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EANET NEWSLETTER

ACID DEPOSITION MONITORING NETWORK IN EAST ASIA

THIS EDITION

The Year 2020 for the EANET

The year 2020 is a special year for the EANET as it marks the 20th anniversary of the Network. Amid the COVID-19 pandemic, EANET Participating Countries have continued their efforts to cooperate and discuss how they build their Network's brighter future.

During the year, the Network successfully organized its key meetings, among others the 21st Senior Technical Meetings (STM21), the 20th Scientific Advisory Committee Meeting (SAC20), the Working Group Meetings on Drafting Medium Term Plan for the EANET (2021-2025) and Reviewing the Scope of Instrument for the EANET, as well as the 22nd Intergovernmental Meeting of EANET.
(IG22).

This year, EANET also started developing the Fourth Periodic Report on the State of Acid Deposition in East Asia (PRSAD4), its landmark publication.

Curious about what we do? Discover more inside!

EDITORIAL PAGE

By Tomi Haryadi
Coordinator, Secretariat for the EANET

The recently launched UNEP Emission Gap Report mentioned that despite a brief reduction in carbon dioxide emissions caused by the restriction of movement during the COVID-19 pandemic this year, the world is still heading for a temperature rise above 3°C this century.

It is still far beyond the Paris Agreement goals of limiting global warming to well below 2°C and pursuing 1.5°C. The Gap Report also confirmed 2020 as one of the warmest on record, with wildfires, droughts, storms, and glacier melt intensifying. A call to action is addressed to all stakeholders to put efforts and mitigate this catastrophe.

Despite the existing environmental challenges above, undoubtedly, 2020 has been a tough year for all of us. The pandemic of COVID-19 has forced us to re-think our plans and come up with alternative solutions.

Instead of just coping with the impacts, we also learn to think about building back better by making this pandemic a warning from nature to act on various environmental issues, such as climate change, nature loss, and pollution.

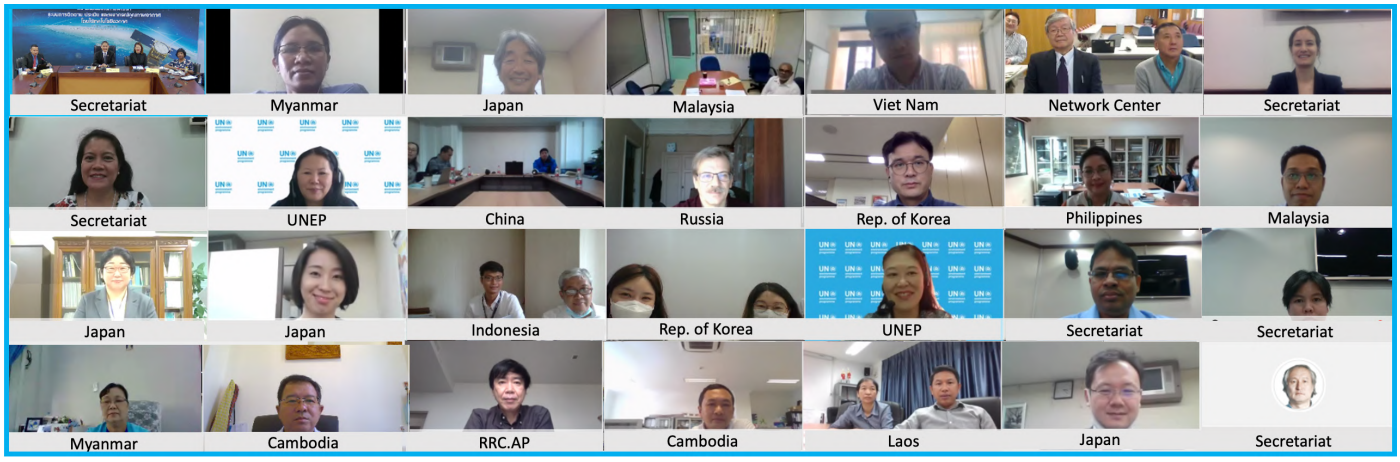
EANET also attempted to cope with pandemic impacts by adjusting its activities due to health reasons and travel restrictions. This year, the Network continued to work virtually to develop two key future agendas, including developing the Medium Term Plan (MTP) for the EANET (2021-2025) and Work Programme & Budget in 2021.

