

The Second Interim Scientific Advisory Group
on the Acid Deposition Monitoring Network
in East Asia
13-15 March 2000, Jakarta , Indonesia

REPORT OF THE MEETING

Introduction

1. The Interim Scientific Advisory Group for the Acid Deposition Monitoring Network in East Asia (EANET) (hereinafter referred to as ISAG) held its Second Meeting in Jakarta from 13-15 March 2000.
2. The Meeting was attended by the members of ISAG and their alternates nominated by the following participating countries: China, Indonesia, Japan, Malaysia, Mongolia, the Philippines, the Republic of Korea, the Russian Federation, Thailand and Vietnam.
3. The Meeting was also attended by invitees nominated by the following organizations with competence in relevant fields: the Chemical Coordinating Center of EMEP, the United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP), the United Nations Environment Programme/Environment Assessment for Asia and Pacific (UNEP/EAP-AP), and the World Meteorological Organization (WMO).
4. The list of participants is attached in Annex I.

Agenda Item 1: Opening of the Meeting

5. The Meeting was opened with remarks by Mr. Masao Nii, Director of the Interim Secretariat, followed by a welcoming address by Mr. Aca Sugandhy, Assistant to the Minister, Natural Environmental Management, State Ministry for the Environment, Indonesia.

Agenda Item 2: Election of the officers

6. The Meeting elected a Chairperson, three Vice-Chairpersons and a Rapporteur: Dr.

Seog-Yeon Cho, Associate Professor, Department of Environmental Engineering, Inha University, the Republic of Korea (Chairperson); Mr. Ruibin Wang, Senior Engineer, Department of Environmental Monitoring, China National Environmental Monitoring Center, China; Prof. Tsumugu Totsuka, Professor, Department of Environmental Science and Information, Edogawa University; Dr. Kansri Boonpragob, Assistant Professor, Department of Biology, Faculty of Science, Ramkhamhaeng University, Thailand (Vice-Chairpersons), and Dr. Zamba Batjargal, Director General, National Agency for Meteorology, Hydrology and Environmental Monitoring, Mongolia (Rapporteur).

Agenda Item 3: Adoption of the agenda

7. The Meeting adopted without revision the provisional agenda (EANET/ISAG 2/3/1) that had been prepared and circulated by the Interim Secretariat.

Agenda Item 4: Consideration and adoption of the monitoring guidelines, technical manuals, QA/QC Programs etc. for the Network

(Guidelines for monitoring acid deposition in East Asia)

8. INC presented the paper on the Guidelines for Monitoring Acid Deposition in East Asia (EANET/ISAG 2/4/1). Major discussions on this topic included the following:

- Contribution by anthropogenic and natural emission sources cannot be distinguished through the network monitoring activities. It will be done at the next step through modeling.
- Methodologies for ecosystems analysis need to be developed in the future.
- The network activities should focus on the acid deposition problem and not include stratospheric ozone layer depletion.
- Particulate matter should be described as PM, not specifying either PM10 or PM2.5, since this issue should be further elaborated later.
- The entire processes in developing the technical documents were clarified.

(Technical manual for monitoring wet deposition)

9. INC presented the paper on the Technical Manual for Wet Deposition Monitoring (EANET/ISAG 2/4/2). Major discussions on this topic included:

- When failure to attain ion balance by measuring the major ions is recognized to be systematic, some additional ions relevant to the ion balance are recommended to be identified and measured, as appropriate, although such measurements are not mandatory.
- The importance of measuring bicarbonate was emphasized.

- Electric conductivity and pH are recommended to be measured at 25°C in a temperature controlled water bath. If such a water bath is not available, use of a water bath without temperature control but containing at least 5 L of water may be considered.
- Precipitation sensors should be at the same height as the bucket or funnel of the precipitation chemistry collectors.

(Technical manual for monitoring soil and vegetation)

10. INC presented the paper on the Technical Manual for Soil and Vegetation Monitoring (EANET/ISAG 2/4/3). Major discussions on this topic included the following:

- Soil microbiological properties are important issues for detection of the impact of acid deposition, because the microbial activities may be sensitive to acid deposition. However, since participating countries may have some difficulties to do so from the first stage, measurement of microbiological properties should be considered at the next stage.
- There are some difficulties in complying with the siting criteria, especially in finding two soil types in some remote areas, while maintaining wet and dry deposition monitoring in place. Some flexibility should be allowed in such cases.

