

The Second Session  
of the Scientific Advisory Committee  
on the Acid Deposition Monitoring Network  
in East Asia  
25-27 November 2002, Bangkok, Thailand

## REPORT OF THE SESSION

### Introduction

1. The Scientific Advisory Committee on the Acid Deposition Monitoring Network in East Asia (EANET) (hereinafter referred to as SAC) held its Second Session in Bangkok, Thailand, from 25 to 27 November 2002. The Session was organized by the Secretariat for EANET and the Network Center for EANET (NC) and hosted by the UNEP RRC.AP.
2. The Session was attended by the members of SAC and their alternates nominated by the following participating countries: Cambodia, China, Indonesia, Japan, Malaysia, Mongolia, the Philippines, Republic of Korea, Russia, Thailand and Vietnam.
3. The Session was also attended by the representatives from Lao People's Democratic Republic and Myanmar as observers, as well as experts from both the United Nations Economic Commission for Europe (UN/ECE) representing the Convention on Long-Range Transboundary Air Pollution (CLRTAP), and the Chemical Coordinating Center of the Co-operative Programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollutants in Europe (EMEP).
4. Representatives from Pollution Control Department of Thailand observed the Session as well as researchers of a local research center etc.
5. The list of participants is attached as Annex.

### Agenda Item 1: Opening of the Session

6. The Session was opened with a welcome address from UNEP RRC.AP delivered by Mr. Mylvakanam Iyngararasan, Senior Programme Officer, UNEP RRC.AP. The Coordinator of Secretariat for EANET, Dr. Jiang Wei and the Programme Officer, Ms. Adelaida B. Roman were introduced as well as the Administrative Assistant, Ms. Sumana Ratanasawetwad.

Agenda Item 2: Election of officers

7. Dr. Hiroshi Hara, Japan was elected as Chairperson of the Session. Dr. Tjang Mushadji Sutamihardja, Indonesia and Ms. Ella Sandoval Deocadiz, Philippines were elected as Vice-Chairpersons. Ms. Bulgan Tumendemberel from Mongolia was elected as Rapporteur.

Agenda Item 3: Adoption of the agenda

8. The Session adopted the agenda as proposed by the Secretariat and NC.

Agenda Item 4: Review of EANET activities since the First Session of Scientific Advisory Committee

9. The Secretariat and NC presented a summary report on the progress after the First Session of SAC held in November 2001 in Chiang Mai, Thailand. The Secretariat reported that important institutional changes had occurred after the Third Session of the Intergovernmental Meeting (IG3). All terms of EANET activities implemented by NC for mentioned period were observed with emphasis that the most important issues were prepared to be considered at SAC2 in detail. It was noted that according to "Procedures on Data and Information Disclosure for EANET" adopted at IG3 the Data report 2000 was disclosed outside EANET without any objection from participating countries after its finalization by NC in May 2002 following the comments of SAC1. Also taking into account the discussions at previous meetings of SAC and ISAG, and after the communication with the national focal points, NC prepared draft reports on 2001 inter-laboratory comparison projects in the way that the names of laboratories were revealed.
10. The results of Questionnaire Survey for National Training Activities in 2001 were presented by NC to observe the progress in line with the "Training Programs for EANET in the Regular Phase" endorsed at IG3. NC also introduced the summary of capacity building activities by relevant international and bilateral organizations concerning acid deposition problems.

