



The Network Center for the Acid Deposition Monitoring Network in East Asia

Results of survey on HAQMN and technical studies in some EANET participating countries

EANET Seminar on Expanding monitoring system using Low-cost sensor

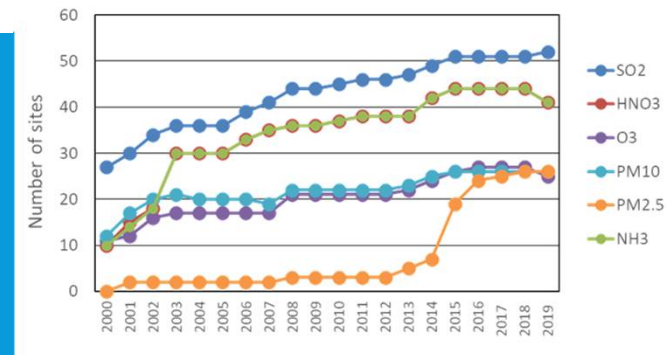
21 July 2022



The Network Center for the Acid Deposition Monitoring Network in East Asia

Background

Annual variations of the number of EANET gas and aerosol monitoring sites



- Developing countries in East Asia have insufficient air quality observation networks and lack of data to assess air pollution conditions.
- The official monitoring method has high barriers regarding the cost of installing equipment, maintenance and management costs, and securing staffs to operate the equipment, which may make it difficult to deploy in developing countries in East Asia. (Refer right figure)
- Some countries in Europe, the U.S., and East Asia have been conducting activities to supplement existing air quality observation networks using LCS equipment.
- As a preliminary survey for the future deployment of observation networks using LCS in EANET participating countries, we have been investigated the status of LCS equipment installation and LCS needs in EANET participating countries.



Status of LCS Equipment Installation in Myanmar

Air Quality Monitoring Activities of Environmental Conservation Department



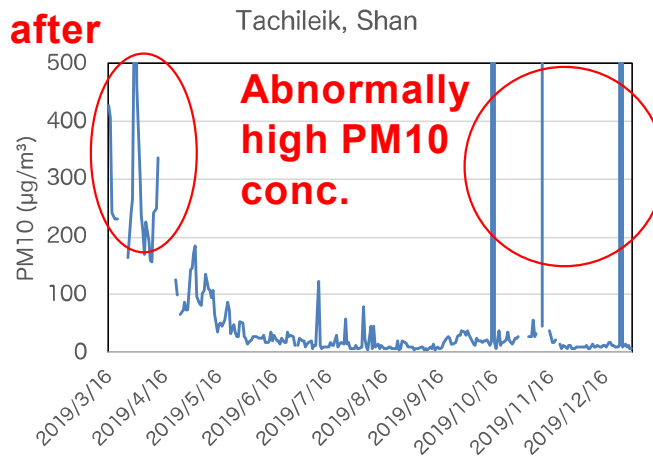
Ambient Air Quality Monitoring - ECD (Tachileik District, Shan State)

Air Quality Monitoring Activities of Environmental Conservation Department



Ambient Air Quality Monitoring - ECD (Kachin State)

Unstable after
startup

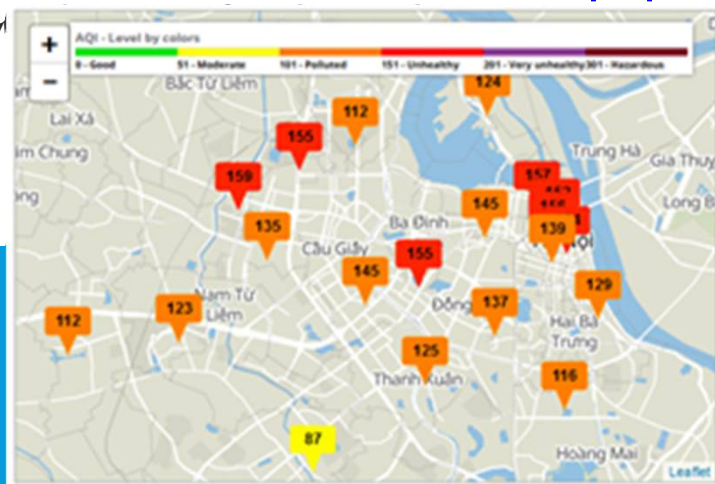


- Air quality monitoring is conducted periodically by using Haz-Scanner (made in the U.S.) at various cities.
- Pilot monitoring including parallel measurement with reference monitors is implemented in 2022 as part of a JICA project.

