

The Ninth Senior Technical Managers' Meeting  
of the Acid Deposition Monitoring Network in East Asia  
27-29 August 2008, Niigata, Japan

## **Report on the activities of the Task Force on Soil and Vegetation Monitoring**

**Network Center for EANET**

### **1. Date of the 1<sup>st</sup> Meeting**

Date: 6-7 August 2008

Venue: Large Meeting Room, Acid Deposition and Oxidant Research Center, Niigata,  
Japan

### **2. Terms of reference (TOR)**

- To revise the technical documents on soil and vegetation monitoring as necessary
- To assess the impacts of acid deposition and relevant air pollutants on soil and vegetation based on available data and other information for the EANET periodic reports
- To improve methodologies mentioned in the Technical Manual for Soil and Vegetation Monitoring and the Sub-Manual on Forest Vegetation Monitoring for EANET
- To recommend activities for future direction of soil, vegetation and related ecosystems monitoring
- To develop guidelines and methods for future monitoring
- To identify future research activities for soil and vegetation

### **3. Members (as of August 2008)**

Dr. Wilfredo M. Carandang      University of the Philippines at Los Banos, the  
(Chairperson)                      Philippines

Prof. Fang Liu                      China National Environmental Monitoring Centre,  
China

Dr. Tomoyuki Hakamata      Hamamatsu Photonics K.K., Japan

Prof. Nik Muhamad Majid      Universiti Putra Malaysia, Malaysia

Dr. Apolonio M. Ocampo      University of the Philippines at Los Banos, the  
Philippines

Ms. Hoe-Jung Noh              National Institute of Environment Research, Republic of  
Korea

Dr. Tatiana A. Mikhailova	Siberian Institute of Plant Physiology and Biochemistry, RAS/SB, Russia
Dr. Jesada Luangjame	Royal Forest Department, Thailand
Dr. Hiroyuki Sase	Acid Deposition and Oxidant Research Center, Japan

#### 4. Major decisions

Discussions in the 1<sup>st</sup> Meeting of the Task Force on Soil and Vegetation Monitoring were summarized as the meeting minutes (Annex). The major decisions of the 1<sup>st</sup> Meeting are as follows:

- The Meeting agreed on the terms of reference and members as shown above.
- The Meeting discussed mainly revision of the Strategy Paper for Future Direction of Soil and Vegetation Monitoring. It was agreed that the revised strategy paper would be entitled “Action Plan for Future Direction of Soil, Vegetation and related Ecosystems Monitoring (2009-2014)”.
- The Meeting discussed specific activities to be described in the Action Plan and role of the Task Force. The meeting agreed on the assignment of the leaders and cooperative members for the respective works as the following table.

**Table: Proposed leaders and cooperative members for the specific activities described in the Action Plan**

Activities	Leader	Cooperative members
Promotion of continuous monitoring	-	All
Improvement of monitoring system	-	All
Compilation of the list of experts on ecological impacts in the respective countries	-	All
Promotion of capacity building activities	-	All
Development of the guideline for the catchment monitoring	Dr. Jesada	Dr. Hakamata, Dr. Sase, Dr. Carandang
Step-by-step identification of the areas susceptible to acid deposition	Dr. Hakamata	Prof. Liu, Ms. Noh, Dr. Ocampo
Trial campaign for measurement of ozone concentration in forest area and its effects	Dr. Carandang	Dr. Mikhailova, Prof. Nik, Dr. Jesada, Dr. Sase
Promotion of catchment analysis and simulation modeling on soil and inland water	Dr. Sase	Dr. Hakamata, Dr. Jesada
Evaluation of the ecological monitoring data for the next periodic report	Dr. Ocampo	All

- The final draft of the Action Plan for submission to SAC8 will be prepared within September 2008 after circulation among the members.
- The 2<sup>nd</sup> Meeting will be held in June or July 2009.

