VIETNAM INSTITUTE OF HYDROLOGY, METEOROLOGY AND CLIMATE CHANGE

Air quality modeling and Low Cost Sensor studies

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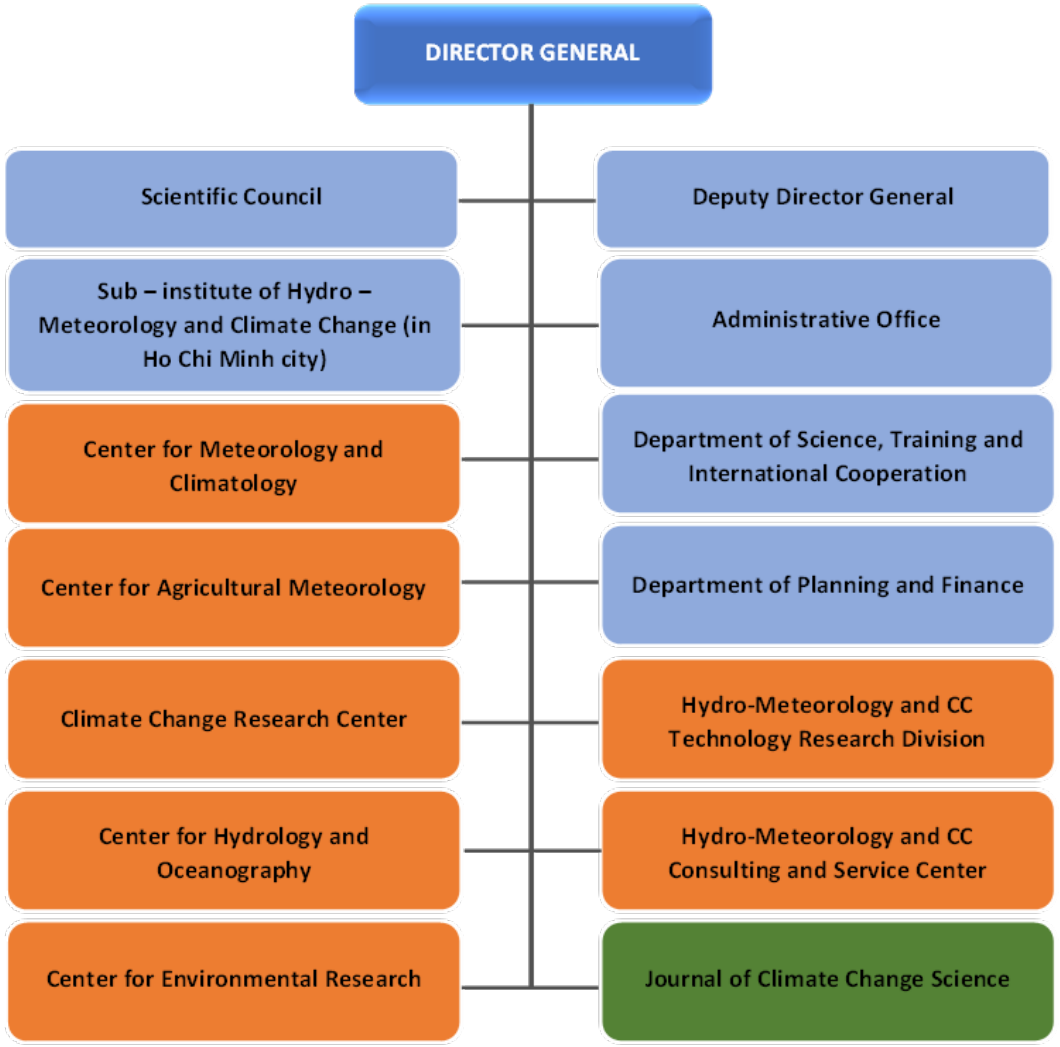
1. Vietnam Institute of Meteorology, Hydrology and Climate change (IMHEN)

- 45+ years of history (Est 1977)
- A public research institution affiliated with MONRE

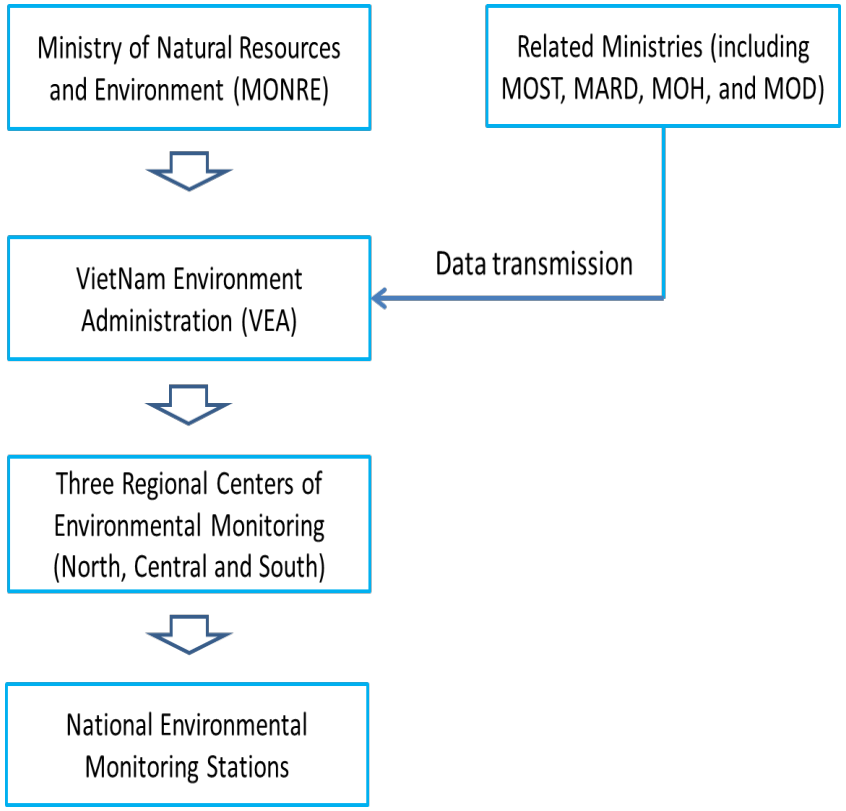
Core areas:

- Meteorology, Climatology and Agriculture Meteorology
- Hydrology and Oceanography
- Environment
- Climate Change

