



# 2024 7-SEAS and KPEX Workshop

2024 七海計畫暨高屏實驗國際工作會

12-13 November, 2024

Taipei, Taiwan



Hosted by



環境部  
Ministry of Environment



台灣氣膠研究學會  
Taiwan Association for  
Aerosol Research, TAAR

Organized by



國立中央大學  
National Central University

# Contents

Contents.....	I
About.....	1
The Seven SouthEast Asian Studies (7-SEAS).....	1
Agenda.....	2
11 November, 2024 (Monday).....	2
12 November, 2024 (Tuesday).....	2
13 November, 2024 (Wednesday).....	4
Organizer Contact Information.....	6
Poster Presentation.....	7

# About

## The Seven SouthEast Asian Studies (7-SEAS)

The Seven SouthEast Asian Studies (7-SEAS) program seeks to perform interdisciplinary research in aerosol-environment-meteorology and climate interaction in Southeast Asia (SEA). A series of studies of 7-SEAS, including VBBE, Cruise Mission, Dongsha Experiment, Son La Campaign, BASELInE, Fang/DAK Experiment, and PMSEANet had been conducted. From 2024 to 2026, the 7-SEAS/Urban-AQ focuses on transboundary pollution, particularly urban air quality (AQ) in big cities. Meanwhile, the Kao-Ping Experiment (KPEX) conducted in southern Taiwan in February-March 2024, in line with NASA/ASIA-AQ's overflights on Taiwan, is a prelude of 7-SEAS/Urban-AQ designed to address local air quality challenges. Specifically, ASIA-AQ will contribute to improving the integration of satellite observations with existing air quality ground monitoring and modeling efforts across East and Southeast Asia.

The 2024 7-SEAS and KPEX Workshop, which will be held in Taiwan from November 11 to 13, 2024, will consist of two days of oral presentations and a poster session at the Ministry of Environment (MOENV) Conference Hall in Taipei. Keynotes, oral presentations and posters from independent and cooperative investigators interested in 7-SEAS/ASIA-AQ/KPEX topics will be given. The main objectives of the workshop are:

1. To discuss the data collected in KPEX, ASIA-AQ, and previous 7-SEAS experiments and campaigns, NASA ground-based networks in SEA, and other related studies in Asia.
2. To bring together the experts who are interested in pursuing the 7-SEAS program and wish to make definitive plans for research and deployment in the coming years.
3. To provide a technical training/tour on overall aerosol chemical/physical measurements and instrumentation, aerosol optical/radiative measurements (i.e., NASA AERONET, MPLNET, Pandora, SMART-s, etc.), and satellite remote sensing.

The meeting will be a workshop rather than a scientific conference, with active discussions on the data, the nature of the Southeast Asian atmospheric environment, and the planning for remote sensing, modeling, and field research.

# Agenda

## 11 November, 2024 (Monday)

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17:00 – 19:00 **Icebreaker at Just Sleep Hotel – Taipei Ximending**

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## 12 November, 2024 (Tuesday)

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08:30 – 09:00 Registration

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09:00 – 09:40 **Opening Ceremony**

Opening Address

Remarked by:

*Chi-Ming Peng, Minister, Ministry of Environment, Taiwan*

*Hal Maring, Project Manager, NASA HQ*

Group Photo

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### **Special Talks**

*Chairperson: Neng-Huei (George) Lin, National Central University*

09:40 – 10:10 Overview of NASA Earth Science Observation System – Current and Future  
*Hal Maring, NASA HQ*

10:10 – 10:40 An Overview of ASIA-AQ with Emphasis on Flights over Taiwan  
*James Crawford, NASA LaRC*

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10:40 – 11:10 Coffee Break

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### **Session I: Overview of Networks (I)**

*Chairperson: Ukkyo Jeong, Pukyong National University*

11:10 – 11:30 AERONET Overview and Updates  
*Pawan Gupta, NASA GSFC*

11:30 – 11:50 APAC: Overview and Activities  
*Sheng-Hsiang (Carlo) Wang, National Central University*

11:50 – 12:10 MPLNET Update  
*Ellsworth Judd Welton, NASA GSFC*

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12:10 – 13:30 Lunch

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**Session II: Overview of Networks (II)**

*Chairperson: Sheng-Hsiang (Carlo) Wang, National Central University*

- 13:30 – 13:50 Validation and Support of Space-Based Measurements with the Pandora Global Network of Ground-Based Spectrometers  
*Thomas F. Hanisco, NASA GSFC*
- 13:50 – 14:10 Ground-Based Remote Sensing Validation Efforts for the Geostationary Environment Monitoring Spectrometer  
*Ukkyo Jeong, Pukyong National University*
- 14:10 – 14:30 SMART-s Remote Sensing and Retrieval for Air Quality Research: Chapter 2, the Spectrometry  
*Si-Chee Tsay, NASA GSFC*
- 14:30 – 14:40 Overview of 7-SEAS/Kao-Ping Experiment (KPEX)  
*Neng-Huei (George) Lin, National Central University*
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- 14:40 – 15:10 Coffee Break
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**Session III: 7-SEAS/KPEX**