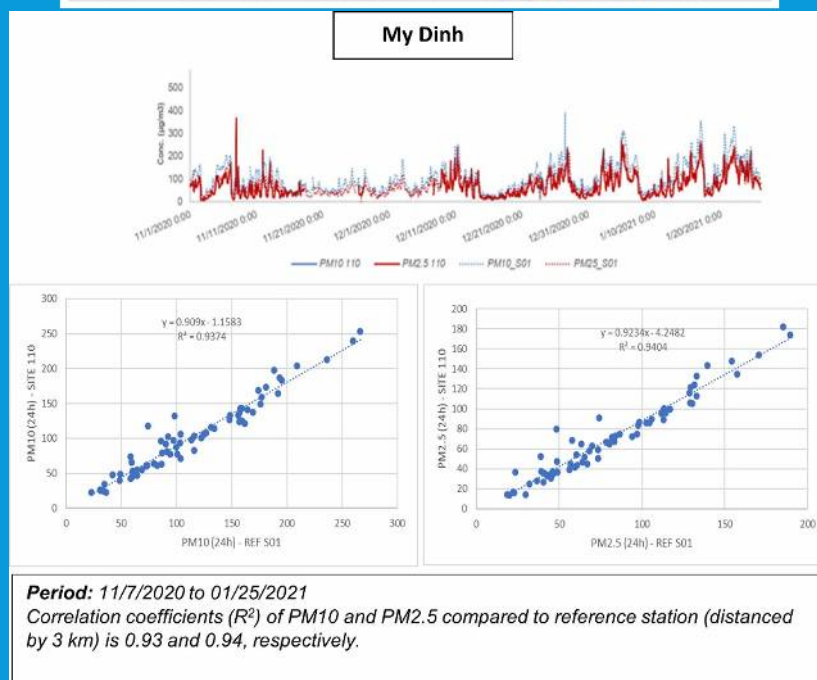


The Network

Status of LCS Equipment Installation in Vietnam



Parallel
measurement
with reference
monitors



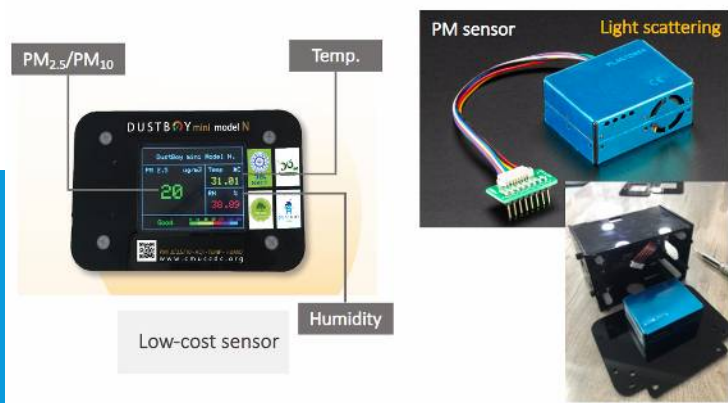
- 50 LCS instruments manufactured by ENVEA (made in France) were provided for research and screening purposes.
- Vietnam Clean Air Partnership (VCAP), a non-governmental organization, conducted wide-area observations in Hanoi.
- In addition, Green Blue Co. in Japan is conducting PM_{2.5}, O₃, and NO₂ using GBiot.
- There are no governmental agencies using LCS instruments, but IMHEN is highly interested for LCS.