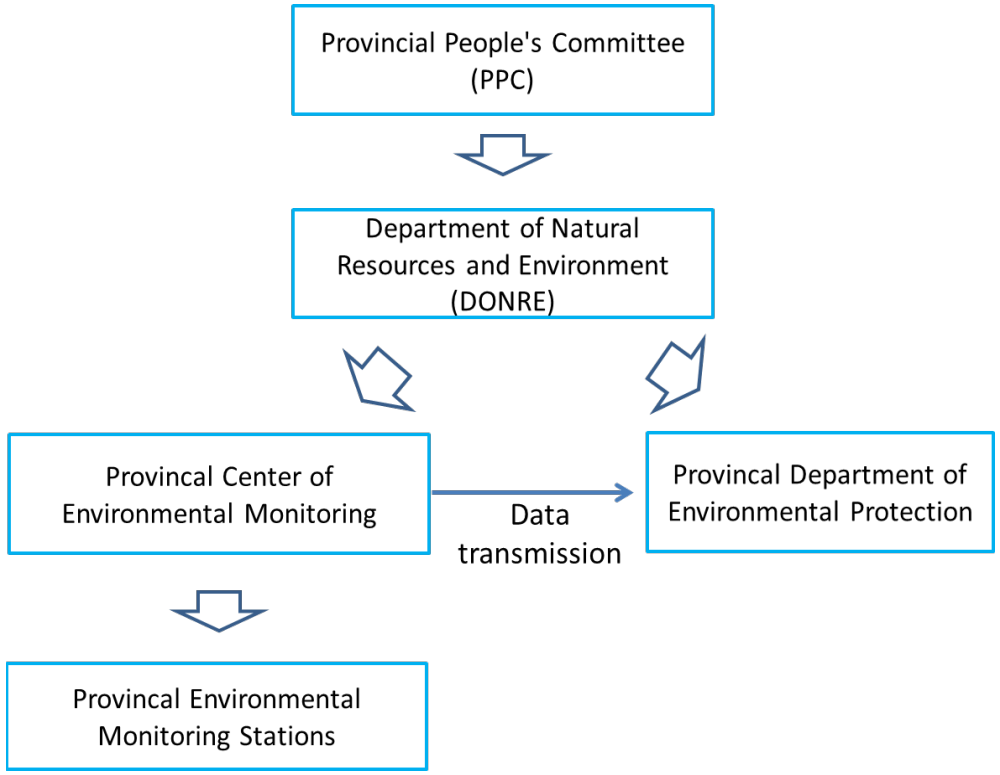


Organizational structure of IMHEN

2. Air quality monitoring in Vietnam



National Monitoring System



Provincial Monitoring System

3. EANET activities in Vietnam

- Viet Nam has joined EANET since 1999
- IMHEN is assigned as Vietnam's National Focal Point for EANET
- Number of EANET stations: 7

3 Urban sites: Ha Noi, Da Nang, Ho Chi Minh

3 Rural sites: Hoa Binh, Can Tho, Yen Bai

1 Remote site: Cuc Phuong

Location of EANET stations in VN

3. EANET activities in Vietnam (Cont'd)

Monitoring

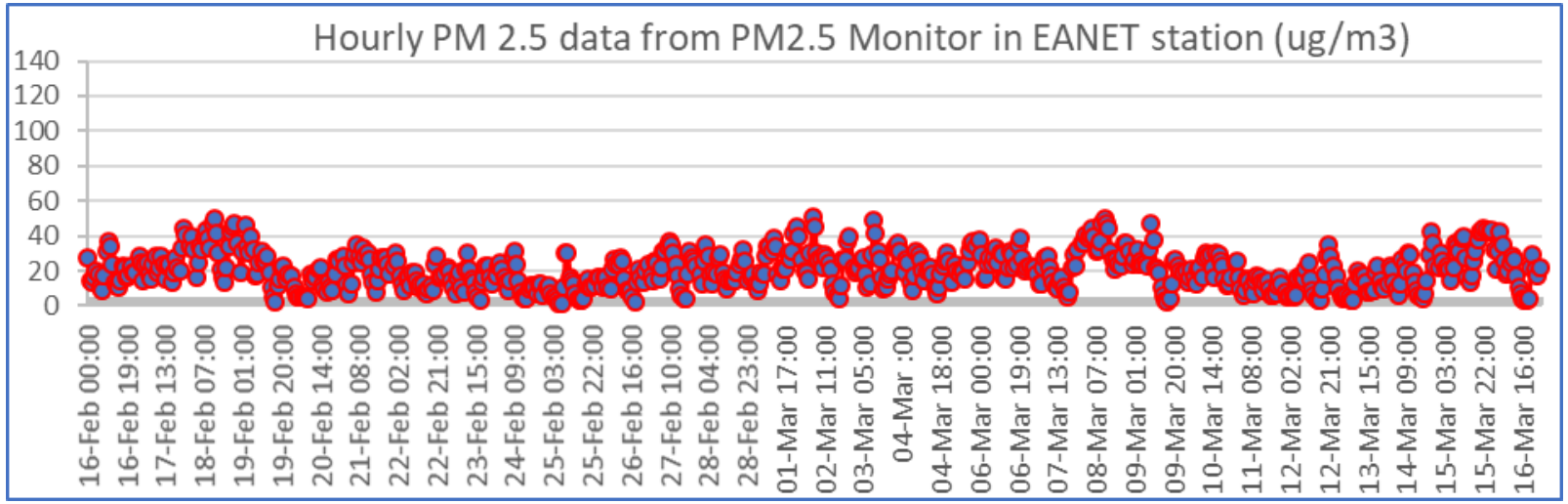
- Dry deposition: 4 sites
- Wet deposition:

  7 sites
- Inland aquatic: Hoa Binh reservoir

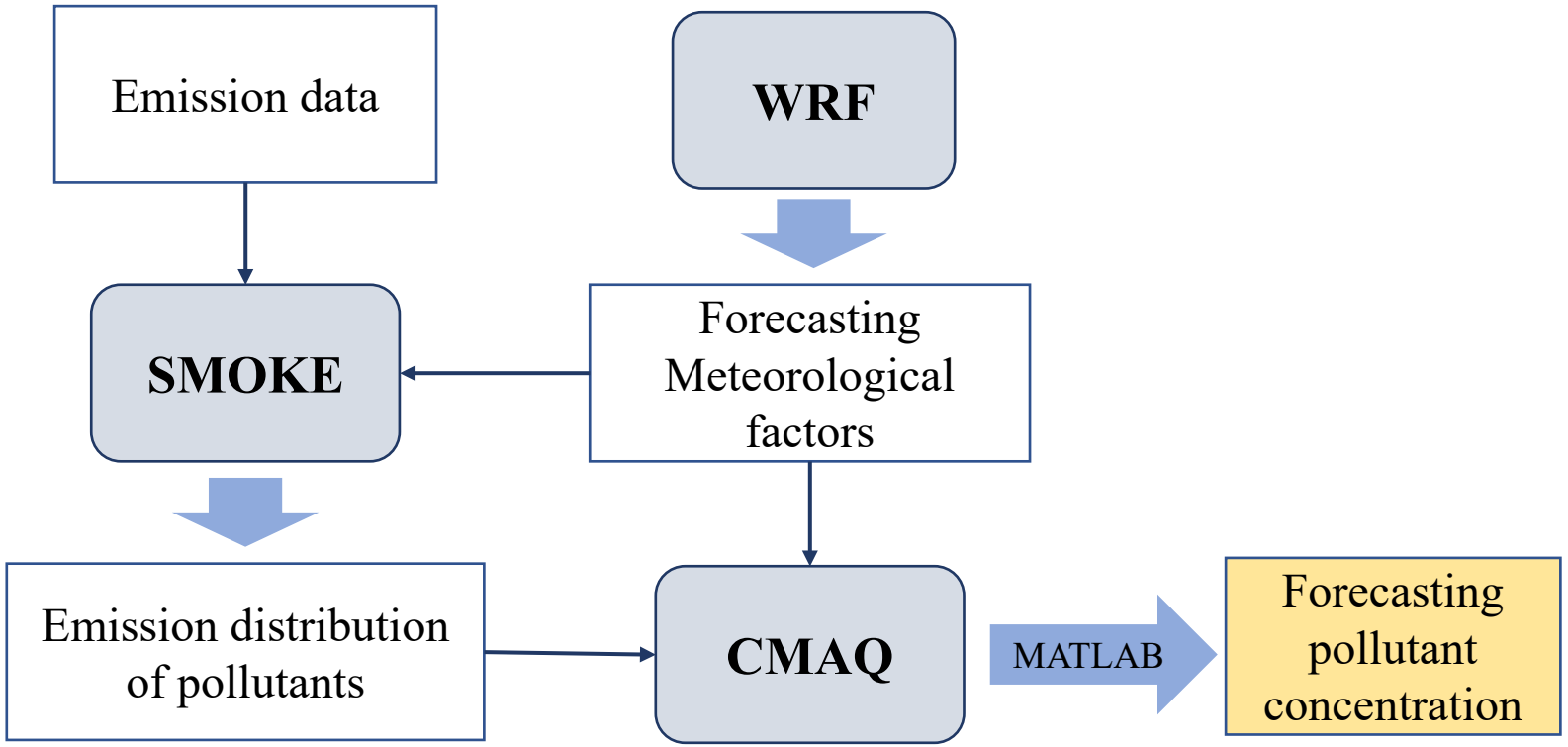
3. EANET activities in Vietnam (Cont'd)