*Chairperson: Ta-Chih Hsiao, National Taiwan University*

- 15:10 – 15:25 Synoptic Weather Patterns and Terrain Effect on Vertical Atmospheric Structure During KPEX  
*Hsin-Chih Lai, Chang Jung Christian University*
- 15:25 – 15:40 Unraveling 3D Mesoscale Air Pollution Transport Using UAV and Lidar Observations in the 2024 KPEX Campaign  
*Sheng-Hsiang (Carlo) Wang, National Central University*
- 15:40 – 15:55 Near-Surface VOC Vertical Profiling at a KPEX Site  
*Jia-Lin Wang, National Central University*
- 15:55 – 16:10 Preliminary Study of CMAQ-PAMS Speciated VOC Vertical Profiling for KPEX  
*Sheng-Po Chen, Chung Yuan Christian University*
- 16:10 – 16:25 Analysis of DC-8 and Ground-Level VOC Data during ASIA-AQ and KPEX in Taiwan  
*Chang-Feng Ou-Yang, National Central University*
- 16:25 – 16:40 The Properties and Dynamics of Aerosols: Insights from Dual Supersites Measurements during KPEX and ASIA-AQ IOPs in Taiwan  
*Ta-Chih Hsiao, National Taiwan University*
- 16:40 – 16:55 Variations in the Chemical Composition of Atmospheric PM<sub>2.5</sub> Aerosols in the Kaohsiung-Pingtung Area of Southern Taiwan in Spring 2024  
*Ying-I. Tsai, Chia Nan University of Pharmacy and Science*

16:55 – 17:10	Characteristics of Trace Organic and Inorganic Air Pollutants during 2024 Kao-Ping Experiment <i>Lin-Chi Wang, National Kaohsiung University of Science and Technology</i>
17:10	Day 2 Wrap-up

## 13 November, 2024 (Wednesday)

### Session IV: 7-SEAS Recent Activities (I)

*Chairperson: Thi Hien To, VNUHCM-University of Science*

09:00 – 09:15	Air Pollution in Thailand: Current Situation and Recent Research <i>Somporn Chantara, Chiang Mai University</i>
09:15 – 09:30	Updated Report on 7-SEAS Activities in Vietnam: Status & Future Plans <i>Xuan Anh Nguyen, Institute of Geophysics, VAST</i>
09:30 – 09:45	Air Quality Studies in Metro Manila, Philippines <i>Melliza Templonuevo Cruz, Manila Observatory</i>
09:45 – 10:00	The Composition of Fine Particulate Matter in Kuala Lumpur Urban Environment <i>Mohd Talib Latif, Universiti Kebangsaan Malaysia</i>
10:00 – 10:15	CRISP Current Work on Local and Regional Air Quality Monitoring and Forecasting <i>Santo Salinas, National University of Singapore</i>
10:15 – 10:30	Current Research Activities and Air Quality Status in Indonesia <i>Puji Lestari, Bandung Institute of Technology</i>
10:30 – 11:00	Coffee Break

### Session V: 7-SEAS Recent Activities (II)

*Chairperson: Somporn Chantara, Chiang Mai University*

11:00 – 11:15	Investigation of Aerosol Optical Properties during the ASIA-AQ Campaign in Thailand <i>Itsara Masiri, Silpakorn University</i>
11:15 – 11:30	ASIA-AQ Science Mission in Thailand: Current Status <i>Pakorn Petchprayoon, Geo-informatics and Space Technology Development Agency</i>
11:30 – 11:45	Numerical Air Quality Modelling Initiatives in Malaysia <i>Maggie Chel Gee Ooi, Universiti Kebangsaan Malaysia</i>

11:45 – 12:00	Mercury and Metals Reveal Air Pollution Characterization in Ho Chi Minh City <i>Ly Sy Phu Nguyen, VNUHCM-University of Science</i>
12:00 – 12:15	Day and Night Variations in PM <sub>2.5</sub> Chemical Composition During Smoke Haze in Urban Chiang Mai <i>Nuttiapon Yabueng, Chiang Mai University</i>
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12:15 – 13:30	Lunch
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13:30 – 14:30	<b>Session VI: Poster Presentation</b>
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14:30 – 15:00	Poster Presentation and Coffee Break
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15:00 – 16:00	<b>Session VII: Discussion on 2025 7-SEAS/Urban-AQ Planning</b>
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16:00	Day 3 Wrap-up and Closing
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# Organizer Contact Information