Agenda Item 5: Consideration of the national monitoring plans

11. An overview of national monitoring plans of participating countries was presented by NC. During the following discussions, it was pointed out that all the mandatory items were not monitored in some national centers due to financial problems. And it was suggested to specify the percentage of coverage of monitoring parameters into overviews of national monitoring plans for evaluation of the network activities. The overview was followed by the presentations of national monitoring plans by each of the participating countries.
12. The Session considered the national monitoring plans in general line to define their changes in contrast to the previous year with raising of minor clarification questions. Some comments and suggestions were provided for their further elaboration after brief discussions:
  - It was pointed out that volume of precipitation water collected by wet deposition samplers could be used for chemical analysis but the meteorological data on rain gauge should be used for further calculation of averaged values and deposition fluxes;
  - In case of relocating the sampling equipment, the corresponding remarks should be put in report. Also the significance of parallel measurements for both places was stressed for certain period before re-location.
  - If the name of sampling site changes, the clear clarification of reasons as well as relations with the previous site needs to be done in the national monitoring plan and data reports.
  - It was pointed out that there were some parts in the national monitoring plans of some participating countries that should be revised and submitted to NC.
  - As for the proposed plan of Vietnam, it was clarified that 3 new sites suggested to be operated from 2003 if the plan is approved by Vietnamese government. The corresponding assistance and technical support from NC would be requested after the governmental decision.
  - In Russia, it was pointed out that a new monitoring station had started to operate in November 2001 and the possibility of the opening of one more station had been discussed at national level since SAC1.
  - In Thailand, it was informed that one additional monitoring point for soil and vegetation monitoring was established in the area of Khao Laem Dam , which was renamed to Vachiralongkorn Dam.

- The general ideas on institutional and organizing topics were delivered to establish the acid deposition monitoring in Cambodia. The necessities of equipment, funding and training of laboratory staff were pointed out as well as help from international experts.

Agenda Item 6: Consideration of the data report in 2001

13. NC presented a draft Data Report on Acid Deposition in the East Asian Region 2001. Major discussions on this topic included the following:

- i. Wet deposition monitoring data
  - It was pointed out that data quality criteria presently used such as ion balance (R1) could not be a complete parameter for data evaluation. Based on experience of data verification for previous years the SAC members suggested to initiate studies on consideration and evaluation of imbalanced data taking into account different reasons and conditions of their appearance as well as different tasks of research activities that data might be used. The expert from EMEP/CCC made the corresponding remarks on data evaluation within the EMEP program as follows: in spite of importance of ion balance the intercomparisons for respective species are prevailed in data checking, and imbalance is not a criterion to reject values. Imbalanced data could be used with flags especially for some important tasks such as calculation of atmospheric sulfur balance or pollutant fluxes within the region.
  - Ionic imbalance was reported to occur frequently in some stations. The imbalance would be due to either analytical errors or some missing ions. It could be evaluated together with the results of annual intercomparison program as one of the tasks for International Data Verification Group of NC.
  - Quality assurance should be improved by more comprehensive scientific analysis of data.
  - The analysis and evaluation of data for previous years should be organized by SAC and NC to create a mechanism of multi-level creditability of data using classification of measurement conditions, difference of ranks, tasks to use data taking into account that data on sulfur and nitrogen species are most important for acid deposition.
  - The results of intercomparison projects should be taken into account for evaluation of flagged data.

- ii. Air Concentration monitoring data for Dry deposition
  - It was pointed out that there were data obtained for only one-week period in a month by filter pack method. In such cases, the minimum or maximum values during the month were the same as the averaged value, and the data were indicated only as the average values in the report.
  - It was recommended to provide a definition of N.D. in tables with clarification of measuring methods, values of detection limits provided by devices/procedures, by vendor or laboratory. NC responded that it would include the clarification of sampling period and explanation of N.D. in the Data Report.
  - Upon the exchange of opinions on data units the recommendation was done to consider the affinity of different types from points of demonstration of results outside EANET and their use for global evaluations on the common basis as well as for clear understanding by politicians and public.
  - As the consequence of discussion, the practical recommendation was accepted by NC to include the tables with conversion coefficients in Data Report.
  - The suggestion that data for report should be prepared based on common time interval of averaging was proposed.
  
- iii. Soil and vegetation monitoring data
  - The evident differences between the number of samples reported and theoretical quantity of results according to the multi-stage sampling scheme in the manual were commented by a member of SAC.
  - The suggestion was made that a soil sampler with smaller hole could be used to take a representative sample on subplot.
  
- iv. Inland aquatic environment monitoring data
  - In response to a question from NC, representative of China explained that a request to measure alkalinity was made in September 2002.
  
- v. General remarks
  - The scientific analysis of existing time series of data jointly by members of SAC and NC could be helpful to receive the first state-of-the-art evaluation of acid deposition in the EANET region during both preparatory and regular phases of EANET.

