line with the Strategy on EANET Development. NC can assist in providing useful information on this matter.

#### v. Lao PDR

- It was announced that analysis using the Ion Chromatography system has started but other monitoring instruments and further training are required to carry out dry deposition monitoring.
- It was informed that a candidate site for monitoring on inland aquatic environment had been selected in cooperation with the NC technical mission. The monitoring activities will be started in the future.

#### vi. Malaysia

- It was announced that inland aquatic monitoring has commenced at Danum Valley in 2007 and a new EANET wet and dry deposition monitoring site in Kuching will be considered in the future.
- It was proposed to start soil and vegetation monitoring at Danum Valley. A request was made to NC to consider providing assistance to the national agencies in carrying out the site selection during the next technical mission to Malaysia.

- Data on ozone, NO<sub>x</sub> and PM from the automatic monitoring instruments located at Petaling Jaya, Tanah Rata and Danun Valley would be submitted to NC.
- As there is much interest in passive samplers, it was suggested that the results from the experimental studies conducted using passive samplers at Tanah Rata and Danum Valley be shared with the EANET community. It was clarified that the passive samplers were prepared by the Department of Chemistry following the procedures of CSIRO, Australia.

#### vii. Mongolia

- Annual average concentration of SO<sub>2</sub> increased steeply after 2004 in Ulaanbaatar. It was suggested that causes of the increment should be investigated with accumulation of the data.
- It was informed that pH of Terelj river from inland aquatic environment monitoring in 2003 was low due to the low rainfall during that year.
- Analysis of soil samples collected in 2005 has not been finished because exchangeable analysis could not be analyzed due to lack of equipments such as atomic absorption spectrometer (AAS). It was suggested that the data on pH and exchangeable acidity could be submitted initially for the Data Report 2006.

#### viii. Myanmar

- It was announced that the wet-only sampler was installed and wet deposition monitoring was started on 19 June 2007 in the new EANET monitoring station in Yangon.
- As data before and after the use of the wet-only sampler was presented, it was suggested to clarify whether the measurements before were taken using bulk samplers. Since the collecting method of the bulk sampler is different from the wet-only samplers, the differences between the data by wet-only and bulk samplers should be clarified.
- It was proposed to extend the monitoring activities to another rural site and to conduct dry deposition and inland aquatic monitoring in the future.

#### ix. Philippines

- Organic acids and other unanalyzed components in the wet deposition samples may have significant influences on precipitation chemistry in tropical countries including the Philippines. It was informed that under the EANET Research Fellowship program in 2006, a researcher from the Philippines analyzed organic ions and other additional components in precipitation from the Philippines at NC. It was suggested that organic ions should be

analyzed taking the results of the study into account.

- At present, nitrite is being analyzed.
- It was informed that a new remote site for wet and dry deposition and inland aquatic environment monitoring was established.

x. Republic of Korea

- It was pointed out that characteristics of the respective monitoring sites are important for the analysis of the data.
- It was suggested that the high concentration phenomenon like NO<sub>2</sub> measured at Jeju should be investigated.
- It was recommended to submit monitoring data of NO and NO<sub>x</sub> as well as NO<sub>2</sub> since instruments using the Chemiluminescence Detection Method (CLD) can output them.

xi. Russia

- The difference was noted between pH in rain and snow in Primorskaya site compared with East Siberian sites. It can be attributed to much higher winter precipitation amounts in Primorskaya site. More careful studies should be done to understand the causes.
- Concentrations of SO<sub>2</sub> increased suddenly in 2005 at all three sites in Siberia. It was suggested that local emission sources and the climate conditions might affect the data of SO<sub>2</sub>. Further investigation is necessary.

xii. Thailand

- The names of some sites were changed several times in Thailand due to various reasons. It was recommended that the names of the sites which are designated for long-term monitoring should be kept constant to enable proper documentation, storage and distribution of the data and to avoid possible confusions to users of the data.

xiii. Viet Nam

- The new monitoring plan for EANET including establishment of new monitoring stations has not been approved by the government. The EANET community is waiting for the decision on the new monitoring stations. It was informed that the new plan would be approved after establishing the national monitoring network on acid deposition.

