

The Eighteenth Session of the Intergovernmental Meeting  
on the Acid Deposition Monitoring Network in East Asia  
22-23 November 2016, Bangkok, Thailand

## **Draft “Third Periodic Report on the State of Acid Deposition in East Asia (PRSAD3)”**

Network Center

### **I. INTRODUCTION**

1. The Fourteenth Session of the Scientific Advisory Committee (SAC14) approved the establishment of the Drafting Committee (DC) for the Third Periodic Report on State of Acid Deposition in East Asia (DC-PRSAD3) to prepare the implementation plan and other related works. After the endorsement of the Sixteenth Session of the Intergovernmental Meeting (IG16) on the Acid Deposition Monitoring Network in East Asia (EANET) on the Report on the Outcomes of the SAC14 including establishment of the DC, the NC invited NFPs of the participating countries to nominate one expert from each participating country as the member of the DC.
2. The first meeting of DC (DC1) was held on 8-9 June 2015 and developed the format, contents, and lead authors and candidates of contributing authors for each chapter of PRSAD3. There were three parts: Part I: Regional Assessment, Part II: National Assessments and Part III: Executive Summary, as in the similar manner to the PRSAD2. The first Lead Authors Meeting (LAM1) held on 18-19 August 2015 discussed the detailed contents of PRSAD3.
3. The outputs from DC1 and LAM1 were reported to the Fifteenth Scientific Advisory Committee (SAC15) on 29 September - 1 October 2015, Da Nang, Vietnam, and the Seventeenth Session of the Intergovernmental Meeting (IG17) on the EANET held on 24-25 November 2015, Bangkok, Thailand. The outputs were endorsed by the SAC15 and IG17 both.
4. The Second Lead Authors Meeting (LAM2) was held on 25 April 2016 and discussed the each chapter of the draft regional assessment report of the PRSAD3. The Second Meeting of DC (DC2) was held on 26-27 April 2016 and discussed the draft contents of the PRSAD3, and the outline of the draft national assessment reports of the PRSAD3 were introduced. Based on the result of LAM2 and DC2, the Third Lead Authors Meeting (LAM3) and the Third Meeting of DC (DC3) were held on 9 and 10 August 2016 respectively. The first draft of the regional assessment report and the national assessment report of PRSAD3 were discussed in each Meeting.

5. After LAM3 and DC3, the second draft of the regional assessment report of the PRSAD3 were developed considering the discussion at LAM3 and DC3, comments from experts attending the Special Session of the PRSAD3 held on 30 August, 2016 during the 17th IUAPPA World Clean Air Congress and 9th CAA Better Air Quality Conference in Busan, R. of Korea, and external scientific reviewing process by distinguished scientists.
6. Considering the discussion at the Sixteenth Session of the Scientific Advisory Committee (SAC16) held on 24-26 October, 2016 in Pathumthani, Thailand, and receiving the comments from the Scientific Advisory Committee (SAC) members, etc. after the SAC16, the final draft of the PRSAD3 was prepared to be submitted to the IG18 for its approval.

## **II. OUTLINE OF THE THIRD PERIODIC REPORT**

7. The document is prepared as a scientific assessment of the state of acid deposition in East Asia based on the data accumulated from the network. The decided title is “The Third Periodic Report on the State of Acid Deposition in East Asia”.
8. Suggested period of monitoring data to be analyzed in the third periodic report is from 2010 to 2014 (five years), however the data 2000-2009 are also used for trend analysis.
9. The third periodic report consists of three parts. The first part is on regional assessment and the second part includes national assessments presented by participating countries on a voluntary basis, and the third part is executive summary.
10. The third periodic report is prepared to focus to trend analysis and impact assessment of acid deposition in the region.
11. National assessment report is prepared by each country according to a format for national assessments which was prepared by the drafting committee. The EANET data and other domestic data of each country could be used for the national assessment.
12. Other national/international monitoring results, including the Review of the State of Air Pollution in East Asia may be used as references for additional assessment (for interpretation of EANET data).

## **III. CONTENTS OF THE THIRD PERIODIC REPORT**

13. The draft contents of the Regional Assessment Report of the PRSAD3 were discussed among DC and the Lead Authors meetings as presented on ANNEX 1.
14. Table of the Contents of the National Assessment Report of the PRSAD3 is as ANNEX 2.

## **IV. IMPLEMENTATION PLAN**

15. The implementation plan of the PRSAD3 is as ANNEX 3.

## **V. ACTIONS REQUIRED**

16. The Eighteenth Session of the Intergovernmental Meeting (IG18) on the EANET is invited to review the draft of PRSAD3, and may wish to discuss, make comments, provide guidance and approve, as appropriate.

## ANNEX I

### **Structure and Contents of the Third Periodic Report on the State of Acid Deposition in East Asia (PR SAD3)**

#### **Chapter 1. Introduction**

Lead Author: S. Lee

Contributing Authors: R.T.M. Sutamihardja, N.M. Majid, H. Akimoto, J. Sato, S. Toda, Heads of ACAP Dept.