Agenda Item 7: Review of QA/QC activities in the participating countries

14. NC presented draft reports on the inter-laboratory comparison projects in 2001 on wet deposition, soil, and inland aquatic environment. Major discussions on this topic included the following:
- Participation in more international campaigns for interlaboratory comparison was proposed both for NC and participating countries by using world-wide programs. Such results will also be published as an EANET activity. The contribution of other laboratories that had already been involved in international intercomparisons could be used by NC.
  - The evaluation of imbalanced data should be included as one of the tasks for international verification group by NC.
  - Due to possible inappropriate way to use a simple QA/QC criterion in data verification, the first priority species with good results of inter-laboratory comparison studies on wet deposition need to receive priorities for data evaluation.
  - The clearer clarification is necessary on reproducibility and repeatability for analysis of soil samples. NC was addressed to prepare the detailed explanation on procedures of analysis for soil monitoring after SAC2.
  - Lakes were recommended for monitoring inland aquatic environment to recognize an effect of acid deposition. In case of absence of suitable lakes, rivers with low flow rates should be chosen for sampling.
  - After the discussion at SAC1, the draft reports were prepared before SAC2 in a way to open the names of laboratories, which received no objection from participating countries.
15. The suggestion was put forward for NC to provide a plan and related guidelines for preparing the intercomparison on dry deposition taking into account the experience of EMEP campaigns as well as existing EMEP manual. NC responded that discussion on how to prepare samples for this inter-laboratory comparison would be organized.
16. The report on questionnaire survey on QA/QC activities in the participating countries was presented by NC. The members of SAC requested to present the example of an existing successful QA/QC program for soil and vegetation monitoring. They commented that the QA/QC program for soil prepared by a country is for general use and it is not developed for specific condition of soil monitoring in practice.

Agenda Item 8: Consideration of improvement of the monitoring methodologies

17. NC presented the revised draft of ‘Strategy Paper for the Future Direction of Soil and Vegetation Monitoring of EANET’ developed by the Task Force on Soil and Vegetation Monitoring with consideration and comments by members of Network of soil and vegetation specialists. After the revision based on a few remarks suggested by participants, the ‘Strategy Paper for the Future Direction of Soil and Vegetation Monitoring of EANET’ was endorsed by SAC.
18. The ‘Technical Document for Filter Pack Monitoring in East Asia’ was presented as the preliminary draft by the NC. The comments were made that the document should include the discussion of various types of filter pack methods with different configurations and flow rates. Some important suggestions on elaborating the document were accepted by NC concerning the artifact problem. The document was considered by SAC2 as the basis for further development according to the suggested timetable.

Agenda Item 9: Consideration of research activities on acid deposition

19. NC presented the paper on review of its on-going research activities on acid deposition including the joint research project with Russia on improvement of monitoring methodology in frigid zones, joint research programme with Thailand on dry deposition fluxes and joint research project with Mongolia on plant sensitivity to dry deposition. During the discussion of results some suggestions were made as follows:
  - To implement the measurements of bicarbonates over the northern parts of the EANET region for wet deposition monitoring.
  - Taking into account the results of joint project with Russia and experience of EMEP, operation with bulk samplers could be recommended to use for snow sampling in the northern sites. .
  - Passive samplers could not be suitable to monitor ozone in case of plant sensitivity because the exposure of their concentration with values above threshold is not recognized by passive sampling of 1-2 weeks interval.
20. NC presented the ‘Review of Existed Initiatives on Developing Emission Inventories and Numerical Modeling’ concentrating on programs and projects within the EANET region during recent years such as the LTP project, the RAINS-Asia, the MISC-Asia, the TAcIDES and the MATCH system application. Some results and achievements were

clarified during the following discussion, including the clarification of geographical coverage of the EANET region by model domains.

21. Dr A.Ryaboshapko introduced his research activities in these fields by presenting the expert results on:
  - applicability of simple dry deposition velocity approximation to calculation of dry deposition fluxes of acidified pollutants,
  - emission evaluation of sulfur dioxide and ammonia over Russian territory, and
  - calculated deposition of mercury over the East Asia that were produced by hemispheric long-range transport model in EMEP/MSC-East which expressed its readiness to participate in the coming model intercomparison project over the EANET region.
  