- It was announced that their laboratory was certified by ISO17025:2005.

**VII. Consideration of the Preliminary Draft Data Report on the Acid Deposition Monitoring in 2006 (Agenda Item 6)**

18. The NC presented the preliminary Data Report on the Acid Deposition Monitoring in the East Asian Region (EANET/STM 8/6). The participating countries were requested to submit their data and related information obtained from the EANET monitoring activities during the year 2006, upon approval according to national procedures, to the NC before 30 April 2007. It was informed that all countries except for Lao PDR submitted their monitoring data for the preparation of the preliminary Draft Report. The meeting was invited to discuss, review, and make recommendations as appropriate.
19. Major clarifications and discussions on this topic included the following:
  - i. Wet deposition monitoring data
    - It was informed that names of sites should not be changed throughout the monitoring period. However, if the monitoring instrument is relocated 100 meters or more away from the original site, the name of the site should be changed. Detailed descriptions on historical information of relocation or renaming of sites should be described in the Data Report to minimize user's confusion.
    - With respect to the request for NC to provide some guidance on the spatial distribution of sites required for assessment of regional air pollution, it was informed that it has been recommended that at least one site should be established in every 10 degree x 10 degree grid. The location of the sites should be determined based on the priorities of the countries and region. It was suggested that revision of the Technical Manual regarding new site establishment should be proposed to SAC7 as a recommendation from STM8.
    - It was pointed out that the number of sites has increased in the regular phase monitoring of EANET and while additional sites would enable more accurate assessments, participating countries should also focus on improvement of data quality and completeness as the establishment of new sites would depend on available financial resources.
    - The expert from CCC-EMEP commented that although the present number of sites was inadequate for assessment of impacts, having a few strategically located sites producing data of good quality in each country would enable EANET to understand the current situation.

ii. Dry deposition (air concentration) monitoring data

- The seasonal variation of SO<sub>2</sub> and sulfate concentrations in 2006 and annual trend from 2001 to 2006 at EANET sites were introduced as preliminary analysis for data verification.
- It was recommended that participating countries reconfirm the monitoring data and re-submit their data as soon as possible if there is a necessity for amendments.

iii. Soil and vegetation monitoring data

- It was informed that altogether 8 areas of four countries were surveyed in 2006.
- It was pointed out that repeat analysis for soil samples were not reported from several organizations although repeat analysis was recommended in the QA/QC program.
- It was also announced that observation of tree decline should be carried out at least once a year according to the Sub-Manual on Forest Vegetation Monitoring in EANET and this procedure should commence from 2007.

iv. Inland aquatic environment monitoring data

- Some countries may have difficulties in selection of appropriate lakes for monitoring inland aquatic environment since not only local anthropogenic sources but also natural factors such as eruption of volcano and peat soils should be considered. It was suggested that possibility of selecting rivers or springs in mountainous area should also be considered in such cases.
- Participating countries are requested to inform the NC if they have information on lakes and rivers in their countries that meet the siting criteria as currently monitoring is conducted in some sites that do not meet the siting criteria.
- It was pointed out that revision of the Technical Manual should be considered in line with the Strategy on EANET Development (2006-2010). Procedures on the site selection should be reviewed in this process taking into account the situation and problems faced by countries in selection of suitable lakes and rivers.

20. It was clarified that, in general, data checking for QA/QC should be carried out by NC but data analysis should be carried out by SAC in the process of preparation of the periodic reports on state of acid deposition in East Asia. Detailed information on data checking can be included in the Data Report if necessary.