- 1.1 Background (S. Lee, J. Sato)
- 1.2 Global perspectives (H. Akimoto, N.M. Majid, R.T.M. Sutamihardja)
- 1.3 Objectives (S. Lee)
- 1.4 Institutional Arrangement (J. Sato, S. Lee, S. Toda)
- 1.5 EANET Activities in 2010-2014 (S. Lee, J. Sato, S. Toda, Heads of ACAP Dept.)
- 1.6 References (Contributors)

#### **Chapter 2. Data Quality**

Lead Author: S. Gromov

Contributing Authors: K. Yamashita, K. Sato,

- 2.1 Introduction
- 2.2 General procedures of QA/QC
- 2.3 Evaluation of Inter-laboratory Comparison Projects
- 2.4 Evaluation of the regular measurements
- 2.5 Conclusion (Summary)
- 2.6 References

#### **Chapter 3. Precipitation Chemistry**

Lead author: S.Y. Cho

Contributing Authors: P. Suwanathada, S. Gromov, H. Hara, E. Aldrian, K. Savuth, T. Ohizumi

- 3.1. Introduction (H. Hara and T. Ohizumi)
- 3.2. Ion compositions over space and time (P. Suwanathada, E. Aldrian, K. Savuth)
- 3.3. Characteristics of major cations and anions
- 3.4. Trend analysis of major anions and pH (S. Gromov)
- 3.5. Conclusion
- 3.6. References

## **Chapter 4. Trace gas and aerosol concentrations affecting the acid deposition in East Asia**

Lead Author: F. Meng

Contributing Authors: S. Gromov, H. Minoura, M. Hu, Z. Gong, Y.D. Hong, S.D. Kusumaningtyas

### 4.1 Introduction

4.1.1 General description of the air pollutants

4.1.2 Emission of air pollutants in East Asia region

### 4.2 Trace gas and aerosol concentrations measurement methodology

### 4.3 Spatial variation of trace gas and aerosol concentrations

### 4.4 Temporal variation of trace gas and aerosol concentrations

### 4.5 Trends of trace gas and aerosol concentrations

### 4.6 Conclusion (Summary)

### 4.7 References

## **Chapter 5. Wet and Dry Deposition in East Asia**

Lead Author: D.H. Son

Contributing Authors: K. Sato, K. Matsuda, T. Ohizumi, A. Dolgorsuren

### 5.1 Introduction (K. Sato)

### 5.2 Methodology for calculating wet and dry deposition (K. Sato)

5.2.1 Method of dry deposition flux estimation

5.2.2 Parameterization terms to be used by EANET countries

### 5.3 Trend of temporal and spatial acid deposition variation (K. Matsuda, T. Ohizumi)

5.3.1 Overview

5.3.2 Assessment of wet deposition trend

5.3.3 Characteristics of dry and overall deposition at EANET sites

5.3.4 Trial assessment of dry deposition trend by using reanalysis meteorological data methodology

5.3.5 Trial assessment of total wet and dry deposition variation by using reanalysis meteorological data

### 5.4 Conclusion (D.H. Son)

### 5.5 References

## **Chapter 6. Impacts on Ecosystems in East Asia**

Lead Author: W. Carandang

Contributing Authors: E. Philip, J. Shindo, H. Sase, N. Yamashita, T. Saito

### 6.1 Introduction (W. Carandang)

- 6.2 Soil features and temporal changes (N. Yamashita)
- 6.3 Vegetation features and temporal changes (E. Philip and W. Carandang)
- 6.4 Inland water chemistry and trend (J. Shindo, T. Saito, N. Yamashita and H. Sase)
- 6.5 Catchment-scale analysis (H. Sase)
- 6.6 Conclusion (Summary) (W. Carandang)
- 6.7 References

## **Chapter 7. Summary and Recommendations for Future Activities**

Lead author: K. Sakamoto

Contributing Authors: E. Philip, H.H. Win, T. Ohara, S.Y. Cho, H. Minoura, T. Ohizumi, S. Lee, K. Sato, H. Sase

- 7.1 Introduction (S.Y. Cho, K. Sakamoto, S. Lee)
- 7.2 Summary
  - 7.2.1 Data Quality (Chapter 2) (H.H. Win, K. Sato)
  - 7.2.2 Precipitation Chemistry in East Asia (Chapter 3) (S.Y. Cho)
  - 7.2.3 Trace gas and aerosol concentrations affecting the acids deposition in East Asia  
(Chapter 4) (H. Minoura)
  - 7.2.4 Wet and dry deposition in East Asia (Chapter 5) (T. Ohizumi)
  - 7.2.5 Impacts on Ecosystems in East Asia (Chapter 6) (E. Philip, H. Sase)
- 7.3 Recommendations for future activities\* (S.Y. Cho, T. Ohara, K. Sakamoto, K. Sato, H. Minoura, E. Philip, T. Ohizumi, H. Sase)
- 7.4 References