## 5. Schedule

<u>Early 2008</u>	Appointment of the members of the Task Force
<u>June 2008</u>	Preparation of draft revised Strategy Paper (Action Plan) by the Chair and NC
<u>August 2008</u>	1 <sup>st</sup> meeting of the Task Force
<u>August – October 2008</u>	Preparation of the final draft Action Plan and circulation among SAC members
<u>15-17 October 2008</u>	Endorsement of the Action Plan at the 8 <sup>th</sup> Session of SAC
<u>November 2008</u>	Printing and distribution of the Action Plan before IG10
<u>Mid 2009</u>	Second meeting of the Task Force to review progress of the Action Plan activities and discuss works relevant to the Strategy of EANET Development (2006-2010)
<u>Mid 2010</u>	Third meeting of the Task Force to review progress of the Action Plan activities and discuss future works to be included in the next Mid Term Plan of EANET (2011-2015)

## ACID DEPOSITION MONITORING NETWORK IN EAST ASIA (EANET)

### FIRST MEETING OF THE TASK FORCE ON SOIL AND VEGETATION MONITORING SCIENTIFIC ADVISORY COMMITTEE (SAC) OF EANET

(Niigata, 6-7 August 2008)

#### PROVISIONAL AGENDA

##### August 6

##### **09:00-09:15**

1. Welcome remarks Dr. Ueda

##### **09:15-09:30**

2. Explanation of the Task Forces and Expert Groups Ms. Leong

##### **09:30-09:45**

3. Introduction of the Chair and members Chair

##### **09:45-10:00**

4. Draft terms of reference and membership of the re-formed Task Force NC

**10:00-10:30** Coffee Break

##### **10:30-10:45**

5. Revision of the Strategy Paper for Future Direction of  
Soil and Vegetation Monitoring NC

##### **10:45-11:00**

6. Revised Strategy Paper for Future Direction of Soil and Vegetation  
Monitoring (Draft Action Plan for Future Direction of Soil, Vegetation,  
and Ecosystems Monitoring) NC

##### **11:00-12:00**

7. Revised Strategy Paper for Future Direction of Soil and Vegetation  
Monitoring (Draft Action Plan for Future Direction of Soil, Vegetation  
and Ecosystems Monitoring) Discussion

**12:00-14:00** Lunch

##### **14:00-15:30**

8. Presentation on research activities related to the catchment  
monitoring Members

**15:30-16:00** Coffee Break

##### **16:00-18:00**

9. Presentation on other research activities related to soil and  
vegetation monitoring Members

**18:00** Departure to hotel

**August 7**

**09:00-10:00**

10. Discussion on specific activities described in the Action Plan and proposed role of the Task Force Chair

**10:00-10:30** Coffee Break

**10:30-12:00**

11. Discussion on specific activities described in the Action Plan and proposed role of the Task Force Discussion

**12:00-14:00** Lunch

**14:00-15:30**

12. Summary of discussions Chair

**15:30-16:00**

13. Next steps and schedule Discussion

**16:00** Close

**MEETING MINUTES**

I. Agenda

The Meeting followed the issues as listed in the Provisional Agenda.

II. Welcome Remarks

The Director General of ADORC welcomed the members of the Task Force on Soil and Vegetation Monitoring of the EANET Scientific Advisory Committee to ADORC, Niigata, Japan (see the attached List of Participants).

III. Draft terms of reference and membership of the Task Force

The Secretariat presented the draft terms of reference and membership of the Task Force.

The Meeting proposed adding an item "To identify future research activities for soil and vegetation", and deleting "To review and revise the Strategy Paper on Future Direction of Soil and Vegetation Monitoring of EANET(2002)" in the draft terms of reference. The Meeting agreed on the terms of reference and list of members as Attachment 1 and 2.

IV. Revision of the Strategy Paper for Future Direction of Soil and Vegetation Monitoring

The Secretariat presented the previous discussion on revision of the Strategy Paper for Future Direction of Soil and Vegetation Monitoring and the draft revised strategy paper, *Action Plan for Future Direction of Soil, Vegetation and Ecosystems Monitoring (2009-2014) (draft)*.