(Technical manual for monitoring inland aquatic environment)

11. INC presented the paper on the Technical Manual for Monitoring on Inland Aquatic Environment (EANET/ISAG 2/4/4). Major discussions on this topic included the following:

- There is flexibility to select the timing of sampling for items to be measured at least once a year, but sampling should be done at around the same time every year.
- Participating countries should have flexibility in carrying out the monitoring on inland aquatic environment. Although the site selection criteria for springs, headwaters and rivers become more detailed, it should be clearly stated that only sites potentially susceptible to acidification may be selected.
- Natural lakes are generally better than artificial lakes for monitoring sites on inland aquatic environment.

(QA/QC programs, and reporting procedures and format)

12. INC presented the papers on the QA/QC Programs and Data Reporting Procedures and Formats (EANET/ISAG 2/4/5-8). Major discussions on this topic included:

- Data quality may be different in different countries. In this connection, the importance of the reporting of the information related to data quality was emphasized

- In response to comments about the difficulty of sampling the inland aquatic environment during winter seasons, particularly in frigid zones, it was suggested that different monitoring periods can be decided in the national monitoring plan of each country.

13. After intensive review and discussions, ISAG adopted the monitoring guidelines, technical manuals and other technical documents (EANET/ISAG 2/4/1-8) with the modifications presented in Annex II.

Agenda Item 5: Review of the preparatory-phase activities of the Network

14. INC presented the report on the review of the preparatory-phase activities (EANET/ISAG 2/2/5/1), the report on Quality Assurance/Quality Control (QA/QC) Activities during the Preparatory Phase (EANET/ISAG 2/5/2), and the report on Capacity Building in the Participating Countries of EANET during the Preparatory Phase (EANET/ISAG 2/5/3). Major discussions on this topic included the following:

- The inter-laboratory comparison is important as one of the QA/QC activities of EANET to recognize the present status of the analytical performance of each participating laboratory. It was pointed out that more inter-laboratory comparison activities are necessary
- The follow up activities of the inter-laboratory comparison are particularly important for the laboratories that performed poorly for some chemical species. The availability of standard solution is also an important problem in some countries.
- In the future, disclosure of the individual names of the participating laboratories to the inter-laboratory comparison should be considered to identify the analytical performance of each laboratory.
- The cause of poor performance for some chemical species shown in the inter-laboratory comparison should be carefully examined, taking into account the analytical equipment used, way of sample handling, etc.

Agenda Item 6: Consideration of the monitoring data during the preparatory phase

(Data report)

15. INC presented the paper on the Data Report on the Acid Deposition in the East Asian Region (EANET/ISAG 2/6/1). Major discussions on this topic included:

- The ion balance (R1) and conductivity agreement (R2) check is a useful indicator for the evaluation of data quality in general, although discrepancy of R1 and R2 can occur at some sites where unidentified species are present.
- National center should perform data verification and then submit the verified data to INC for

further verification.

- The monitoring results should include the information on which months min/max values are obtained during the monitoring period. The time series of monitoring data should also be presented for evaluation of data.
- The data completeness of wet deposition monitoring should further be examined in terms of the number of samples in different monitoring sites.
- As one of the future tasks, INC should perform a comparative study of automatic SO₂ monitor and filter pack method, particularly at the remote sites to assess the reliability of these methods.

(Draft structure of the report on the state of acid deposition in the East Asian Region (tentative title) and the proposal on the establishment of the Drafting Committee on the report)

16. INC presented the papers on the Draft Structure of the Report on the State of Acid Deposition in the East Asian Region (tentative title) (EANET/ISAG 2/6/2) and the Proposal on the Establishment of the Drafting Committee on the Report (EANET/ISAG 2/6/3). Major discussions on this topic included:

- The draft structure in the presented document (EANET/ISAG 2/6/2) can be generally endorsed. Short description on regional atmospheric circulation and precipitation pattern may be included in the report. For the time being, the proposed title of the report (Report on the Acid Deposition Monitoring of EANET during the Preparatory Phase – its results, major constraints and ways to overcome them) should also be endorsed.
- The data to be used for the report can be up to September 1999, however, data beyond then may be used if they can be verified. Because data in wintertime are quite important for evaluation, the available data for winter 1998/1999 may be used for the report.
- The data verification should be performed before the preparation of the report. INC should make its best effort to complete the data verification possibly by 15 April 2000.
- INC will prepare, under the direction of ISAG, a preliminary draft report by 31 May 2000 for circulation among the ISAG members for comments. Taking into account the comments by ISAG members by 30 June 2000, the revised draft will be prepared for consideration and possible adoption at the Third ISAG Meeting.