The MTP discussions started in mid-2019 at the working group meeting to consider proposed ideas of the Participating Countries to be included in developing the next MTP. In November 2019, the 21st Session of the Intergovernmental Meeting (IG21) on the EANET acknowledged that besides acid deposition activities, the Participating Countries also intended to include wider air pollution/ air quality activities in the next MTP. As a follow-up, the IG21 requested the Secretariat to facilitate the discussions among Participating Countries on the draft MTP and its activities through working group meetings.

Finally, by considering the working group meetings and the Scientific Advisory Committee's recommendations, the Twenty-second Session of the Intergovernmental Meeting (IG22) approved the MTP (2021-2025) and the Work Programme and Budget of EANET in 2021. In addition, the IG22 also agreed to start expanding the scope of the Instrument after recognizing some activities relating to air pollution are a major interest to Participating Countries but beyond the current scope of the Instrument. The decision on the expansion of the scope of Instrument is a significant milestone for EANET. After 20 years of focusing its work only on acid deposition, the Participating Countries finally agreed to open the possibility for the Network to work on wider air quality/air pollution issues.

In 2021, the Network will work jointly to implement the MTP (2021-2025) activities, Work Programme and Budget in 2021, and arrangements for the expansion of the scope of Instrument. With this new arrangement, we hope EANET will contribute more to the better environment of the region.

The Twenty-second Session of the Intergovernmental Meeting on the EANET



The Twenty-second Session of the Intergovernmental Meeting (IG22) on the EANET was held virtually from 25 to 26 November 2020. It was concluded by major decisions on the approval of the Medium Term Plan (MTP) (2021-2025) and Work Programme and Budget in 2021, as well as the decision to start expanding the scope of EANET's Instrument.

Over 50 representatives from Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Republic of Korea, Russia, Thailand, Philippines, and Viet Nam participated in the IG22 to discuss in detail how they envision the future of their Network. Chaired by Thailand, the IG22 Session started with Welcome Remarks from Mr. Thalearngsak Petchsuwan, Deputy-Director General, Pollution Control Department, Ministry of Natural Resources and Environment, Thailand, followed by Opening Remarks by Dr. Dechen Tsering, Regional Director and Representative, United Nations Environment Programme for Asia & the Pacific, and by Dr. Shiro Hatakeyama, Director General, Asia Center for Air Pollution Research.

After almost two years of conducting several discussions among the Participating Countries, the IG22 approved the MTP for the EANET (2021-2025). In addition, the Session approved the Work Programme and Budget of the EANET in 2021.

Detailing the actions that will take place during the next five years, the MTP for the EANET (2021-2025) regroups activities related to five key objectives: Objective 1: Monitoring of acid deposition including related chemical substances with quality assurance and quality control (QA/QC), Objective 2: Promotion of data utilization and dissemination, Objective 3: Promotion of capacity building, Objective 4: Enhancement of outreach activities and Objective 5: Enhancement of cooperation and collaboration.