**Mr. Ping-Fei Shieh, Convener of Local Organizing Committee**

Director, Department of Monitoring and Information  
Ministry of Environment, Taiwan

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National Central University, Taiwan  
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# Poster Presentation

- P1 Impacts of SBTEX on Ambient Air Quality in Chiang Mai During Smoke Haze and Non-Haze Periods  
*Wittaya Tala, Chiang Mai University*
- P2 Sources of Carbonaceous PM<sub>0.49</sub> and Climate Impacts in a Rural Chiang Mai Area Near Thailand-Myanmar Border  
*Radshadaporn Janta, Chiang Mai University*
- P3 Seasonal Variations in Chemical Composition and Source Profiles of PM<sub>2.5</sub> in Chiang Mai City (2020-2021)  
*Sarana Chansuebsri, Chiang Mai University*
- P4 Chemical Compositions and Oxidative Potential of PM<sub>2.5</sub> in Chiang Mai, Thailand During the Ground Measurement ASIA-AQ Campaign  
*Duangduean Thepnuan, Chiang Mai University*
- P5 Health Risk Assessment of Polycyclic Aromatic Hydrocarbons (PAHs) in Size-Fractionated Particulate Matter near the Thailand-Myanmar Border  
*Pavidarin Kraisitnitikul, Chiang Mai University*
- P6 Fine Particulate Matter (PM<sub>2.5</sub>)-Bound Polycyclic Aromatic Hydrocarbon (PAHs) in Northern Thailand and their Source-Specific Cancer Risk Assessment  
*Supattarachai Saksakulkrai, Chiang Mai University*
- P7 Oxidative Potential of PM<sub>0.5</sub> in Upper Southeast Asia  
*Jaturawit Kabao, Chiang Mai University*
- P8 Impacts of Biomass-Burning-Derived Aerosols over an Urban Environment in Northern Peninsular Southeast Asia  
*Shantanu Kumar Pani, National Central University*
- P9 Air Quality and Its Associated Radiative Forcing Over an Urban Location in Northwestern India  
*Divya Prakash, Poornima University Jaipur*
- P10 Insights into the Characterizations of Size-Fractionated Atmospheric Metals in Urban and Industrial Areas in Southern Vietnam  
*Quoc Hau Le, VNUHCM-University of Science*
- P11 Spatiotemporal Characterizations of Air Pollution Revealed by Aerobox at Educational Institutions in Ho Chi Minh City, Vietnam  
*Duc Thanh Nguyen, VNUHCM-University of Science*

- P12 Air Quality Status in UKM (Malaysia) Using Aerobox Sensor under the PM<sub>2.5</sub>@Asia Network  
*Nur Izzati Zaini, Universiti Kebangsaan Malaysia*
- P13 Updating AERONET in Thailand and Its Results  
*Somjet Pattarapanitchai, Silpakorn University*
- P14 Long-Term Observation of Aerosol Optical Properties in Bangladesh Using Ground-Based AERONET Data  
*Md. Al-amin Hossen, University of Dhaka*
- P15 SMART-s Aerosol and Trace Gas Retrievals for Air Quality  
*Stephen Windle, NASA GSFC*
- P16 Evaluation of Aerosol Optical Depth and PM<sub>2.5</sub> Associations Using AERONET/MPLNET Measurement during the Kao-Ping Experiment (KPEX)  
*Duy Tran Huynh, National Central University*
- P17 AERONET/MPLNET Measurement and Retrieval of Optical Properties of Urban and Biomass Burning Aerosols during ASIA-AQ / Kao-Ping Experiment (KPEX)  
*Yueh-Chen (Mia) Wang, National Central University*
- P18 Long-Term Trends in Carbon Monoxide (CO) at a High Altitude Background Station in the Western North Pacific  
*Ravindra Babu, National Central University*
- P19 Characteristics and Source Analysis of Volatile Organic Compounds at Lulin Atmospheric Background Station  
*Yi-Wen Wang, National Central University*
- P20 Ozone Episodes in Urban Metropolitan Area: Influences from Local Photochemical Processes and Transboundary Effects  
*Duy Nguyen Hieu, National Central University*
- P21 Investigation of the Characteristics of Volatile Organic Compounds and Ozone Formation Potential in the Atmosphere of Urban Areas  
*Hsiang-Ying Wu, National Sun Yat-sen University*
- P22 Application of Photochemical Assessment Monitoring Stations (PAMS) and NO<sub>x</sub> as Aging Indicators to Investigate the High Ozone Concentration in Chaozhou in KPEX  
*Pei-Chen Ma, Chung Yuan Christian University*
- P23 Investigation of Ambient Carbonyl Compounds in Central and Southern Taiwan in KPEX: Real Measurements  
*Pei-Yu Chien, Chung Yuan Christian University*