It was agreed that the revised strategy paper would be entitled “ *Action Plan for Future Direction of Soil, Vegetation and related Ecosystems Monitoring (2009-2014)*”.

As terminology, it was suggested that the “ultimate” objective should be described as the “long-term” objective, because assessment of ecological impacts should be updated periodically and would not be finalized.

Several fundamental issues were suggested for continuous monitoring. It was decided that funding on national and international levels, networking of the experts in each countries and capacity building of staffs would be included as continuous efforts in the specific work plan.

It was informed that the Expert Group on Revision of the Technical Manual on Inland Aquatic Environment Monitoring (EGIAE) agreed on collaboration with this Task Force taking importance of the catchment-scale analysis into account. Accordingly, it was agreed that collaboration between EGIAE and the Task Force is important and this would be described for future catchment monitoring.

The East Asian region is latitudinally wide area and consists of varied climatic zones. Various vegetation types including from boreal forest to tropical rain forests can be found in the region. Consequently, importance of the biodiversity issue was discussed taking this particularity of the region into account. It was pointed out that forest ecosystems might include some part of the biodiversity issue, while the clear description may not be necessary in the Action Plan.

Additional discussions were made to brush up the draft Action Plan throughout the Meeting as described below.

#### V. Presentations on research activities related to the catchment monitoring

The following experts presented their research activities on the catchment monitoring

Prof. Fang Liu

He introduced an example of the catchment study in Longgan Lake in China. Direct or indirect effects of human activities on stream, wetland, lake sediment, and soil were discussed. It was informed that several research papers have been published in this study.

Dr. Tomoyuki Hakamata

He introduced the catchment analysis of Ijira Lake in central Japan. It was discussed that abnormal cool summer in 1993 and dry summer in 1994 might affect a biogeochemical cycle of elements in Ijira Lake, resulting in leaching of  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$  and Al and acidification of the stream water. It was also introduced that the soil pH decreased significantly during the monitoring period for approximately 15 years.

Dr. Hiroyuki Sase

He talked about seasonal changes in atmospheric deposition and stream water chemistry in the small catchment along the Sea of Japan. It was stressed that estimation of dry deposition fluxes was important especially for nitrogen compounds because of the canopy interactions. Moreover, temporary acidification during heavy rain events was introduced. He also introduced the joint research project with Thailand. It was discussed that unique seasonal changes in the stream water chemistry might be related to climate and soil properties as well as seasonal changes of atmospheric deposition.

Mr. Naoyuki Yamashita

He presented spatial-seasonal variation in soil pH and an internal cycle of elements in tropical dry evergreen forest catchment in Thailand. The soil pH were negatively correlated with contents of clay and silt in the macro scale and positively correlated with forest floor mass in meso scale. It was suggested that topography and tree locations regulated the soil pH in macro and meso scale, respectively. Moreover, the soil pH of surface layer was lower in dry season than in wet season. It was suggested that seasonal changes of the internal cycle might be related to the pH changes.

Dr. Jesada Luangjame

He presented recommendations for preparation of guidelines on the future catchment monitoring in the EANET participating countries based on experiences in the EANET-related catchment study sites mentioned above.

#### VI. Presentations on other research activities related to soil and vegetation monitoring

Prof. Liu Fang

He talked about technical criterion for evaluation of eco-environmental status in China. It was introduced that Ecological Environment Index (EI) was proposed for evaluation of the status. EI was calculated based on biological abundance, vegetation, water density, land degradation and environmental quality, and changes of EI ( $\Delta EI$ ) were used for classification of environmental changes.