**VIII. Consideration of the preliminary draft Report on Inter-laboratory Comparison Projects in 2006 (Agenda Item 7)**

21. The NC presented the preliminary draft Reports on the Inter-laboratory Comparison Projects in 2006 for wet deposition, dry deposition (filter pack method), soil, and inland aquatic environment (EANET/STM 8/7). It was informed that from 2007, a combined report will be prepared and published including all the items. The meeting was invited to discuss and provide comments, as appropriate.
  
22. Major discussions included:
  - i. Project on wet deposition
    - It was informed that NC would discuss the results of the inter-laboratory comparison projects during the technical missions to the participating countries.
    - Regarding the  $\text{NH}_4^+$  data of several countries that were out of allowable range (within 15%), it was suggested that various factors such as contamination, preparation of standard solutions and calibration curves and so on might affect accuracy of the data.
  
  - ii. Project on dry deposition (filter pack method)
    - It was suggested that laboratories which have more than 4 flagged values should review their analytical procedures as well as quality of standard solutions.
    - It was also suggested that the prepared values of low and high amount must be within the range of the calibration curve in order to decrease flagged data.
  
  - iii. Project on soil
    - It was informed that in the report, the statistical analysis was carried out using data from only 13 out of the 14 participating laboratories. The statistical analysis will be carried out again after including the data from one more country.
  
  - iv. Project on inland aquatic environment
    - It was informed that the EMB/CAR laboratory in the Philippines participated in this project for the first time in 2006.
    - It was reported that the percentage of flagged data for cations was larger than the percentage for anions, and the percentage of flagged data for  $\text{Ca}^{2+}$  and  $\text{NH}_4^+$  were larger than that of the other parameters.

23. NC announced that it will send out new samples for the inter-laboratory comparison projects in November 2007. Participating countries are requested to conduct the analysis as soon as possible after receiving the samples and submit the results before 29 February 2008.

**IX. Consideration on Improvement of Monitoring Methodologies (Agenda Item 8)**

24. The NC presented a Discussion Paper on Estimation of Dry Deposition Flux and Consideration of Less Expensive Monitoring Methods (EANET/STM 8/8/1). This paper presents the necessity of dry deposition flux, methods to evaluate dry deposition flux, and recommendation on use of less expensive methods for monitoring. These are activities necessary for further development of EANET as identified in the Strategy on EANET Development (2006-2010). Major discussions on this topic included:
- It was informed out that during the preparation of the Periodic Report on State of Acid Deposition in East Asia, it was not possible to assess total acid deposition for the EANET region due to insufficient dry deposition measurements for estimation of dry deposition flux.
  - It was proposed that the presented procedures for dry deposition flux estimation and the use of passive samplers in the participating countries to conduct air concentration measurements of NO, NO<sub>x</sub>/NO<sub>x</sub>\*, NO<sub>2</sub> and O<sub>3</sub> to supplement the filter pack measurements and increase the data set of dry deposition measurements should be reported to SAC7 as a recommendation of STM8.
25. The expert from CCC-EMEP informed that the use of passive samplers for NH<sub>3</sub> and HNO<sub>3</sub> is useful to supplement filter pack measurements and, depending on purpose of monitoring, passive samplers for NO<sub>2</sub> and O<sub>3</sub> may be used to replace active samplers. However for health warnings, assessments of hourly data are needed. Low cost denuder measurements can be considered as a good supplement or alternative. It was also clarified that EMEP in Europe did not calculate dry deposition flux and total deposition was estimated by models. The total deposition values obtained from the model calculations were validated using the throughfall data provided by ICP Forests.
26. The NC also presented a paper on Some Considerations in the Determination of Wet Deposition Flux (EANET/STM 8/8/2), which highlights the importance of good data quality to enable accurate determination of wet deposition flux in the EANET region. The

requirement in some countries to analyze additional components to achieve ion balance was also presented. Major discussions on this topic included:

- It was clarified that data with completeness, percent total precipitation (%TP) and percent precipitation cover length (%PCL) below 80% were listed with hatched column, and were not deleted in the summary tables.