22. The Proposal for future direction of research activities in EANET were presented by NC for consideration by SAC before the more determined future research activities would be elaborated. Some participants stressed that research activities of highest priority should be incorporated into revision of manuals and QA/QC programs. The document was recommended by SAC2 for future discussion among SAC members.
  
23. Dr H.Akimoto made a presentation on Asia Brown Cloud (ABC) Program.

ABC is a program under UNEP for studying the impacts of air pollution on climate change, hydrological cycle, agriculture and human health in Asia. ABC Science Committee proposed 13 stations in Asia and Pacific side of US for observation of gaseous and particulate air pollutants. It also proposed potential collaboration with EANET as well as WMO –GAW and other organizations.

Agenda Item 10: Consideration of the work program and budget for 2003

24. Secretariat and NC presented the draft Work Program and Budget in 2003 for EANET to observe planned EANET activities by SAC for their comments to the Fourth Session of the Intergovernmental Meeting (IG4) that will be held immediately after this session. The discussion on the draft work program was concerned with important terms of activities regarding data quality enhancement. It was suggested to implement additional actions by incorporating them into the Work Program for starting as soon as possible under the guidance of SAC:

- SAC should establish the new Task Force for Wet Deposition with special tasks to evaluate problem of imbalanced data, applicability of flagged data, etc;
- NC should prepare the document for the procedure of inter-laboratory campaign project on dry deposition with the assistance of Task Force on Dry Deposition Monitoring in 2003;
- NC should initiate the revision of technical manuals for acid deposition monitoring as soon as possible to get the revised documents during the shorter period (3-5 years).

As for the imbalanced data, it was proposed as another option that the indication of problems with imbalanced data and their evaluation as well as other important questions is included into the Annex of its national monitoring plan if they are identified by a participating country for consideration by SAC and NC or other scientific experts.

Regarding the inter-laboratory comparison project on dry deposition, NC replied that there is no available knowledge on how to organize the intercomparison for dry deposition at present in NC and supposed to start a research on applicable methods for this intercomparison taking into account the comments that the Task Force could provide in this field.

25. After the discussion on suggestions and some explanations of possible procedures within the rules of EANET done by NC, the SAC session expressed its expectation that the processes mentioned above would be intensified by the presentation of SAC's recommendation at the IG4 by Chair of SAC session.

Agenda Item 11: Review of the progress of other international programs on acid deposition

26. The representative from UN/ECE, the secretariat for CLRTAP, made a presentation on the history, framework and recent relevant activities of the Convention. He provided information on the progress in scientific work under the Convention on Long Range Transboundary Air Pollution. He noted developments in reporting trends, dynamic modeling of effects, quantifying effects of nitrogen and ozone, and guidelines for the reporting of emissions. He stressed the importance that the Convention attached to collaboration with EANET and drew attention to possible issues for information exchange in the future. For global issues in particular, such as hemispheric air pollution transport and climate change, it would be important to collaborate.

27. The expert from EMEP representing the EMEP Chemical Coordinating Center presented recent developments and the future priorities of EMEP, with particular emphasis on how research and monitoring activities should supplement each other in order to develop sound abatement strategies. He also highlighted to progress towards expanding the geographical coverage in moving towards hemispheric scale modeling which will set new requirements to providing harmonized datasets available for model validation. A continued close cooperation with EANET on this issue is anticipated.

Agenda Item 12: Other issues

28. The representative of Russia announced the proposal to organize a special workshop on soil and vegetation monitoring problem in Irkutsk, Russia to introduce the field procedures developed at the national level.
29. Proposal for electing chairpersons of SAC and Task Forces for more than one-year period was done. This issue was left for future discussion.

Agenda Item 13: Consideration and adoption of the report of the Session

30. This report was considered and adopted.

Agenda Item 14: Closing of the Session

31. All the participants expressed their gratitude and appreciation for the efforts made by the Network Center and Secretariat for having arranged this important meeting.