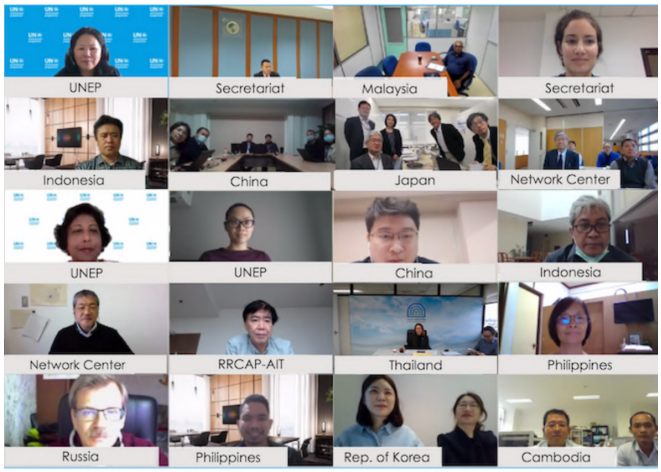
The IG22 recognized activities related to air pollution as of major interest to Participating Countries, although considered beyond the current scope of the EANET. For 20 years, based on the Instrument for the Strengthening the Acid Deposition Monitoring Network in East Asia (EANET), the EANET has been working specifically on acid deposition monitoring.

Marking an important milestone for the Network, Participating Countries agreed to start the process of expanding the scope of the Instrument, allowing the EANET to work on wider air quality and air pollution issues in the near future.

The Working Group (WG) Session 2 Meeting on Drafting MTP (2021-2025) and on Reviewing the Scope of Instrument for the EANET

The Working Group (WG) Session 2 Meeting on Drafting Medium Term Plan (MTP) for the EANET (2021-2025) and on Reviewing the Scope of Instrument for the EANET was held virtually from the 20th to the 22nd October 2020, gathering over 50 representatives from the Acid Deposition Monitoring Network in East Asia (EANET)'s Participating Countries.

Following the Session 1 of the meeting held last July, participants met again online to work together on the Medium Term Plan for the EANET (2021-2025), defining the Network's future activities for the next 5 years while also discussing a possible expansion of the scope of the EANET's Instrument. For three days, from 20-22 October 2020, National Focal Points and representatives from Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Republic of Korea, Russia, Thailand, Philippines, and Viet Nam joined the EANET's Secretariat, Network Center and the United Nations Environment Programme teams to discuss in detail how they envision the future of their Network. The Session was initiated by the Welcome Remarks of Dr. Dechen Tsering, Regional Director, and Representative, United Nations Environment Programme for Asia & the Pacific, who emphasized the importance of the mandate of the EANET, as part of growing momentum for international cooperation on air quality in the region. Dr. Shiro Hatakeyama, Director General, Asia Center for Air Pollution Research, delivered the



Opening Remarks and highlighted the importance of the 2nd Working Group Meeting to determine the future activities of the EANET. Mr. Yuichi Nagasaka, Director of the Air Environment Division, Environmental Management Bureau, Ministry of Environment, Japan, also delivered Remarks to greet participants and reaffirm Japan's support to the EANET.

At the end of the 3-day meeting, the Session agreed on Recommendations to be submitted to the 22nd Session of the Intergovernmental Meeting (IG22). In these Recommendations, it is suggested to adopt the final draft of Medium Term Plan (MTP) (2021-2025) as well as the final draft of Work Programme and Budget in 2021 (WP&B 2021) that will be prepared according to the discussion at the Working Group Meeting sessions and relevant follow-up discussions. In addition, the Working Group recommended the IG22 to recognize that "some activities relating to air pollution are a major interest to Participating Countries but may be beyond the current scope of the EANET. This includes types of activities and/or substances or targets areas that are related to air pollution beyond acid deposition" and to "Express support for the need to expand the scope of the Instrument."

The Twentieth Session of the Scientific Advisory Committee on the Acid Deposition Monitoring Network in East Asia

The Scientific Advisory Committee (SAC) of the Acid Deposition Monitoring Network in East Asia (EANET) held its Twentieth Session of the SAC (SAC20) from 23-24 September 2020, virtually. The Session was organized by the Secretariat and the Network Center (NC) for the EANET. Nearly 50 members of the SAC and/or their representatives from the Participating Countries of the EANET (from Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand, Viet Nam), as well as the Secretariat and the NC, participated in the two-day meeting.