PM2.5 monitoring

- Hoa Binh
- Started in 2015

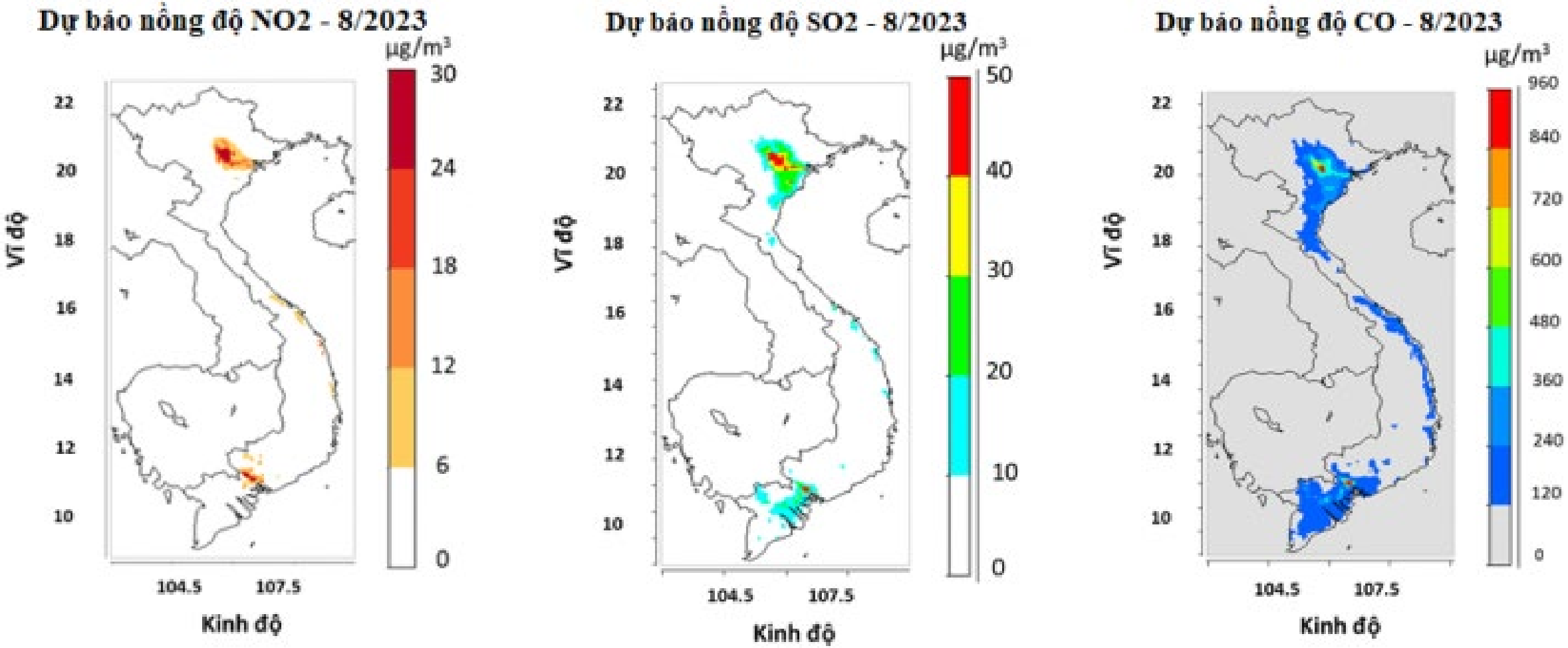


4. Air quality modeling



Application of models for air quality forecasting

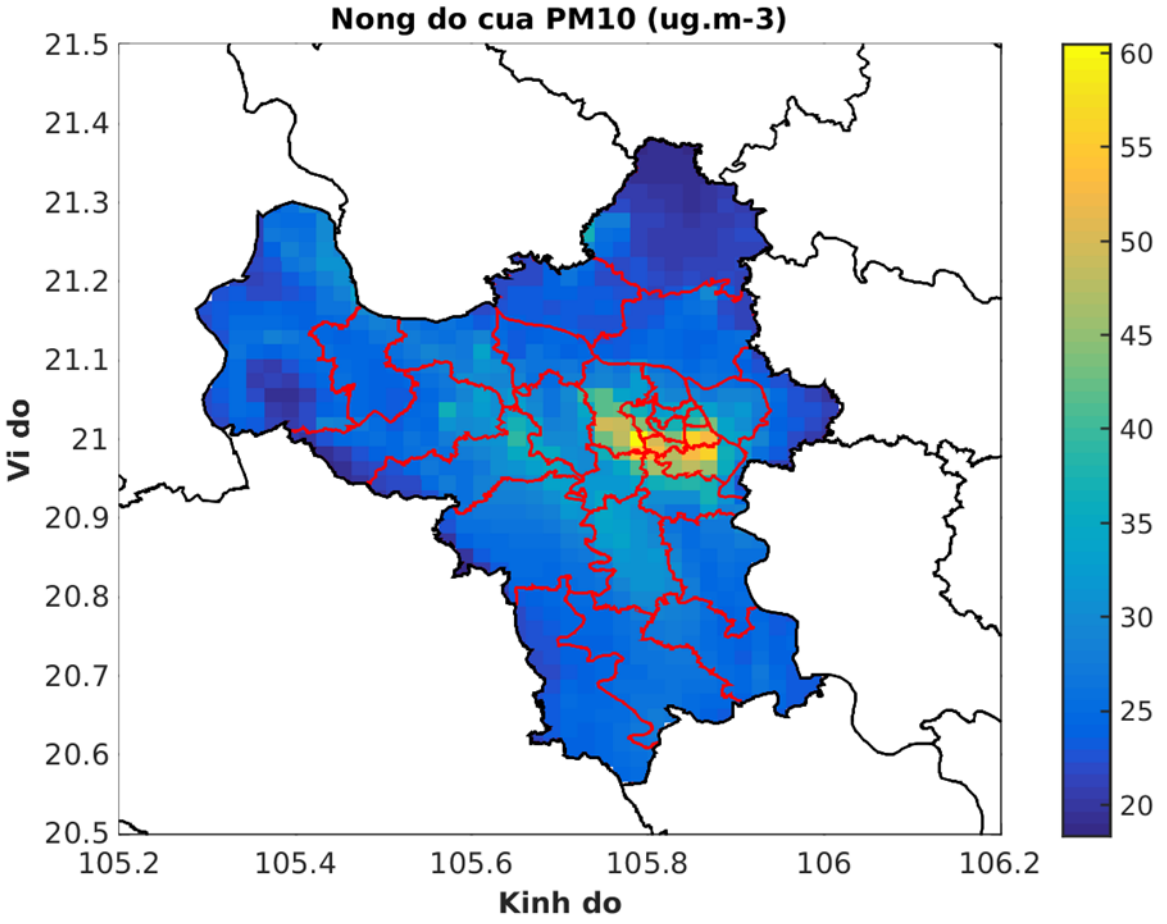