**Annex I****List of Participants***Participating Countries*

---

Cambodia

Mr. Hang Dara  
Vice Chief of Air Quality, Noise and Vibration Management Office  
Department of Pollution Control  
Ministry of Environment  
#48, Samdech Preah Sihanouk, Tonle Bassac  
Chamkarmon, Phnom Penh  
Cambodia  
Tel: +855-16-86-60-43  
Fax: +855-23-21-25-40  
Email: hang\_dara@hotmail.com

Mr. Pak Sokharavuth  
Chief Office Environment Quality Research & Lab  
Department of Pollution Control  
Ministry of Environment  
#48, Samdech Preah Sihanouk, Tonle Bassac  
Chamkarmon, Phnom Penh  
Cambodia  
Tel: +855-12-96-21-03  
Fax: +855-23-98-78-80  
Email: 012962103@mobitel.com.kh

China

Mr. Wang Ruibin  
Senior Engineer  
Department of Air Quality Monitoring  
China National Environmental Monitoring Center (CNEMC)  
No. 1 Yuhuinanlu, Beijing 100029  
People's Republic of China  
Tel: +86-10-8463-6375  
Fax: +86-10-8465-0863  
Email: rbwang@zhb.gov.cn

Ms. Zhang Xin  
Senior Engineer  
Department of Air Quality Monitoring  
China National Environmental Monitoring Center (CNEMC)  
No. 1 Yuhuinanlu, Beijing 100029  
People's Republic of China  
Tel: +86-10-8463-6375  
Fax: +86-10-8465-0863

Indonesia

Mr. Hery Haryanto  
Director, Climatological and Air Quality Centre  
Bureau of Meteorology and Geophysics  
Jl. Angkasa I No. 2, Jakarta 10720  
Indonesia  
Tel: +62-21-654-0158  
Fax: +62-21-654-0158  
Email: hery\_h@bmg.go.id

Dr. Tjang Mushadji Sutamihardja  
Lecturer, Graduate School  
Department of Natural Resources of Environment  
Bogor Agriculture University  
Jl. Flamboyan No. 3 Komplek IPB  
Sindangbarang Logi - Bogor, Jawa Barat  
Indonesia  
Tel: +62-251-325-811 / 324-820  
Fax: +62-251-324-820 / 325-811  
Email: suta-ipb@indo.net.id / sutamihardja2002@yahoo.com

Japan

Dr. Hajime Akimoto  
Program Director, Atmospheric Composition Research Program  
Institute of Global Change Research  
Frontier Research System for Global Change  
3723-25 Showa-machi  
Kanazawa-ku, Yokohama 236-0001  
Japan  
Tel: +81-45-778-5710  
Fax: +81-45-788-5496  
Email: akimoto@jamstec.go.jp

Dr. Tomoyuki Hakamata  
Director, Department of Rural Environment  
National Institute for Rural Engineering  
Kannondai 2-1-6, Tsukuba 305  
Japan  
Tel: +81-298-38-7584  
Fax: +81-298-38-7609  
Email: tomo@affrc.go.jp

Dr. Hiroshi Hara  
Head, Environmental Chemistry Section  
National Institute of Public Health  
Shirokanedai 4-6-1, Minato-ku  
Tokyo 108-8638  
Japan  
Tel: +81-3-3441-7111 (Ext. 326)  
Fax: +81-3-3446-6468  
Email: harahrs@niph.go.jp

Malaysia

Prof. Dr. Muhamad Bin Awang  
Deputy Vice Chancellor (Academic Affairs)  
Chancellery Department  
Universiti Putra Malaysia  
43400 UPM Serdang, Selangor  
Malaysia  
Tel: +60-3-8946-6024  
Fax: +60-3-8943-2516  
Email: awang@admin.upm.edu.my

Mongolia

Mr. Enebish Dugerjav  
Officer, Department of Information, Monitoring & Assessment  
Ministry of Nature and Environment  
Government Building-3, Bagatoiruu-44  
Ulaanbaatar-11, Mongolia  
Tel: +976-11-312-269  
Fax: +976-11-321-401  
Email: oyundar@mongol.net