Agenda Item 7: Consideration of the establishment of Task Forces

17. INC presented the paper on the Proposal for the Establishment of Task Forces (EANET/ISAG 2/7). Major discussions on this topic included:

- ISAG will recommend that the Working Group establish two Task Forces, one on Dry Deposition Monitoring and the other on Soil and Vegetation Monitoring, and a network of

- soil and vegetation specialists as presented in Annex III.
- The members of these Task Forces and the focal points of the network should be nominated through the diplomatic channel. They need not necessarily be ISAG members, but the roster of these experts should be reported to ISAG.
 - To facilitate the communication, the maximum use of the Internet may be considered, but accessibility to the Internet should not be a condition for participation.

Agenda Item 8: Review of information on the other scientific activities relating to acid deposition problems

18. The representative of the Norwegian Institute for Air Research (NILU) made a presentation on the recent activities of the Chemical Coordinating Center of EMEP (the European Monitoring and Evaluation Programme) (EMEP-CCC) for the European Convention on Long-Range Transboundary Air Pollutants (CLRTAP). He also made a brief presentation of the project on "Integrated Monitoring Programme on Chinese Terrestrial Systems-IMPACTS". Though not formally linked to EMEP, the impacts programme aims to transfer knowledge based on the CLRTAP work (e.g. manuals developed under the CLRTAP have been made available for the Chinese research group) and would contribute to the better understanding of acidification in China.

19. The representative of WMO briefed the Meeting on the WMO Global Atmosphere Watch (GAW) system and its precipitation chemistry and deposition component, including the main objectives of the latter, relevant activities in East Asia, results of the 1997-1999 laboratory performance inter-comparison in which from 7 to 10 laboratories from 7-9 EANET countries participated. He also presented some examples of the WMO modeling activities related to the long-range transport and deposition of pollutants, in particular for nitrogen and heavy metals. Finally he informed the Meeting about the newly established GAW Urban Research Meteorology and Environment (GURME) Project and about a GURME activity aimed at establishing a network of stations for air pollution measurements using passive samplers, which include 23 stations in 8 countries participating to EANET activities.

20. The representative of UNEP/EAP-AP made a presentation explaining its approach on the issue of transboundary air pollution by sub-region. He explained that an approach in 3 steps was successfully used in South Asia, resulting in the Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia in April 1998, and its activities since then. He also explained that UNEP was supporting the ASEAN secretariat in formulating a legal framework for the sub-region.

21. The representative of ESCAP briefed the Meeting on the Northeast Asian Subregional Programme on Environmental Cooperation (NEASPEC) with particular reference to its second phase project on Environmental Monitoring, Data Collection, Comparability and Analysis. The

project was now to be implemented in terms of two activities: 1) Promotion of Capacity Building in National Centres for Inter-comparability of Air Quality Data, and 2) Development of a Sub-regional Center and Initiation of Capacity Building in Air Quality Monitoring. He also referred to the recommendations of the Sixth Senior Official's Meeting of NEASPEC on the importance of a mutually beneficial partnership with ongoing environmental cooperation initiatives, including EANET, with a view to enhancing synergies and avoiding duplication and overlapping in their activities.

22. The representative of the Interim Secretariat made a presentation on various regional programs and activities with which EANET had tried to establish and strengthen cooperative links, such as the RAINS-ASIA Project by the World Bank and the Asian Development Bank, the UNDP "Subregional Program on Energy, Coal Combustion and Atmospheric Pollution in North Asia", "Long-Range Transport of Air Pollutants" project by China, Japan and the Republic of Korea, etc.

23. In addition, a paper introducing the recent acid deposition-related activities in North America, prepared by Dr. Bruce Hicks, was distributed among the participants.

Agenda Item 9: Other issues

24. Several issues were discussed under this agenda item. They included the following topics;

- Several recommendations by the representatives of NILU/EMEP-CCC, based on the experiences in Europe, including importance of the field intercomparison;
- Disclosure of the code names of the laboratories participating in the inter-comparison with their results. This issue will be raised at the Working Group;
- Procedures to prepare the Report on the State of the Acid Deposition in the East Asian Region (tentative title); and
- Milestones and future perspectives of EANET activities (All data to be collected in the present activities are not sufficient to comprehensively assess the acid deposition in the region.)