## **Table of the contents of the National Report of the Third Periodic Report on the State of Acid Deposition in East Asia (PRSDA3)**

### **PART II: National Assessment**

Participating countries:

<i>Cambodia,</i>	<i>Myanmar,</i>
<i>China,</i>	<i>Philippines,</i>
<i>Indonesia,</i>	<i>Republic of Korea,</i>
<i>Japan,</i>	<i>Russia,</i>
<i>Lao PDR,</i>	<i>Thailand,</i>
<i>Malaysia,</i>	<i>Vietnam.</i>
<i>Mongolia,</i>	

(Modification of structure can be made by each country)

#### **Chapter 1. Basic Information on National Monitoring Activities**

- 1.1 Outline of the activities on acid deposition and National Monitoring Plan
- 1.2 Monitoring program from 2010 to 2014
- 1.3 Monitoring Stations
- 1.4 Sampling and Measurements

#### **Chapter 2. State of Acid Deposition in each participating country**

- 2.1 Outline of the activities on acid deposition and National Monitoring Plan
  - 2.1.1 State of wet deposition
  - 2.1.2 State of dry deposition
- 2.2 State of inland aquatic environment
- 2.3 State of soil and vegetation
- 2.4 State of catchment monitoring
- 2.5 Overall analysis

#### **Chapter 3. Review of National Air Quality Management including Acid Deposition**

#### **Chapter 4. Conclusion or Summary**

### **Implementation Plan of the Third Periodic Report on the State of Acid Deposition in East Asia (PRSAD3)**

<b>Year</b>	<b>Month</b>	<b>Activities/Events</b>	<b>Deliverables</b>
2014	September	SAC14	Proposal on establishment of the DC of PRSAD3 to SAC14 by the NC
2015	June	1 <sup>st</sup> Meeting of the DC Preparation of Report of DC meeting	Draft Table of Contents of PRSAD3 Names and contacts of DC members Names of Lead Authors of Regional Assessment Report Names of Contributors to the National Assessment Report Work Schedule
	June	Report of 1 <sup>st</sup> DC meeting sent to DC members and NFPs	Report of 1 <sup>st</sup> DC meeting
	July	Provide EANET dataset until 2013 to Lead Authors	EANET dataset until 2013
	August	1 <sup>st</sup> Meeting of Lead Authors	Confirmation of authors of each chapter, items etc. Clarification of responsibilities. Intensive discussion based on the outline of each chapter prepared by LA.
	August 2015-February 2016	Compilation, editing and communications with contributors and Lead Authors	Preliminary draft of some sections of PRSAD3
	September/October	SAC15 Preparation of Report of Chairman of DC	Report of Chairman of DC to SAC15
	November	Provide EANET dataset in 2014 to Lead Authors	EANET dataset in 2014
	November	IG17 Chairman of SAC reports progress of PRSAD3 to IG17	SAC Chairman's Report to IG17
2016	February-April	Preparation of First Draft of PRSAD3	First Draft of PRSAD3
	April	2 <sup>nd</sup> Meeting of the DC 2 <sup>nd</sup> Meeting of Lead Authors/SWS for PRSAD3 back to back 2 <sup>nd</sup> DC meeting (2 days) Preparation of Report of DC meeting	Comments from DC members, Lead Authors and related experts
	May	Report of DC meeting was sent to DC members	Report of DC meeting



May - July	Revision of First Draft to include comments from 2 <sup>nd</sup> DC meeting and Lead Authors Meeting	Second Draft of PRSAD3 Submission of National Assessment (Part II)
9-10 August	3 <sup>rd</sup> Meeting of the DC 3 <sup>rd</sup> Meeting of the Lead Authors after DC Preparation of Report of DC meeting	Comments from DC meeting and Lead Authors Meeting
August	Report of the DC meeting was sent to DC members	Report of DC meeting
30 August	Special Session on PRSAD3 in BAQ/IUAPPA in Busan, R. of Korea (29 Aug. – 2 Sep.)	Discussion with external experts
September	Request for review of to voluntary outer experts	Comments from experts
September	Revision of the Second Draft of PRSAD3 to include comments from the DC meeting and Lead Authors Meeting	Final Draft of PRSAD3
24-26 October	SAC16 Preparation of the report of the Chairman of DC to SAC16 Presentation of Final Draft of PRSAD3 to SAC16 for adoption	Final Draft of PRSAD3
5-15 November	Circulation of the Final Draft of PRSAD3 and Executive Summary to DC members and SAC members for approval	Final Draft of PRSAD3 and Executive Summary (approved by DC and SAC members)
22-23 November	IG18	Final Draft of PRSAD3 and Executive Summary (approved by IG18)
December	Language Check	Final Draft of PRSAD3 checked by language expert
December	Printing and distribution of PRSAD3	