4. Air quality modeling

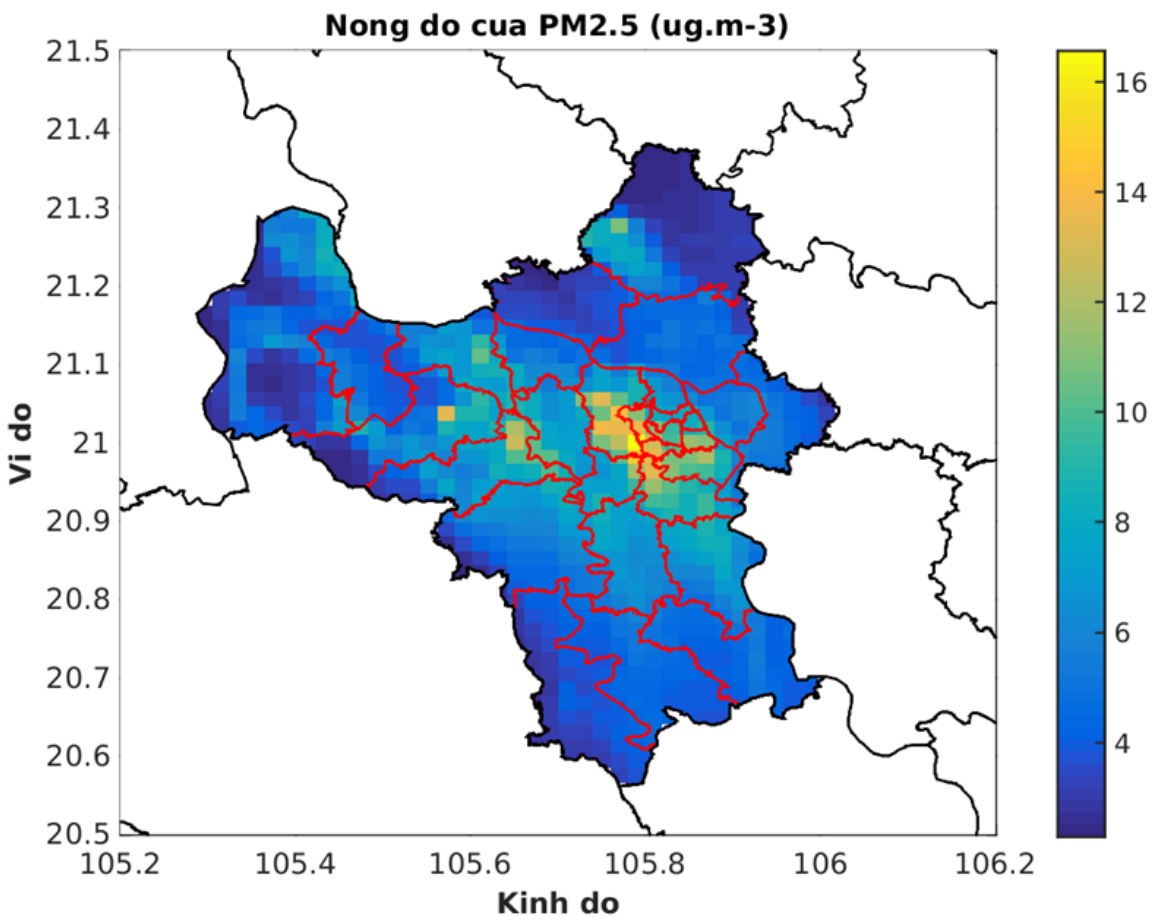


Monthly air quality forecasting for whole Vietnam (NO_2, SO_2, CO)

https://imh.ac.vn/ban-tin-du-bao-chat-luong-moi-truong-khong-khi-thang-08-nam-2023/

