

PM2.5 source apportionment using PM2.5 components data – Joint Capacity Building through EANET and SATREPS



Joint Capacity Building through the Science and Technology Research Partnership for Sustainable Development (SATREPS) and EANET took place from 1st December to 5th December onsite and online under the collaboration of the Japan International Cooperation Agency (JICA SATREPS) and EANET Project Fund (project 2025-01).

Seven researchers and government officers from Cambodia, and experts from Kanazawa University, and Nagasaki University visited the Network Center (NC) for the EANET and joined the training on the methodology of PM2.5 component analysis, PM2.5 source apportionment using Positive Matrix Factorization (PMF) method.

232 people in total joined the 5 days training, including online participants.

Introduction of SATREPS and EANET (Hybrid)

On December 1st (Day1), Dr. Mitsuhiro Hata (Kanazawa University), representing the AIR-SATREPS project (SATREPS Project for Establishment of a Risk Management Platform for Air Pollution in Cambodia) introduced the objectives, activities and achievements of the project. This international collaborative research project on air

pollution in Cambodia commenced in 2022 under the Science and Technology Research Partnership for Sustainable Development (SATREPS) program funded by the Japan International Cooperation Agency (JICA) and the Japan Science and Technology Agency (JST). The leading institute in Japan is Kanazawa University and the counterpart in Cambodia is the Institute of Technology of Cambodia. This project aims to address the air pollution issues in Cambodia by providing necessary instruments for monitoring and developing a chemical analysis especially for particulate matter, and by capacity building for local practitioners.

Dr. Fan Meng, Deputy Director General of Asia Center for Air Pollution Research (ACAP), serving as the Network Center (NC) for the EANET gave the presentation about the outlines, activities, achievements of EANET, including the current EANET Projects such as VOC monitoring and the future direction of EANET such as the expansion of scope and the Medium Term Plan (2026-2030).

Inorganic ion analysis in PM2.5 using PM2.5 roll tape (Onsite)

On December 2nd and 3rd, Dr. Fumikazu Ikemori (AIR-SATREPS G1 leader, Nagasaki University) and Dr. Akie Yuba (NC, EANET) gave lectures of Ion Chromatography (IC) analysis and provided practical training of the pretreatment of samples IC analysis and the calculation of the data. Especially, the Quality Assurance and Quality Control (QAQC) was focused on improving their analytical skills.



Lecture and practical training of PM2.5 source apportionment (Hybrid)

On December 3rd, Dr. Ikemori and Dr. Keiichi Sato (NC, EANET) explained the overview of the methodology of PM2.5 source apportionment using the Positive Matrix Factorization (PMF), through deepening the knowledge of source indicators and learning the theory. The trainees also learned the outcomes of the PM2.5 source apportionment research in Japan and Southeast Asian countries such as Thailand and Viet Nam.

On December 4th, the trainees practiced the whole procedure of PMF analysis procedures such as the installation of PMF analysis model, implementation of PMF using the demo data, and source identification by comparing the source indicators and the results of PM2.5 components factorization by PMF.





Lecture of the early detection and prediction of haze and VOC monitoring methodology

On December 5th, Dr. Yusuke Kiriya (NC, EANET) introduced the recent research achievement of the PM_{2.5} early detection and prediction. The lecture explained the overview of the current issue of haze in Southeast Asia, the detection technologies such as satellite observation, emission inventory, and Chemical Transport Model (CTM), and challenges and future directions.

Dr. Mingqun Huo (NC, EANET) talked about the overviews and current achievements of VOC project under the EANET Project Fund. The lecture shared the techniques to measure VOC in the manual and automatic method and the results of VOC measurement in the ambient air and inside the factories in Mongolia, Philippines, and Cambodia. Dr. Huo also shared the future plan including that the technical guidance of VOC monitoring in EANET will be established within the project.

Useful Resources:

- Read the Training Materials

Day4