Ms. Bulgan Tumendemberel  
Chief Engineer  
Central Laboratory of Environmental Monitoring  
P.O. Box 150, Ulaanbaatar-36  
Mongolia  
Tel: +976-11-341-818  
Fax: +976-11-460-777  
Email: bnbn@magicnet.mn

Philippines

Dr. Wilfredo Manila Carandang  
Associate Professor, Institute of Renewable Natural Resources  
College of Forestry and Natural Resources  
University of the Philippines Los Baños  
College, Laguna 4031, Philippines  
Tel: +63-49-536-2599 / 536-2657  
Fax: +63-49-536-3809 / 536-5314  
Email: wmc@mudspring.uplb.edu.ph / wm\_carandang@yahoo.com

Ms. Ella Sandoval Deocadiz  
Chief, Research and Development Division  
Environmental Management Bureau  
DENR Compound, Visayas Avenue  
Diliman, Quezon City  
Philippines  
Tel: +63-2-426-4339 / 426-4340  
Fax: +63-2-426-4340  
Email: ella\_deocadiz@emb.gov.ph

Republic of Korea

Prof. Seog Yeon Cho  
Professor, Environmental and Civil Engineering Division  
Inha University  
253 Yonghyundong, Nanku  
Incheon, 502-751  
Republic of Korea  
Tel: 82-32-860-7506  
Fax: 82-32-862-7412  
Email: sycho@inha.ac.kr

Dr. Jin Seok Han  
Director, Atmospheric Chemistry Division  
National Institute of Environmental Research (NIER)  
Seo-gu, Kyongseou-dong, Incheon  
Republic of Korea  
Tel: +82-32-560-7330  
Fax: +82-32-560-7333  
Email: nierhan@hanmail.net

Mr. Soo Yun Ma  
Deputy Director, Air Quality Policy Division  
Ministry of Environment  
No. 1, Joong-Ang-Dong, Kwa-cheon City  
Kyung-Gi-Do  
Republic of Korea  
Tel: +82-2-504-9247  
Fax: +82-2-504-9208  
Email: ma21@me.go.kr

Russia

Dr. Alexey Grigorievich Ryaboshapko  
Chief of Scientific Sector  
Monitoring of Transboundary Pollution  
Institute of Global Climate and Ecology (IGCE)  
Russian Federal Service for Hydrometeorology and Environmental  
Monitoring (ROSHYDROMET)  
Glebovskaya str., 20-B, Moscow 107258  
Russia  
Tel: +7-095-160-5867  
Fax: +7-095-160-0831  
Email: agryaboshapko@mail.ru

Ms. Veronika Alexandrovna Ginzburg  
Researcher, Background Environmental Monitoring Department  
Institute of Global Climate and Ecology (IGCE)  
Russian Federal Service for Hydrometeorology and  
Environmental Monitoring (ROSHYDROMET)  
Glebovskaya str., 20-B  
Moscow 107258  
Russia  
Tel: +7-095-160-0840  
Fax: +7-095-160-0831  
Email: Vergiliy@mtu-net.ru / ofm@mail.ru

### Thailand

Dr. Jesada Luangjame  
Forest Technical Official Level 8  
Silvicultural Research Division  
Royal Forest Department  
61 Phaholyothin Road, Chatuchak  
Bangkok 10900  
Thailand  
Tel: +66-2-561-4292 Ext. 449 / 940-6586 (direct)  
Fax: +66-2-579-9576 / 561-4809  
Email: jesada@mozart.inet.co.th

Dr. Pojanie Khummongkol  
Chairperson  
Environmental Technology Division  
King Mongkut's University of Technology, Thonburi  
Suksawad 48, Rasburana, Bangmod  
Bangkok 10140  
Thailand  
Tel: +66-2-470-8651  
Fax: +66-2-470-8660  
Email: pojanie.khu@kmutt.ac.th