On day one, the main discussions concerned the considerations by the SAC members of future activities from technical and scientific viewpoints. Outcomes of these discussions were recommendations for the 22nd Intergovernmental Meeting of EANET (IG22) and considered in finalizing the MTP for the EANET (2021-2025). Currently, EANET's main activities focus essentially on acid deposition monitoring and provision of data; promotion of quality assurance and quality control (QA/QC); implementation of technical support and capacity building; dispatch of technical missions; promotion of research and studies; and promotion of public awareness activities.

SAC20 members discussed the Draft MTP that includes new activities proposed by the Participating Countries.

Day two of the meeting focused essentially on the results from acid deposition monitoring, compilation, evaluation, storage, and provision of data in 2019, based on data provided by the 13 EANET Participating Countries, retrieved from their national monitoring sites.

Scientists from the NC presented detailed results from the EANET Data Report 2019 data on wet deposition, dry deposition, soil and vegetation, inland aquatic environment, and catchment-scale, as well as and from the Report on the Inter-laboratory Comparison (ILC) Projects 2019, focusing on results of wet deposition, dry deposition (filter pack method), soil, and inland aquatic environment ILC Projects carried out in 2019. An overview of the National Monitoring Plans from the EANET Participating Countries, Reports from the Chairpersons of the Task Forces of the Scientific Advisory Committee (SAC), Progress of Development of the Fourth Periodic Report on the State of Acid Deposition in East Asia (PRSAD4) and updates on other relevant scientific activities were also presented throughout the day.

EANET Research Fellowship Programme – The Impacts of Exposure to Fine Particulate Matter on Premature Mortality in Bangkok, Thailand

The Acid Deposition Monitoring Network in East Asia (EANET)'s fellowship program aims at funding researchers from the EANET's Participating Countries to carry out research pertaining to acid deposition at the Network Center in Japan. Kessinee Unapumnuk, from Thailand, was awarded the EANET fellowship for 2018. She led her research on the impacts of exposure to fine particulate matter on premature mortality in Bangkok.

Fine particulate matters (PM2.5) affect human health and can lead to premature death if exposed for a long time. Chronic exposure to PM2.5 increases the risk of developing cardiovascular and respiratory diseases, as well as lung cancer. The World Health Organization
(WHO) reported 4.2 million premature deaths due to cardiovascular and respiratory diseases and cancers worldwide in 2016 related to the exposure to ambient PM2.5 in urban and rural areas. Bangkok, Thailand's capital, has been experiencing frequent air pollution episodes characterized by a high concentration of PM2.5 due to combustion emissions from multiple sources and stagnant meteorological conditions from January to April every year. Transportation-related sources are the major contributions to the PM2.5 levels and result in poor air quality in the city.

Unapumnuk has estimated premature mortalities caused by chronic obstructive pulmonary disease (COPD), lung cancer (LC), ischemic heart disease (IHD), and stroke attributed to long-term exposure to PM2.5 in several districts in Bangkok from 2010 to 2017.

In conclusion, the study suggests that a strict emission control of PM2.5 is needed in Bangkok to avoid significant mortality attributable to PM2.5.

Under the EANET Research Fellowship program 2018, this study was conducted at the Asia Center for Air Pollution (ACAP), Niigata, Japan. The author acknowledged the help received from the Asia Centre for Air Pollution Research (ACAP) for performing the research as well from the Thai Pollution Control Department and the Ministry of Public Health.

Read the full article by Unapumnuk et al. in the EANET Science Bulletin Volume 5.

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EANET Research Fellowship Programme – Komarovka River Catchment Analysis by Long-term Observations at the Russian EANET Primorskaya Station

The Acid Deposition Monitoring Network in East Asia (EANET)'s fellowship program aims at funding researchers from the EANET's Participating Countries to carry out research pertaining to acid deposition at the Network Center in Japan. Ekaterina Zhigacheva, from Russia, was awarded the EANET fellowship in 2017. She led her research on the investigation of atmospheric input and runoff discharge of sulphur and nitrogen compounds as the balance components of Komarovka river catchment by long-term observations at the Russian EANET Primorskaya station (for 2005 – 2015).