Dr. Tomoyuki Hakamata

He talked about possible use of high technologies for vegetation monitoring. It was introduced that the delayed luminescence might detect invisible influence in plants due to environmental stresses. This technique may be useful for early detection of impacts. Moreover, it was introduced that triple oxygen isotopic composition of nitrate in inland waters might be useful for discussion of origin of the nitrate (atmospheric or terrestrial).

Prof. Nik

He talked about establishment of a model planted tropical forest in Malaysia. Reforestation programs in Malaysia were introduced. One of the reforested areas was located near Kuala Lumpur near the highway. It was discussed that experiences in these sites might be informative for the EANET monitoring.

Dr. Apolonio Ocampo

He talked about response of plants to soil acidity. It was stressed that natural acidic soil was widely distributed in tropical countries and caused yield reduction of crops. Moreover, typical nutrient deficiency symptoms caused by soil acidification were introduced for crops and trees.

#### VII. Discussion on specific activities described in the Action Plan and proposed role of the Task Force

The Chair presented specific activities described in the Action Plan and proposed role of the Task Force. The Meeting discussed specific activities and their feasibilities one by one. The major discussions are as follows:

It was discussed that continuous efforts of the respective countries were essential for "promotion of continuous monitoring" and "improvement of monitoring system", and the Task Force as a group should support them on technical/scientific matters.

For example, as a possibility, it was suggested that the reforested areas in Malaysia might be used for the EANET monitoring. Young trees in the reforestation areas in the tropical country may uptake nutrients very quickly and soil may be acidified in this process because of lack of base cations and release of  $H^+$  ion. This natural acidification process may also be informative for discussion of soil acidification by acid deposition.

Several countries may not have established networking of experts on ecological impacts. Networking of relevant experts should be promoted more. Moreover, capacity building of staffs should be promoted utilizing PhD programs or fellowship programs. Consequently, it was proposed that "compilation of the list of experts on ecological impacts in the respective countries" and "promotion of capacity building activities" should be added as continuous efforts, too.

The Meeting agreed that the recommendations introduced by Dr. Jesada are useful for preparation of the guideline for the catchment monitoring. The work, "development of the guideline and methods for the catchment monitoring", may be feasible. It was agreed that the guideline would be prepared within a few years referring this document and experiences in other catchment sites. Moreover, manuals for similar programs in Europe and US can be referred for this work.

The work, "identification of the area susceptible to acid deposition", is important work but may need periodical updates as basic information from some regions is not currently available. It was pointed out that this work could not be finished within five years and seemed to be ambitious. On the other hand, it was also pointed out that this work is assigned in the Strategy on EANET Development (2006-2010) and therefore the Task Force should try to make the initial map for further elaboration at the first. Finally, it was agreed that this work should be implemented as "step-by-step identification of the area susceptible to acid deposition".

Assessment of ozone concentration in forest area is indispensable for discussion of ecological impacts by acid deposition. Passive samplers for ozone concentration measurement are relatively reliable and may be used for monitoring in forest area. Similar projects have been carried out in Europe, too. Therefore, the work, "campaign for measurement of ozone concentration in forest area and its effects", seemed to be feasible. However, it was pointed out some countries may have difficulties to start this campaign because of geography or human resources. It was discussed that this work should be done on a voluntary basis and considered as a trial activity. Finally, it was agreed that this work should be implemented as "trial campaign for measurement of ozone concentration in forest area and its effects".

The work, "catchment analysis and simulation modeling on soil and inland water", does not propose clear milestones with target years as it depends on availability of research funds. However, this work should be promoted due to its importance for achieving the long-term objectives. It was suggested that this work should be described as "promotion of catchment analysis and simulation modeling on soil and inland water".

The work, "evaluation of the ecological monitoring data for the next periodic report", will be a contribution of the Task Force to the drafting committee to be formed for the next periodic report. It was pointed out that national assessments by the respective national centers might be necessary prior to the regional assessment. It was suggested that practical collaboration with the national centers is essential.



The meeting agreed on the assignment of the leaders and cooperative members for the respective works.