27. The NC made presentations on Introduction of the Sub-Manual on Forest Vegetation Monitoring (EANET/STM 8/8/3) and Discussion on Strategy Paper for Future Direction of Soil and Vegetation Monitoring of EANET (EANET/STM 8/8/4). A brief explanation on the contents of the Sub-Manual on Forest Vegetation Monitoring in EANET that was endorsed by SAC6 was presented. Major discussions include the following:

- It was commented that tropical forests have high biodiversity and some tree species might be relatively sensitive to acid substances. It was pointed out that the appendix of the Sub-Manual, which introduced the experience of Japan, could be referred also for considering the plant sensitivities in tropical region.

- It was informed that the electronic data reporting form for observation of tree decline (mandatory item) would be distributed by NC to the participating countries. Other reporting forms will be uploaded on the EANET homepage.

28. To invite comments and views from participating countries on selection and review of priority substances to be assessed, the NC presented a Discussion Paper on the Establishment of a Transparent Framework to Select and Review Priority Substances to be Assessed Including their Monitoring Requirements (EANET/STM 8/8/5). Further clarifications and discussions on this topic are as follows:

- The expert from CCC-EMEP recommended that chemical species related to climate changes such as black carbon, elemental carbon and CO<sub>2</sub> should be taken into account. Some important sites could be identified for conducting the monitoring of the additional parameters.

- The Monitoring Guidelines has proposed a very comprehensive list of the monitoring parameters, especially for monitoring of inland aquatic environment. It was pointed out that significance and meaning of the respective monitoring parameters should be clarified in the process of reviewing the current Technical Manual.

- It was pointed out that the expansion of monitoring activities should be advanced step by step in line with the suggestions and decisions by STM, SAC and other EANET bodies. There are several important considerations including the determination of priority of new substances to be monitored and the establishment of Task Force to carry out the review in a transparent manner.

29. As the revision of the technical manuals is an activity proposed in the Strategy on EANET Development (2006-2010), the NC presented a Discussion Paper on Revision of Technical Manuals for Wet Deposition Monitoring of EANET and Monitoring of Inland Aquatic Environment (EANET/STM 8/8/6). Major discussions are as follows:

- It was suggested that updates/revision of existing manuals and documents should be considered according to the current situation, possibility and necessity of some requirements that would arise in EANET.

- It is recommended that the schedule for the updates should be decided as a first step taking the circumstances of experts into account.

**X. Consideration of the Research Activities on Acid Deposition (Agenda Item 9)**

30. The NC presented an Overview of Past, Ongoing and Future Research Activities of EANET (EANET/STM 8/9/1). The cooperative research studies in Mongolia, Republic of Korea, Russia and Thailand were briefly described as well as other research activities carried out by NC in collaboration with other regional and international organizations. Major clarifications and discussions are as follows:

- It was clarified that the MICS-Asia project is not related to the RAINS-ASIA, a project supported by World Bank and ADB that includes the development of an integrated model for supporting policy makers. MICS-Asia (Phase II) is a model inter-comparison study to evaluate the suitability of a number of models covering all pollutants for application to the EANET region.

31. The NC further provided detailed information on two of the research projects in the participating countries in the Report of Joint Research Project with Russia (EANET/STM 8/9/2) on evaluation of atmospheric environment in East Siberia and Primorsky Region and Report of Joint Research Project on Catchment Study with Thailand (EANET/STM 8/9/3).

32. Major discussions included the following:

i. Joint project with Russia

- It was reported that the Phase I project (1998-2001) focused on Standardization and Advancement of Assessment Methods of Acid Deposition in Frigid Zone while the Phase II project (2002-2004) involves the Evaluation of Atmospheric Environment in East Siberia and Primorsky Region. In the extension of the Phase II project (2005-2007), acid deposition data monitored in East Siberia and Primorsky region was analyzed to evaluate atmospheric environment in those regions and to provide useful information for the long-range transportation of air pollution on the hemispheric scale.