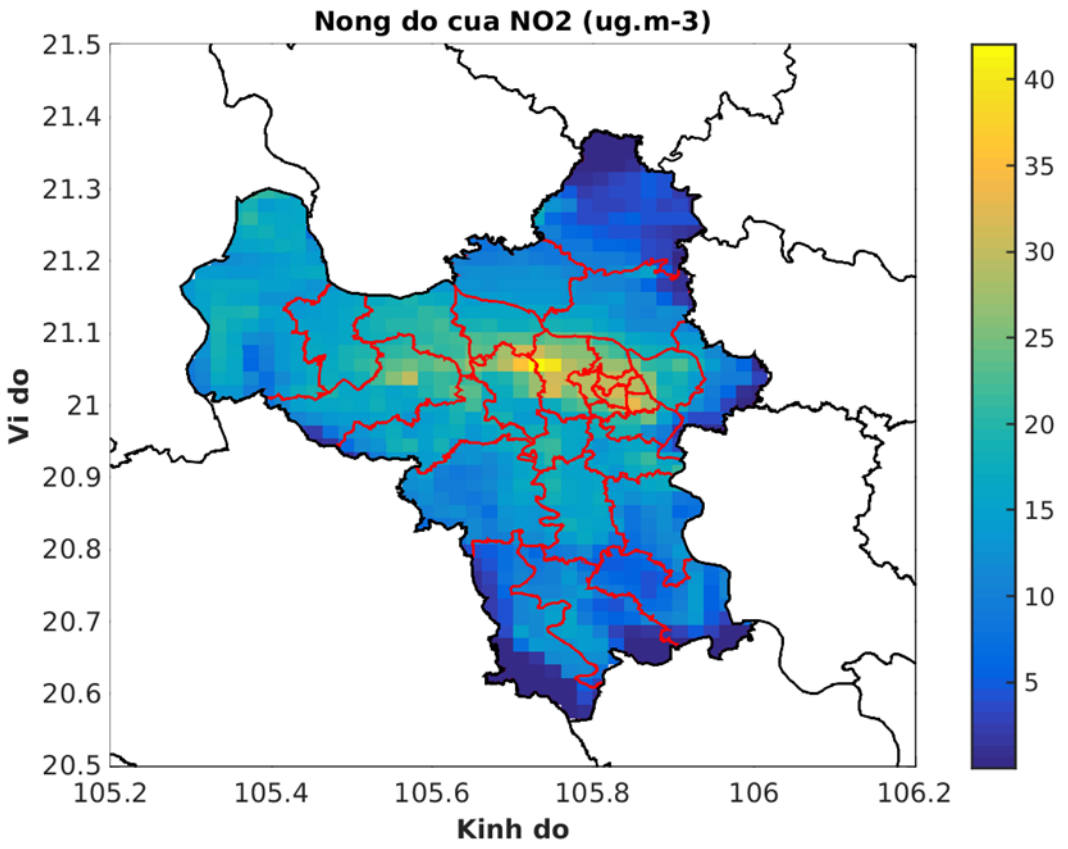
3. Air quality modeling

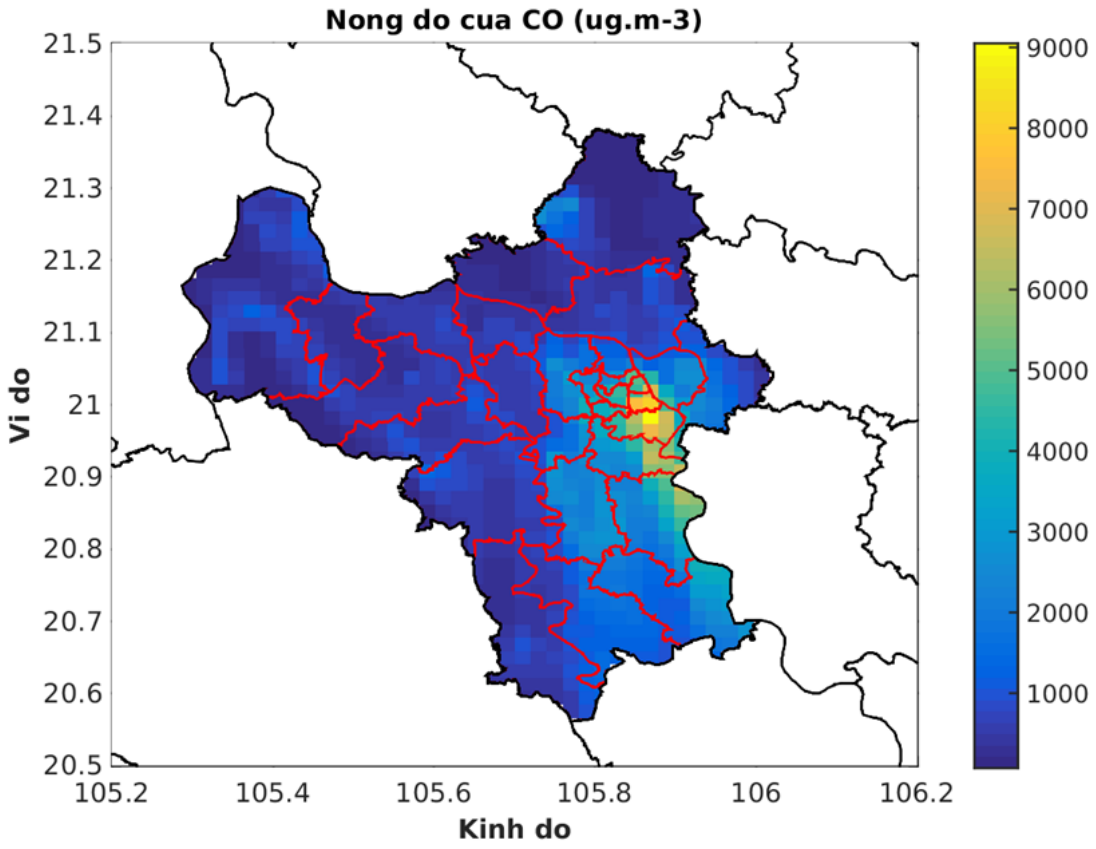




Study on Air quality forecasting for Hanoi city (2021)

3. Air quality modeling





Study on Air quality forecasting for Hanoi city (2021)

5. Collaboration with ACAP/EANET on LCS studies

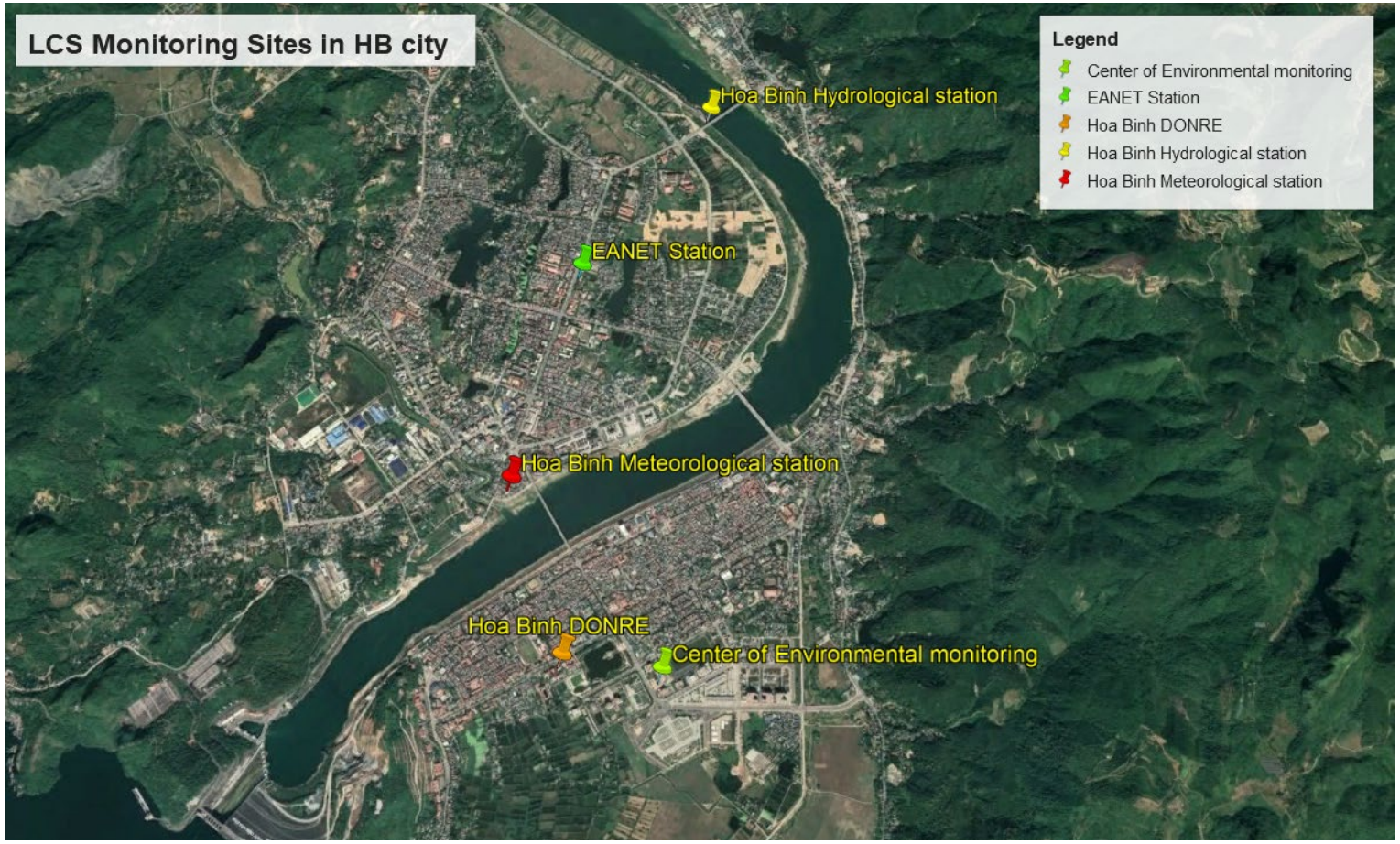
LCS study in Hoa Binh city (EANET project)

- Duration:

Phase 1: Nov. 2022 - Mar. 2023

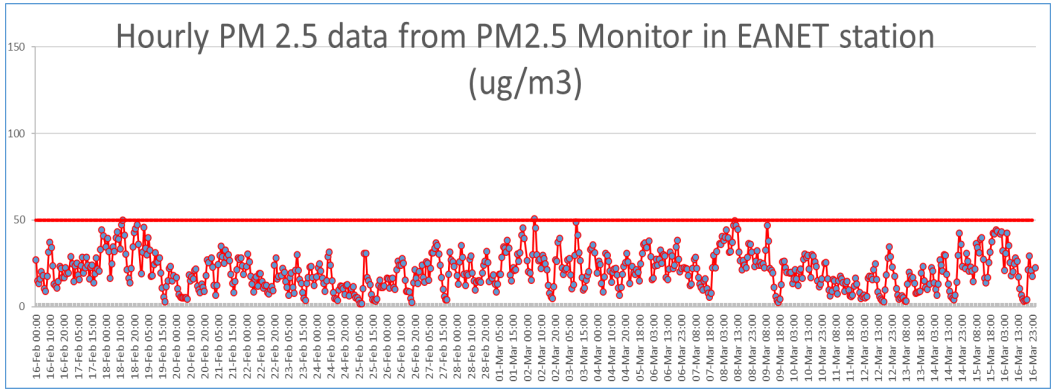
Phase 2: May 2023 – Dec. 2024

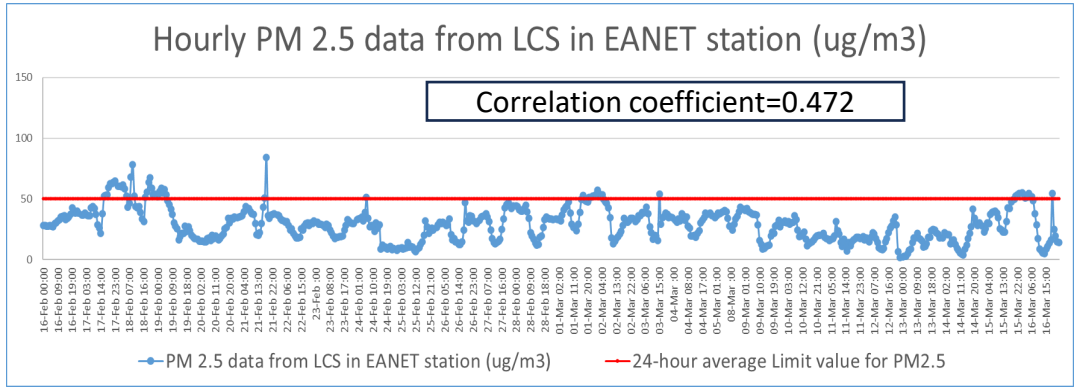
- No. of LCSs installed: 05
- Location: Hoa Binh city
- Parameter: $PM_{2.5}$

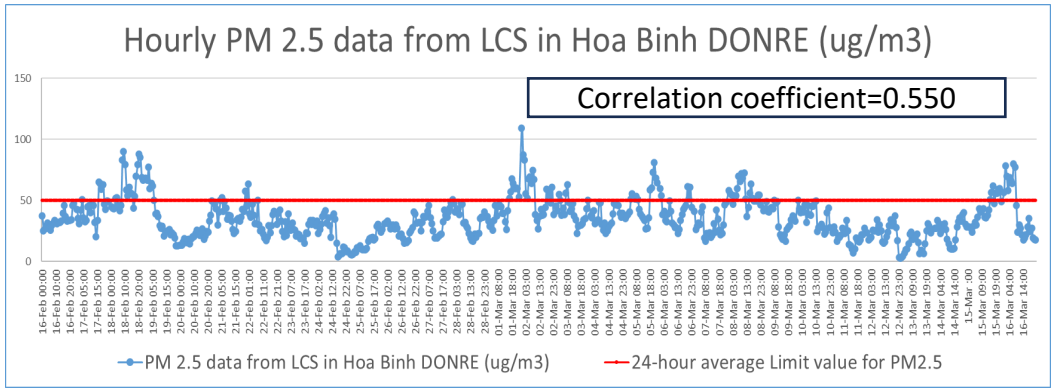


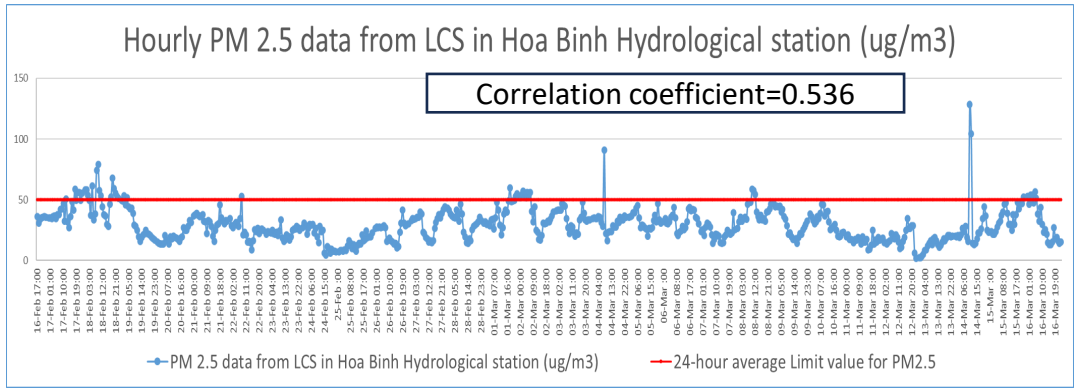
Location of LCSs installed in Hoa Binh city

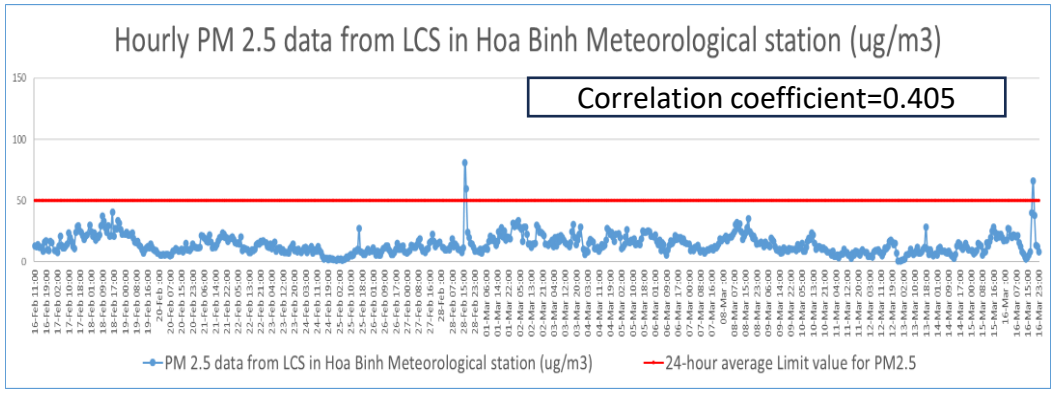
Results on monitoring data from LCS in comparison with PM2.5 monitor in Hoa Binh city during 30 days (from 16 Feb to 16 Mar 2023)