Air pollution consists of significant amounts of compounds of sulphur and nitrogen. These compounds deposit on the earth's surface through wet and dry depositions and cause detrimental impacts on the ecosystems and environment, including acidification of the water bodies, such as rivers and lakes.

Zhigacheva, in this study, analyzed the components of the Komarovka river catchment at the Russian EANET Primorskaya station using observations from 2005 to 2015. The goal of the study was to evaluate the effects of pollution on regional ecosystems.

The author acknowledged the help received from the EANET Primorskaya site and PCEM laboratory for data and financial support and facilities from the Asia Centre for Air Pollution Research (ACAP) for performing the research.

Read the full article by Zhigacheva et al. in the EANET Science Bulletin Volume 5.

Photo credits: Komarovka river by Hiroyuki SASE, all rights reserved.

The Twenty-First Senior Technical Managers' Meeting (STM21)

The Twenty-first Senior Technical Managers' Meeting (STM21) on the Acid Deposition Monitoring Network in East Asia (EANET) was held online on 7 August 2020. The STM21 was organized by the Network Center (NC) for the EANET in collaboration with the Secretariat for the EANET. About 40 senior technical officials involved in the EANET monitoring activities from Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand, and Viet Nam participated in the meeting.

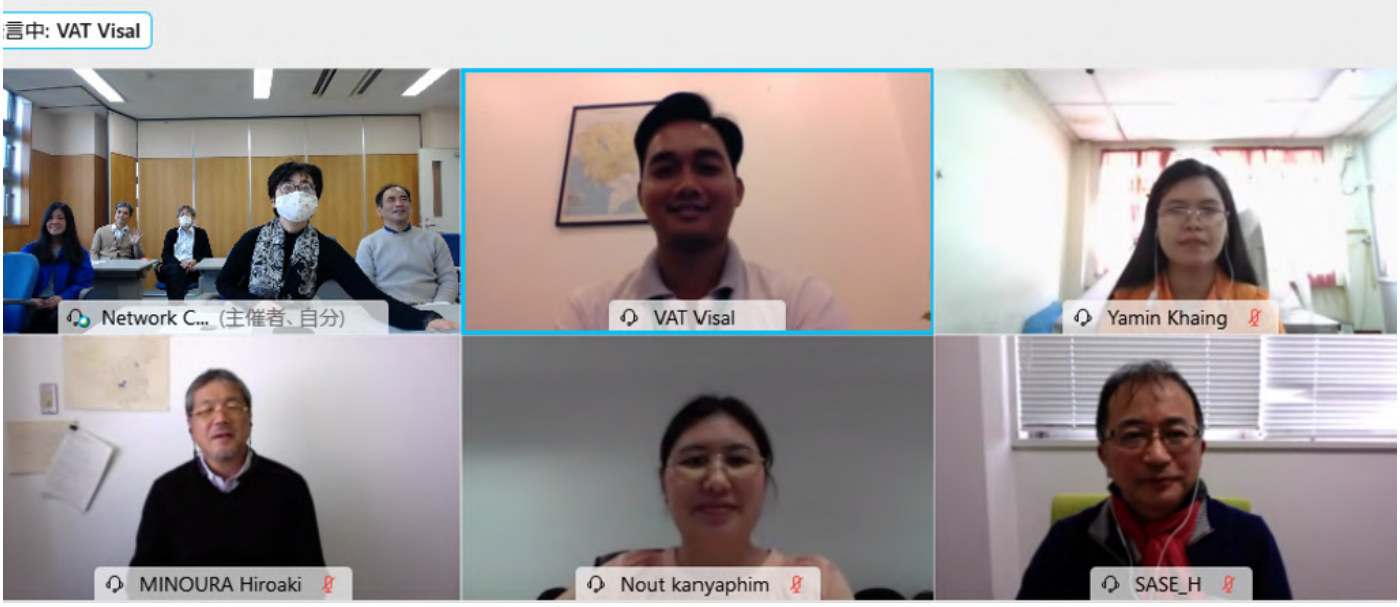
The objectives of this annual meeting were to exchange information on the current status of the EANET monitoring activities, including the consideration of the draft Data Report 2019 and the draft Inter-laboratory Comparison Project Report 2019, as well as to discuss the EANET's National Monitoring Plans for 2020. During the meeting, the NC presented the preliminary draft Data Report 2019, which contains wet deposition, dry deposition (air concentration), soil and vegetation, inland aquatic environment, and catchment-scale monitoring data, as well as a summary of the monitoring data for 2019 and related information submitted by the 13 EANET Participating Countries in 2019.