Th

Status of LCS Equipment Installation in Thailand

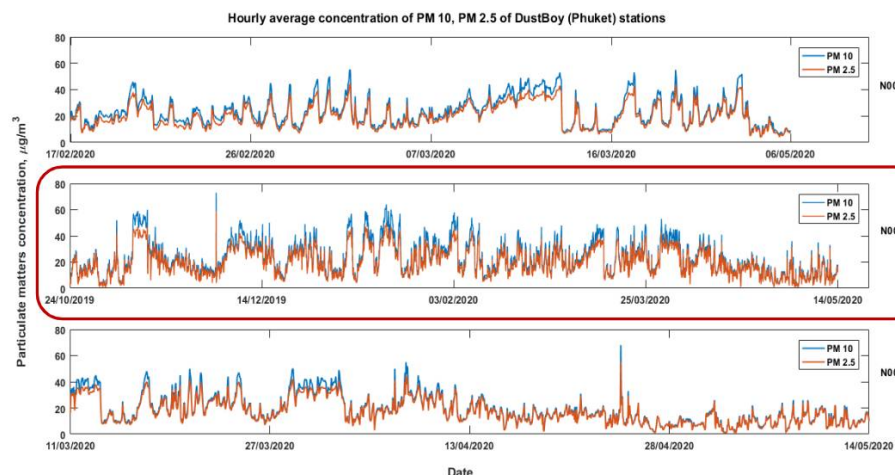
METHODOLOGY



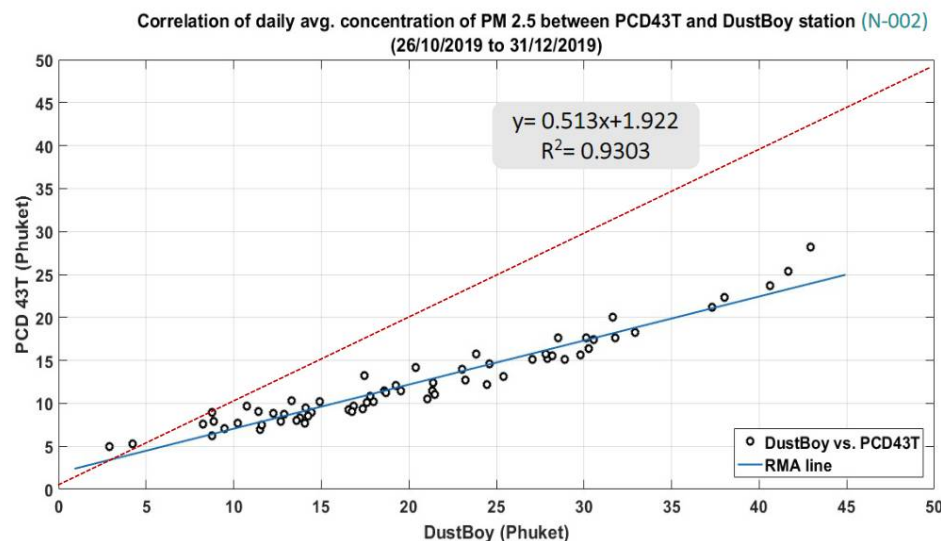
PM Sensor
(Plantower Co.)

Parallel measurement with reference monitors

METHODOLOGY: DATA COLLECTION



Time
variation of
PM₁₀, PM_{2.5}
conc.



(Supasri et al. Siam Physics Congress (2020))

- Many studies on atmospheric observation using LCS instruments have been conducted at universities and other research institutes. (The case of Phuket is introduced in this slide.)
- At the open source air monitoring data site such as IQAir, LCS instruments and data from PCD-operated monitoring stations are mixed, and the data not excluded abnormal values is disclosed, which causes quality control issues.