- It was suggested that the estimation of dry deposition flux and its evaluation should be implemented in the research activities as a preliminary analysis of EANET regular monitoring.

ii. Joint project with Thailand

- It was clarified that the objective of the project is to estimate effects of acid deposition in a tropical forested catchment and develop monitoring guidelines for future catchment monitoring and analysis in the tropical ecosystems.

- The project will estimate total deposition and study the mechanisms of seasonal changes in stream water chemistry, water and elemental budget and elemental flow and proton budget in plant-soil system.

33. Under researches for voluntary collaboration, NC made presentations on i) Secondary environmental acidification caused by the increase in sulfur oxide concentrations due to eruption of the Miyakejima Volcano and generally in air pollution conditions, and ii) Long-term acidification trend of river and lake water in the upper-most stream part of mountainous region (EANET/STM 8/9/4). Participating countries of EANET are encouraged to conduct similar studies to determine the trend of acidity of river and lake water in their respective countries. Major discussions are as follows:

- Natural events such as volcano eruption and forest fire are common problems in Japan and Southeast Asia. Effects of such natural events should be considered in addition to acid deposition. It was suggested that collaboration between the participating countries and ADORC should be promoted to discuss synergistic effects of natural events and acid deposition.

- It was also pointed out that a session for presentation of researches on local issues including forest fires, volcanic eruption and ozone, which were conducted in the respective countries, should be considered at future STM meetings to share the scientific information for the future development of EANET.
- It was suggested that links with other regional programmes and initiatives such as ASEAN Transboundary Haze Agreement should be strengthened to underpin policy development related to regional air pollution issues.

## **XI. Other Issues (Agenda Item 10)**

34. Dr. Wenche Aas, expert from EMEP-CCC, made a presentation on the EMEP monitoring programme, current integration initiatives and quality assurance/quality control activities in the EMEP network. She informed of the need to establish EMEP level 1 sites in the East Europe, Caucasus and Central Asia (EECCA) region and the increased focus on hemispheric and global pollution issues. A further harmonization of methods and QA/QC activities across the different regional networks are encouraged.
35. Dr. Jyunko Shindo, expert on ecosystems, from the National Institute of Agro Environmental Studies (NIAES), Japan gave a presentation on Evaluation of the Effect of Atmospheric Nitrogen Deposition on Stream Water Chemistry in Asian Catchments Areas. She presented her modeling approach on evaluation of nitrogen deposition effects and showed that atmospheric nitrogen deposition possibly affected the stream N loss in forested catchment in East Asia.
36. Prof. Hiroshi Hara, expert on atmospheric chemistry, presented on important results of precipitation chemistry from analysis of EANET data which was reported in the Periodic Report on State of Acid Deposition in East Asia. In addition, inter-regional comparison on the current states of monitoring and acid deposition in north hemisphere was introduced.
37. The Secretariat announced that the Fifth Session of WGFD will be held in Pathumthani, Thailand on 12-14 September 2007, the Seventh Session of SAC will be held in Manila, Philippines on 10-12 October 2007 and the Ninth Session of IG will be held in Lao PDR on 19-20 November 2007. A workshop to promote the understanding of emission inventories will be held a day before SAC7 at the same venue.

**XII. Consideration and adoption of the Report of the Meeting (Agenda Item 11)**

38. The Report of the Meeting (EANET/STM 8/11) was considered and adopted.

**XIII. Closing of the Meeting (Agenda Item 12)**

39. The participants expressed their gratitude and appreciation to the organizers and host country and particularly to the staff of the Ministry of Environment, Indonesia for the excellent arrangements made for the meeting. The Meeting was officially closed by the Chairperson.

## **List of Participants**

3 August 2007

## ***PARTICIPANTS***

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