The representatives of the EANET Participating Countries, later on, presented their National Monitoring Plans and current EANET activities, including monitoring capacities, technical limitations, future plans, etc. Throughout the meeting, the senior technical officials discussed implementation challenges and shared their experiences and knowledge to foster future innovation solutions.

In 2020, the number of the EANET monitoring sites has increased, with a total number of 60 wet deposition monitoring sites, 47 dry deposition monitoring sites, 21 soil and vegetation monitoring sites, 19 inland aquatic environment monitoring sites, and 2 catchment-scale monitoring sites, located in 13 countries of Asia. Most recently, China started monitoring wet and dry deposition in two newly registered EANET monitoring sites: in Wuzhishan, Hainan Province, and Lijiang, Yunnan Province. Indonesia also introduced two new EANET monitoring sites: in Jembrana, in the province of Bali, and Lombok Barat, in West Nusa Tenggara Province.

Photo credits: Lijiang Shi, Yunnan Sheng, China, by Culacinno, free of the copyright license.

Individual Training



The Network Center (NC) selected six trainees for individual training in 2020. However, only three of the six selected trainees decided to receive the individual training web-based because the NC needed to change the program from a face-to-face training program to virtual training mainly in the form of lecture and discussion.

Three trainees from Participating Countries attended the EANET Individual training program on the online platform from 5th to 24th November 2020. Their National Focal Points nominated the participants, namely Visal VAT (Cambodia), Nout Kanyaphim (Lao PDR), Khaing Yamin (Myanmar).

The researchers of the Asia Center for Air Pollution Research (ACAP) facilitated the training through webinars, and the provision of hands-on experiments or analysis were excluded this year. A lecture focusing on atmospheric deposition was explained for trainees to offer a general concept of the issue.

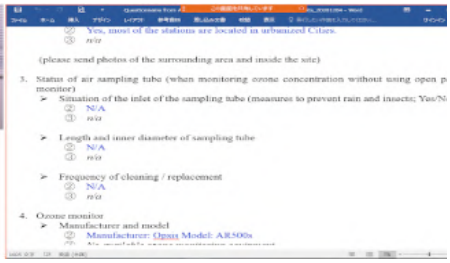
The lecturers conducted the lectures while confirming their understanding of the contents using chat for questions and answers. The trainees could review the lectures for their confirmation by the recorded video.

At the last session of the training, the trainees delivered their wrap-up presentations highlighting the lessons they learned from the program and their plan to utilize the skill/knowledge at their offices.

"*By attending this training, the chance is possessed to perform specifically Acid Deposition and Air Pollution in theoretical. In this training that gave many advantages technologies from the training at our department*", says Khaing Yamin, Hydrology Division, Department of Meteorology and Hydrology, Ministry of Transport and Communication.

The individual training program is a regular activity of EANET aiming to allow monitoring officers and researchers from Participating Countries to gain skills and knowledge on monitoring of acid deposition and air pollution. The training usually accommodates up to six participants every year for about three weeks.