Status of LCS Equipment Installation in Indonesia



Konsentrasi PM10 di Kemayoran

Tanggal: 2019-07-12



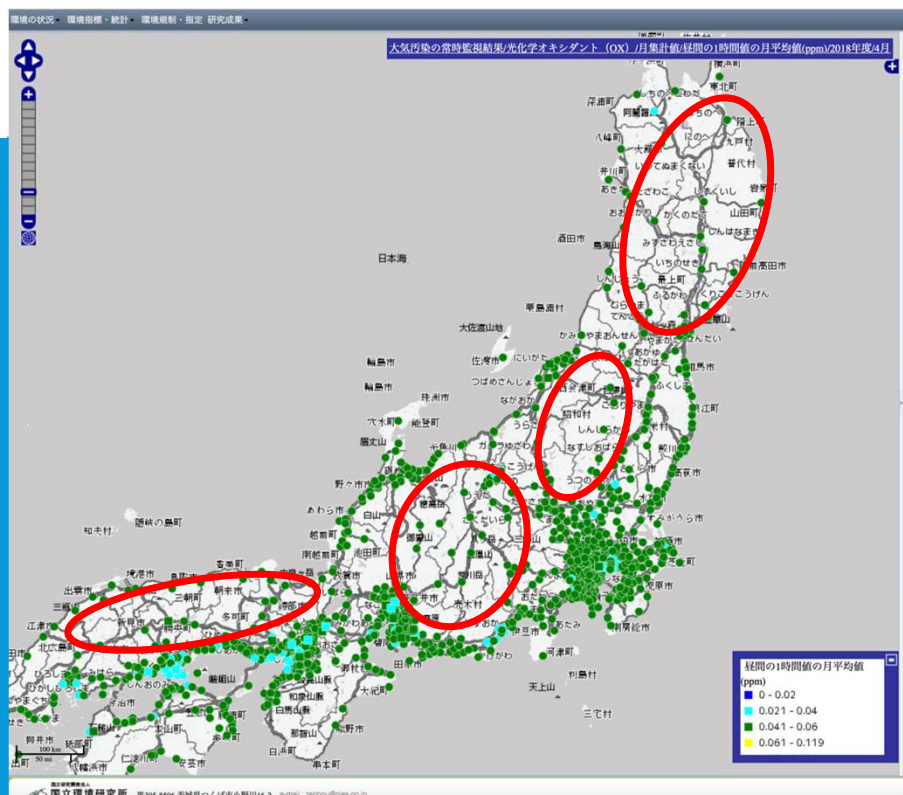
Daily variation of PM₁₀ measured by LCS



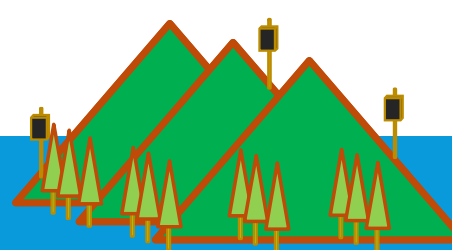
- Since 2019, the U.S. Air Quality Capacity Building Fellowship has been providing support in air quality monitoring, data management, and pollution forecasting, and holds regular technical discussions and trainings.
- Training for BMKG staffs in 2020/2021 will include lectures on reference PM instrument calibration procedures, introduction to air monitoring by official methods and LCS instruments.



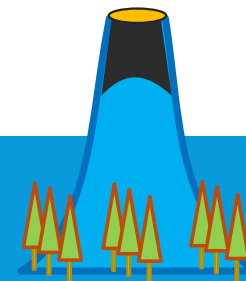
Establishment of an observation network in forest and mountainous areas of Japan using LCS instruments



There are too many blank areas in forest and mountain to study the effects of O₃ and other pollutants on tree growth.



LCS instruments can be used to observe ozone in forested and mountainous areas



Existing mountainous sites in Mt. Fuji, Mt. Akagi and Mt. Hakuba

- Enhancement of air monitoring data in forest and mountainous areas by new observation networks and clarification of O₃ pollution
- Transfer knowledge to EANET PCs.



Key Questions for Discussion Session

- What were the challenges you learned through your experiences in using LCS?
- What do you think are the steps / challenges when we utilize LCS for the air quality control strategies, air quality monitoring at city, regional, and country level?
- What is necessary to build linkages among city, regional and country level monitoring?