“Proposed leaders and cooperative members for the specific activities described in the *Action Plan*” was finalized as Attachment 3

#### VII. Summary of discussions

The Chair summarized discussions on the 1<sup>st</sup> Meeting. The major recommendations and future actions related to the Action Plan can be summarized as follows :

##### Recommendations:

- Discussions on specific activities above should be reflected to descriptions of the *Action Plan*.
- Some important inputs from the presentation sessions should be included in the *Action Plan*. Possible use of high techniques will be described in the section for early detection.
- Possibility of new case study sites should be described in the *Action Plan*.

##### Actions:

- The Chair and NC will modify the *Action Plan* within 2 weeks.
- The final draft for submission to SAC8 will be prepared within September 2008 after circulation among the members.

#### IX. Next Steps and Schedule

The Secretariat introduced next steps and possible schedule, showing procedures of endorsement of the *Action Plan*. Schedule of the Task Force was finalized as Attachment 4.

The Meeting agreed that the next Task Force meeting will be held in 2009.

It was agreed that the Secretariat will:

- circulate the minutes of the meeting to all members within 2 weeks.

### **LIST OF PARTICIPANTS**

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**FIRST MEETING OF THE  
TASK FORCE ON SOIL AND VEGETATION MONITORING  
SCIENTIFIC ADVISORY COMMITTEE (SAC) OF EANET**

**Revised terms of Reference**

**1. Terms of Reference of the Task Force**

- To revise the technical documents on soil and vegetation monitoring as necessary
- To assess the impacts of acid deposition and relevant air pollutants on soil and vegetation based on available data and other information for the EANET periodic reports
- To improve methodologies mentioned in the *Technical Manual for Soil and Vegetation Monitoring* and the *Sub-Manual on Forest Vegetation Monitoring* for EANET
- To recommend activities *for future direction of soil, vegetation and related ecosystems monitoring*
- To develop guidelines and methods for future monitoring
- To identify future research activities for soil and vegetation

**FIRST MEETING OF THE  
TASK FORCE ON SOIL AND VEGETATION MONITORING  
SCIENTIFIC ADVISORY COMMITTEE (SAC) OF EANET**

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**FIRST MEETING OF THE  
TASK FORCE ON SOIL AND VEGETATION MONITORING  
SCIENTIFIC ADVISORY COMMITTEE (SAC) OF EANET**

**Revised proposed leaders and cooperative members for the specific activities  
described in the Action Plan**

Activities	Leader	Cooperative members
Promotion of continuous monitoring	-	All
Improvement of monitoring system	-	All
Compilation of the list of experts on ecological impacts in the respective countries	-	All
Promotion of capacity building activities	-	All
Development of the guideline for the catchment monitoring	Dr. Jesada	Dr. Hakamata, Dr. Sase, Dr. Carandang
Step-by-step identification of the areas susceptible to acid deposition	Dr. Hakamata	Prof. Liu, Ms. Noh, Dr. Ocampo
Trial campaign for measurement of ozone concentration in forest area and its effects	Dr. Carandang	Dr. Mikhailova, Prof. Nik, Dr. Jesada, Dr. Sase
Promotion of catchment analysis and simulation modeling on soil and inland water	Dr. Sase	Dr. Hakamata, Dr. Jesada
Evaluation of the ecological monitoring data for the next periodic report	Dr. Ocampo	All

**FIRST MEETING OF THE  
TASK FORCE ON SOIL AND VEGETATION MONITORING  
SCIENTIFIC ADVISORY COMMITTEE (SAC) OF EANET**

**Schedule of the Task Force**

**Possible schedule**

<u>Early 2008</u>	Appointment of the members of the Task Force
<u>June 2008</u>	Preparation of draft revised Strategy Paper (Action Plan) by the Chair and NC
<u>August 2008</u>	1 <sup>st</sup> meeting of the Task Force
<u>August – October 2008</u>	Preparation of the final draft Action Plan and circulation among SAC members
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