Agenda Item 10: Consideration and adoption of the report of the meeting

25. The Meeting adopted the Report of the Second Meeting of Interim Scientific Advisory Group of EANET (13-15 March 2000, Jakarta, Indonesia).

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Annex II

The Second Interim Scientific Advisory Group Meeting
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13-15 March 2000, Jakarta, Indonesia

ACID DEPOSITION
Monitoring Network in East Asia
Guidelines for Monitoring Acid Deposition in East Asia
(Modifications)

Page/Section/Paragraph/ Line	EANET/ISAG 2/4/1	Modifications
Page 9/ Section 3.3/ Line 3-4	In the case when ion balance is not obtained by measuring the major ions described above, fluoride, bromide, bicarbonate, nitrite and organic acids are recommended to be measured.	In the case when the ion balance is recognized not to be systematically attained by measuring the major ions described above, some additional ions relevant to the ion balance, such as fluoride, bicarbonate, nitrite and organic acids, are recommended to be identified and measured, as appropriate.
Page 13/ Section 4.3/ Line 2	PM10	PM
Page 13/ Section 4.4/ Para.2/Line 4	PM10	PM
Page 13/ Section 4.4/ Para.4/Line 1	PM10	PM
Page 22/ Section 6.1/ Para.2/ Line 1-2	It is recommended that harmonic lakes that are considered to be potentially susceptible to acidification, springs or rivers that have little artificial influence, should be selected.	It is recommended that harmonic lakes that are considered to be potentially susceptible to acidification should be selected. Natural lakes have higher priority for selection as sites than artificial lakes. If appropriate lakes are not available, then springs, headwaters or rivers that are potentially susceptible to acidification and have little artificial influence, should be considered.
Page 22/ Section 6.1/ Para.4/ Line 1-2	If there are no appropriate lakes in an area, springs, headwaters or rivers are selected,	If there are no appropriate lakes in an area, springs, headwaters or rivers that are potentially susceptible to acidification may be selected,
Page 23/ Section 6.2.2/ Line 1-2	The water samples from springs, headwaters and rivers should be measured more than 4 times a year for the same mandatory parameters as those for lake water.	The water samples from springs, headwaters and rivers that are potentially susceptible to acidification should be measured more than 4 times a year for the same mandatory parameters as those for lake water.
Page 24/	Electric conductivity (EC) and pH are	Electric conductivity (EC) and pH are

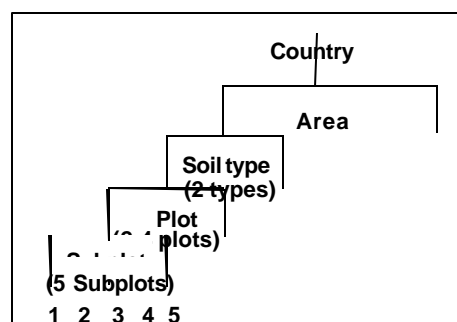
<p>Section 6.3.3/ Line 3-5</p>	<p>recommended to be measured in the water bath at 25°C in the laboratory, if available.</p>	<p>recommended to be measured in the water bath at 25°C in the laboratory. If a temperature controlled water bath is not available, use of water bath without temperature control but containing at least 5 L of water may be considered.</p>
<p>Common</p>		<p>The word, “Site” in soil monitoring system, has different meaning from the description in the other parts of the documents. This may be a cause of misunderstanding. The word should be changed as follows: Soil type: in each site, two soil types, sensitive and tolerant, will be selected. Thus, in the multi-stage sampling system, hierarchical structure is as follows: Country, Area, Soil type, Plot, and Subplot.</p>