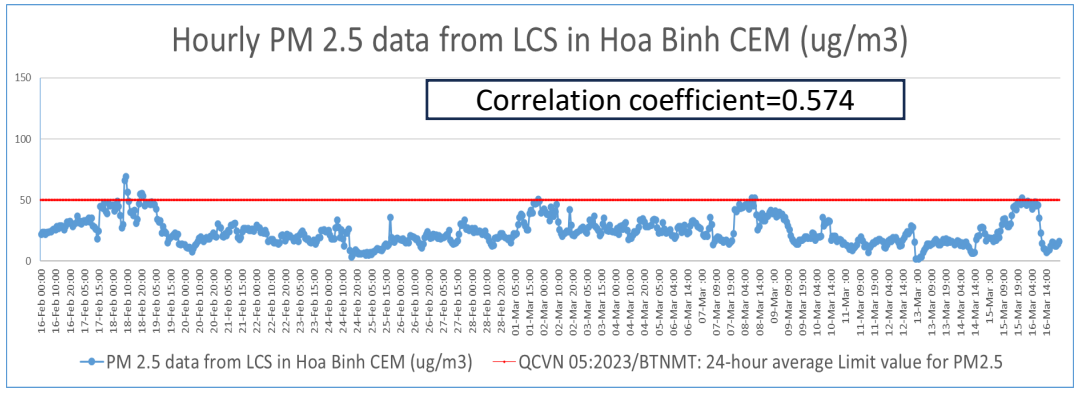












5. Collaboration with ACAP/EANET on LCS (Cont'd)

LCS study in Ha Noi city (ADB project):

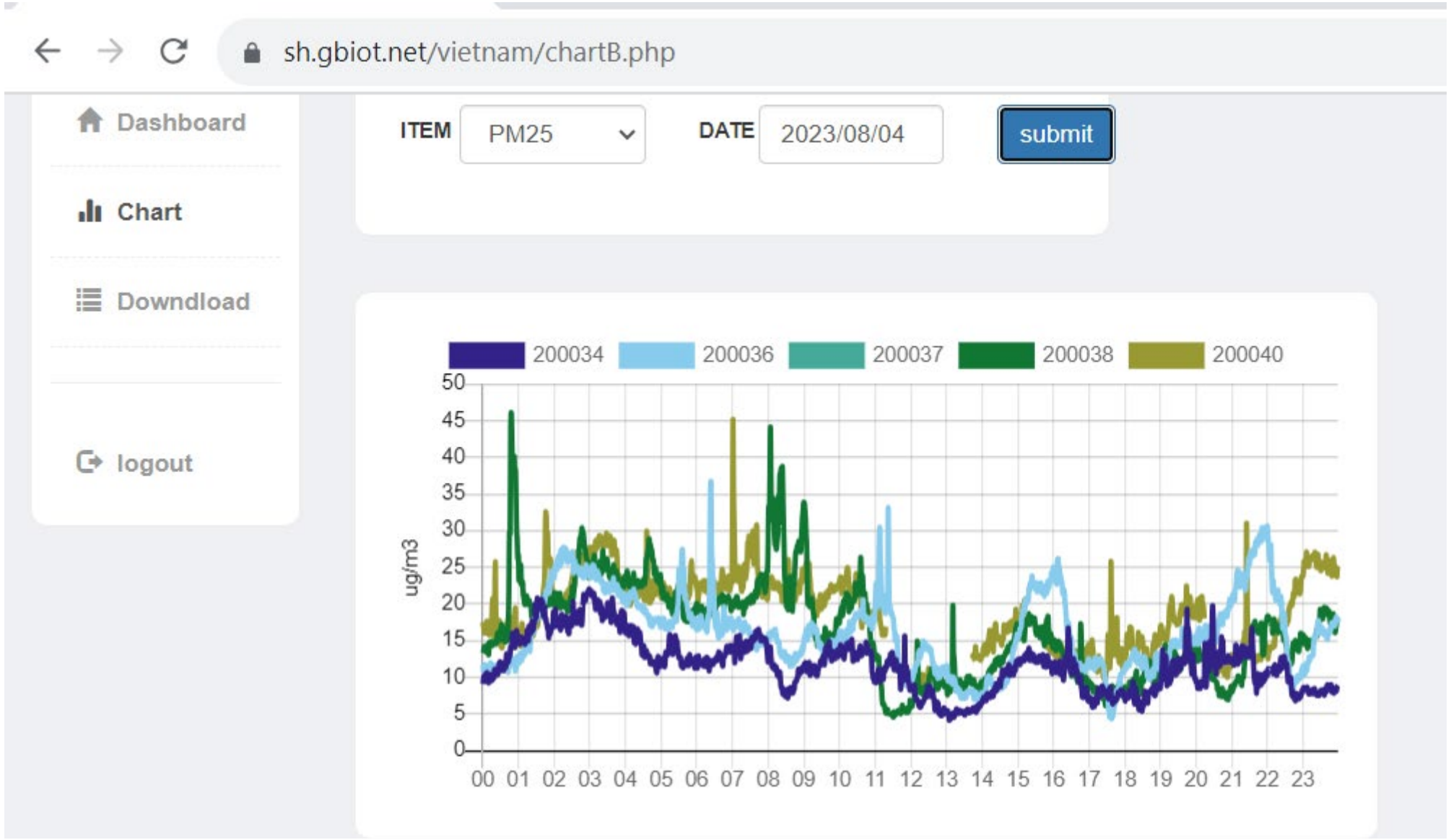
- Duration: May – Sept. 2023
- No. of LCSs installed: 5
- Location: Ha Noi city
- Parameters: $PM_{2.5}$, N_2O, O_3, Meteorology

Figure 2: Candidate sites of LCSs installed in Hanoi city

LCS study in Ha Noi city

Monitoring duration from 29 July to 8 September 2023

Online monitoring data from 5 LCS installed in Hanoi city



6. Planned activities

- Continue the LCS studies
- Study the effectiveness of HAQM using LCS
- Air quality modeling with data from conventional monitoring system and LCS

Thanks for your attention!