### Vietnam

Mr. Nguyen Van Tue  
Deputy Director  
Department of Network Operation  
Hydro - Meteorological Service of Vietnam (HMS)  
No. 4, Dang Thai Than Street  
Hanoi  
Viet Nam  
Tel: +84-4-826-4087  
Fax: +84-4-826-0779  
Email: vvtuan@netnam.org.vn

Mr. Hoang Manh Hoa  
Senior Expert, International Cooperation Department  
Hydro - Meteorological Service of Vietnam (HMS)  
No. 4, Dang Thai Than Street  
Hanoi  
Viet Nam  
Tel: +84-4-826-4087  
Fax: +84-4-826-0779  
Email: vvtuan@netnam.org.vn

*International Organizations etc.*

---

EMEP (NILU)

Dr. Kjetil Tørseth  
Director, Department of Regional and Global Pollution Issues  
Head of the EMEP Chemical Coordinating Center  
Norwegian Institute for Air Research (NILU)  
P.O. Box 100, N-2027 Kjeller  
Norway  
Tel: +47-63-89-81-58  
Fax: +47-63-89-80-50  
Email: kt@nilu.no

UN/ECE

Dr. Keith R. Bull  
Chief, Air and Water Team  
Environment and Human Settlements Division  
United Nations Economic Commission for Europe (UN/ECE)  
Palais des Nations, CH-1211 Geneva 10  
Switzerland  
Tel: +41-22-917-2354  
Fax: +41-22-917-0621  
Email: keith.bull@unece.org

*Observers*

---

Lao PDR

Ms. Monemany Nhoibouakong  
Acting Director General  
Environment Research Institute  
Science Technology and Environment Agency (STEA)  
P.O. Box 2279, Vientiane  
Lao PDR  
Tel: +856-21-218-915 / 217-650  
Fax: +856-21-213-472  
Email: mone\_many@yahoo.com

Myanmar

Mr. Maung Maung Htay  
Staff Officer  
Department of Meteorology and Hydrology  
Kaba Aye Pagoda Road, Mayangon, 11061  
Yangon, Myanmar  
Tel: +95-1-665-669  
Fax: +95-1-665-944 / 665-704  
Email: dg.dmh@mptmail.net.mm

Thailand

Dr. Hathairatana Garivait  
Environmental Scientist, Environmental Research and Training Center / DEQP  
Ministry of Natural Resources and Environment  
49 Rama 6 Soi 30, Rama 6 Road  
Bangkok 10400  
Thailand  
Tel: +66-2-577-4182-9 (Ext. 325)  
Fax: +66-2-577-1138  
Email: evd49581@hotmail.com / hathairat@myrealbox.com

Ms. Mingquan Wichayarangsaridh  
Director, Air Quality and Noise Management Division  
Pollution Control Department (PCD)  
92 Soi Paholyothin 7, Paholyothin Road  
Sam Sen Nai, Phayathai, Bangkok 10400  
Thailand  
Tel: +66-2-298-2323  
Fax: +66-2-298-2325  
Email: mingquan.b@pcd.go.th

Mr. Phunsak Theramongkol  
Acting Chief, Monitoring 1&2 Sub-division  
Air Quality and Noise Management Division  
Pollution Control Department (PCD)  
92 Soi Paholyothin 7, Paholyothin Road  
Sam Sen Nai, Phayathai, Bangkok 10400  
Thailand  
Tel: +66-2-298-2399  
Fax: +66-2-298-2392  
Email: pansak.t@pcd.go.th

Mr. Pichaid Atipakya  
Environmental Officer, Air Quality and Noise Management Division  
Pollution Control Department (PCD)  
92 Soi Paholyothin 7, Paholyothin Road  
Sam Sen Nai, Phayathai, Bangkok 10400  
Thailand  
Tel: +66-2-298-2393  
Fax: +66-2-298-2392  
Email: atipakya@hotmail.com

Mr. Sanya Charoenwerakul  
Assistant Environmental Division Manager – Technical  
Electricity Generating Authority of Thailand  
Bang Kruai, Nonthaburi 11130  
Thailand  
Tel: +66-2-436-1101  
Fax: +66-2-436-1175  
Email: sanya@egat.or.th