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Page/Section/ Paragraph/Line	EANET/ISAG 2/4/2	Modifications
Page6/ 2.2.2/ para.2/ line1	In the case when ion balance is not obtained by measuring the major ions described above, fluoride, bromide, bicarbonate, nitrite and organic acids are recommended to be measured.	In the case when the ion balance is recognized not to be systematically attained by measuring the major ions described above, some additional ions relevant to the ion balance, such as fluoride, bicarbonate, nitrite and organic acids, are recommended to be identified and measured, as appropriate.
Page10/ 3.1.2/ Para2/ Section		Insert the following sentence after the 3 rd sentence (line 8). The height of the sensor should be as same as that of the bucket or funnel.
Page11/ 3.1.3/ para.1		Insert the following sentence at the end of the para.1. The height of precipitation amount measurement is recommended to be from 1.0 to 1.5 m above the grand surface, same as that for the precipitation chemistry collector and the precipitation sensor.
Page17/ section/ 4.1/para5/ line 4	In the case when ion balance is not obtained by measuring the major ions described above, fluoride, bromide, bicarbonate, nitrite and organic acids are recommended to be measured.	In the case when the ion balance is recognized not to be systematically attained by measuring the major ions described above, some additional ions relevant to the ion balance, such as fluoride, bicarbonate, nitrite and organic acids, are recommended to be identified and measured, as appropriate.
Page 19/ Section 4.2.2/d.	d. Water bath of 25°C temperature is recommended if available.	d. Water bath of 25°C temperature is recommended. If a temperature controlled water bath is not available, use of water bath without temperature control but containing at least 5 L of water may be considered.
Page 23/ Section 4.3.5/b.	b. Place the sample solution in a clean plastic or glass vessel to cover the sensing elements of the electrode. Maintenance of the samples at 25°C in a water bath is recommended if available.	b. Place the sample solution in a clean plastic or glass vessel to cover the sensing elements of the electrode. Maintenance of the samples at 25°C in a water bath is recommended. If a temperature controlled water bath is not available, use of water bath without temperature control but containing at least 5 L of water may be considered.

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Page/Section/ Paragraph/ Line Page 6/ Section 2.2.2.1./ line 3 Common	EANET/ISAG 2/4/3 a) Two forest sites, whose soils have different sensitivities to acid deposition, should be selected.	Modifications a) Two forest sites, whose soils have different sensitivities to acid deposition, are recommended to be selected. Concerning the QA/QC program for soil monitoring, the description about JIS will be deleted except in the list of references.
Common		The word, "Site" in soil monitoring system, has different meaning from the description in the other parts of the documents. This may be a cause of misunderstanding. The word should be changed as follows: Soil type: in each site, two soil types, sensitive and tolerant, will be selected. Thus, in the multi-stage sampling system, hierarchical structure is as follows: Country, Area, Soil type, Plot, and Subplot.



Acid Deposition Monitoring Network in East Asia
Technical Manual for Monitoring Inland Aquatic Environment
(Modifications)

Page/Section/ Paragraph/ Line	EANET/ISAG 2/4/4	Modifications
p.6/Sec.2.1.2.(a))/Para.1/ Line2-3	If appropriate lakes are not available, then springs, headwaters or rivers that have little artificial influence, should be considered.	Natural lakes have higher priority for selection of sites than artificial lakes. If appropriate lakes are not available, then springs, headwaters or rivers that are potentially susceptible to acidification and have little artificial influence, should be considered.
p.6/Sec.2.1.3./P ara.1/ Line1	If there are no appropriate lakes in an area, springs, headwaters or rivers are selected,	If there are no appropriate lakes in an area, springs, headwaters or rivers that are potentially susceptible to acidification may be selected,
p.10/Sec.2.3.2./ Para.1/ Line1	The water samples from springs, headwaters and rivers should be measured more than 4 times a year for the same mandatory parameters as those for lake water.	The water samples from springs, headwaters and rivers that are potentially susceptible to acidification should be measured more than 4 times a year for the same mandatory parameters as those for lake water.
p.12/Sec.2.4.2./ Para.1/ Line5-6	EC and pH are recommended to be measured in the water bath at 25°C in the laboratory, if available.	EC and pH are recommended to be measured in the water bath at 25°C in the laboratory. If a temperature controlled water bath is not available, use of water bath without temperature control but containing at least 5 L of water may be considered.
p.12/Sec.2.4.3.(b)/Para.1/ Line5-6	Electric conductivity and pH of the samples are recommended to be measured in the water bath, if available, which is thermostated at 25°C immediately after arriving to the laboratory, and alkalinity should be measured by titration with a 0.01 mol/L or 0.001 mol/L sulfuric acid.	Electric conductivity and pH of the samples are recommended to be measured in the water bath, which is thermostated at 25°C immediately after arriving to the laboratory. If a temperature controlled water bath is not available, use of water bath without temperature control but containing at least 5 L of water may be considered. And alkalinity should be measured by titration with a 0.01 mol/L or 0.001 mol/L sulfuric acid.
p.24/Sec.5.2.1.(a)/Para.3/ Line2-4	Electric conductivity is commended to be measured by a conductivity meter at 25°C using a water bath, if available.	Electric conductivity is commended to be measured by a conductivity meter at 25. using a water bath. If a temperature controlled water bath is not available, use of water bath without temperature control but containing at least 5 L of water may be considered.