Technical Assistance for Participating Countries



CAMBODIA: The Network Center (NC) provided the Standard Operating Procedures (SOPs) of the daily and periodic maintenance for Cambodia's ozone monitor. The periodical maintenance has not been conducted because the national officers do not have the ozone monitor experience. A virtual meeting was organized between NC and staff in Cambodia to explain the contents of SOPs and to confirm the maintenance results. In addition, the NC developed a tool to convert the raw data output from the ozone monitor every 12 seconds to an hourly average, which is the standard for EANET, and provided it to Cambodia. A virtual lecture was provided for Cambodia on how to apply the tool.

RUSSIA: The NC is currently handling the analytical consumable donation for two Russian laboratories. These laboratories have currently run out of most filters for filter-pack sampling and passive sampling, which are not available to purchase in Russia. In addition, the laboratories are also in a shortage of most reagents.

IBAQ: The NC held the Technology Transfer Project on PM2.5 (PMTT) follow-up workshop on 14 November 2020 virtually, of the Integrated Programme for Better Air Quality in Asia (IBAQ Programme), supported by Clean Air Asia (CAA). The workshop was held to support the PM2.5 monitors' technical maintenance, introduced by the IBAQ project in the countries.

PHILIPPINES & THAILAND: The NC organized virtual meetings to tackle technical problems in the Philippines and Thailand's monitoring activities by referring to the technical survey in advance. In the meetings, NC helped to provide solutions to countries monitoring problems and analytical procedures in the countries. The virtual meetings were organized as an alternative way for countries to consult with the NC in the absence of the technical mission due to the COVID-19 pandemic.

Photo credit (below): Battambang, Cambodia, by Simon Soy, free of the copyright license.

The 1st Lead Authors Meeting of Drafting Committee for PRSAD4

The First Lead Authors' Meeting (LAM) of Drafting Committee (DC) for the Fourth Periodic Report on the State of Acid Deposition in East Asia (PRSAD4) was held virtually on 28 October 2020.

The meeting was attended by the Lead Authors, Contributing Authors, and the Network Center for the EANET (NC).

The Lead Authors introduced the outline of each chapter, and the outline was discussed intensively, including contents, the methodology of data analysis, the cooperation of related organizations.

It was also emphasized that PRSAD4 is the major output from 20 years' achievement of EANET.

The development schedule of PRSAD4 was also discussed in the meeting. It will be finalized and published after the submission to SAC21 and IG23 in 2021.

As a reference, **read the full Third Periodic Report on the State of Acid Deposition in East Asia (PRSAD3),** available on the EANET's website.

EANET Meetings, Events and Training in 2021*

- **EANET Awareness Forum Webinar (Session 1)**, March 2021, virtual event
- **The Working Group Meeting (Session 1)**, April 2021, virtual meeting
- **The 22nd Senior Technical Manager's Meeting (STM22),** August 2021, virtual meeting
- **The Working Group Meeting (Session 2)**, August 2021, virtual meeting
- **EANET Awareness Forum Webinar (Session 2),** September 2021, virtual event
- **The 21st Session of the Scientific Advisory Committee (SAC21),** September 2021, virtual meeting (to be confirmed)
- **The 23rd Session of the Intergovernmental Meeting (IG23),** October/November 2021, Niigata, Japan (*to be confirmed*)
- **The 20th Anniversary of EANET,** October/November 2021, Niigata, Japan *(to be confirmed)*
- **EANET Science and Policy Dialogue**, October/November 2021, Niigata, Japan *(to be confirmed)*
- **EANET Individual Training Course,** November-December 2021 *(to be confirmed)*
- **EANET Research Fellowship Programme in 2021,** August and December (2 months) 2021

**The dates and venue above are tentative. The Secretariat will inform the exact dates and venues in early 2021.*

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