Dr. Vithet Srinetr  
Head of Environmental Laboratory  
Pollution Control Department (PCD)  
Ministry of Natural Resources and Environment  
92 Soi Paholyothin 7, Paholyothin Road  
Sam Sen Nai, Phayathai  
Bangkok 10400  
Thailand  
Tel: +66-2-298-2545  
Fax: +66-2-298-2580  
Email: vithet.s@pcd.go.th

### *Secretariat*

---

#### Interim Secretariat

Mr. Tokuya Wada  
Deputy Director  
Global Environment Issues Division  
Global Environment Bureau  
Ministry of the Environment  
1-2-2, Kasumigaseki Chiyoda-ku  
Tokyo, 100-8975  
Japan  
Tel: +81-3-5521-8245  
Fax: +81-3-3581-3348  
Email: tokuya\_wada@env.go.jp

Ms. Riyo Miyashita  
Environmental Staff  
Global Environment Issues Division  
Global Environment Bureau  
Ministry of the Environment  
1-2-2, Kasumigaseki Chiyoda-ku  
Tokyo, 100-8975  
Japan  
Tel: +81-3-5521-8245  
Fax: +81-3-3581-3348  
Email: riyo\_miyashita@env.go.jp

Network Center

Dr. Tsumugu Totsuka  
Director General  
Acid Deposition and Oxidant Research Center  
1182 Sowa, Niigata-shi, 950-2144  
Japan  
Tel: +81-25-263-0551  
Fax: +81-25-263-0566  
Email: totsuka@adorc.gr.jp

Dr. Sergey Arkadyevich Gromov  
Deputy Director General  
Acid Deposition and Oxidant Research Center  
1182 Sowa, Niigata-shi, 950-2144  
Japan  
Tel: +81-25-263-0552  
Fax: +81-25-263-0566  
Email: gromov@adorc.gr.jp

Dr. Hisashi Hasome  
Head, Data Management Department  
Acid Deposition and Oxidant Research Center  
1182 Sowa, Niigata-shi, 950-2144  
Japan  
Tel: +81-25-263-0561  
Fax: +81-25-263-0567  
Email: hasome@adorc.gr.jp

Dr. Norio Fukuzaki  
Head, Atmospheric Research Department  
Acid Deposition and Oxidant Research Center  
1182 Sowa, Niigata-shi, 950-2144  
Japan  
Tel: +81-25-263-0557  
Fax: +81-25-263-0567  
Email: fukuzaki@adorc.gr.jp

UNEP RRC.AP

Mr. Surendra Shrestha  
Director  
UNEP RRC.AP  
Asian Institute of Technology  
P.O. Box 4, Klong Luang, Pathumthani 12120  
Thailand  
Tel: +66-2-516-2124  
Fax: +66-2-516-2125  
Email: Surendra.Shrestha@rrcap.unep.org

Mr. Mylvakanam Iyngararasan  
Senior Programme Officer  
UNEP RRC.AP  
Asian Institute of Technology  
P.O. Box 4, Klong Luang, Pathumthani 12120  
Thailand  
Tel: +66-2-524-6239  
Fax: +66-2-516-2125  
Email: Mylvakanam.Iyngararasan@rrcap.unep.org

EANET Secretariat

Dr. Jiang Wei  
Coordinator, EANET Secretariat  
UNEP RRC.AP  
Asian Institute of Technology  
P.O. Box 4, Klong Luang, Pathumthani 12120  
Thailand  
Fax: +66-2-516-2125

Ms. Adelaida B. Roman  
Programme Officer  
UNEP RRC.AP  
Asian Institute of Technology  
P.O. Box 4, Klong Luang, Pathumthani 12120  
Thailand  
Fax: +66-2-516-2125  
Email: Adelaida.Roman@rrcap.unep.org

Ms. Sumana Ratanasawetwad  
Administrative Assistant  
UNEP RRC.AP  
Asian Institute of Technology  
P.O. Box 4, Klong Luang, Pathumthani 12120  
Thailand  
Tel: +66-2-524-6242  
Fax: +66-2-516-2125  
Email: Sumana.Ratanasawetwad@rrcap.unep.org