- P24 Comparison Study of PM<sub>2.5</sub> and O<sub>3</sub> Data Using Low-Cost Sensors, Satellites, UAVs, and the DC-8 Aircraft during the Kao-Ping Experiment (KPEX)  
*Jui-Hsin Hsu, National Central University*
- P25 Aerosol Particle Size Distribution Patterns in Southern Taiwan: Four Intensive Observation Periods (IOPs) During KPEX Campaign  
*Yen-Ru Lyu, National Taiwan University*
- P26 Characteristics of PM<sub>2.5</sub> Organic and Elemental Carbon at Two Sites in Southern Taiwan  
*Yi-Hsuan Chen, China Medical University*
- P27 Chemical Mass Closure of Hourly PM<sub>2.5</sub> and Visibility Impairment at Two Sites in Southern Taiwan  
*Shi-Ya Tang, China Medical University*
- P28 Atmospheric PAHs, Source Attributed Profile and Oxidative Potential in PM<sub>2.5</sub> during Daytime and Nighttime in Kaohsiung  
*Kai Yu Hsu, National Yang Ming Chiao Tung University*
- P29 The Characteristics of POPs during Dust Storm and Non-Dust Storm Events in Beijing, Ulaanbaatar, and Kaohsiung  
*Shih Yu Pan, National Yang Ming Chiao Tung University*
- P30 Evaluation of CMAQ (v5.3.3) Model over Taiwan during 2024 KPEX Experiment  
*Steven Soon-Kai Kong, National Central University*
- P31 AOD-Related Analysis of Biomass Burning Smoke and Black Carbon Emissions in Urban Areas  
*Kuo-En Chang, National Central University*
- P32 Large-Scale Circulation, Sea Breeze and Topographic Synergistic Effects on PM<sub>2.5</sub> Transportation in Kaohsiung Area during 2024 Kao-Ping Experiment (KPEX) IOP-2  
*Wei-Kuo Soong, Air Force Institute of Technology*
- P33 The Study of the Relationship Between Lee-Side Vortex and PM in Taiwan during 2024 Kao-Ping Experiment (KPEX)  
*Wei-Kuo Soong, Air Force Institute of Technology*
- P34 Aerosol Composition and Source Apportionment through Multi-Isotope and Chemical Analyses in Southern Taiwan  
*Prateek Sharma, Academia Sinica*
- P35 A Preliminary Study of PFAS Characteristics in the Atmosphere of Southern Taiwan  
*Sheng-Lun Lin, National Cheng Kung University*

- P36 Concentration, Speciation, and Spatial Distribution of Atmospheric Mercury during KPEX  
*Guey-Rong Sheu, National Central University*
- P37 Sources, Physicochemical and Optical Properties of Water- and Methanol-Soluble Organic Aerosols in PM<sub>2.5</sub> and Their Impact on Human Health during Spring in Kaohsiung City, Taiwan  
*Chieh-Yu Liao, National Sun Yen-sen university*
- P38 Investigating the Sources and Health Risks of Air Toxics in an Environmental Justice Community  
*Hsin-Cheng Hsieh, National Central University*
- P39 Ozone Depleting Chlorofluorocarbons - Monitoring and Emission Investigation  
*Cheng-Yu Hsu, National Central University*
- P40 Utilization of Regional PM<sub>2.5</sub> Data to Assess County Distribution across Varying PM<sub>2.5</sub> Concentration Levels  
*Chun-Po Lin, National Cheng Kung University*
- P41 Investigating the Practical Benefits of Net-Zero Strategies across Different Countries in Air Pollution and Climate Change Issues  
*Ya-Hong Lin, National Sun Yen-sen university*
- P42 Spatiotemporal Occurrence and Characteristics of Microplastics during 2024 Kao-Ping Experiment  
*Thi-Hieu Le, National Kaohsiung University of Science and Technology*
- P43 Spatial distribution characteristics of atmospheric persistent atmospheric pollutants during 2024 Kao-Ping Experiment  
*Zhi-Ping Hsu, National Kaohsiung University of Science and Technology*
- P44 Vertical Stratification of VOCs and Their Photochemical Product Formation Potential at An Industrial Urban Site  
*Thi-Hieu Le, National Kaohsiung University of Science and Technology*
- P45 Source apportionment of PM<sub>2.5</sub> episodes into the Taichung metropolitan area, Taiwan  
*Ming-Tung Chuang, Academia Sinica*
- P46 Synoptic Weather Patterns and Terrain Effect on Vertical Atmospheric Structure During KPEX  
*Hsin-Chih Lai, Chang Jung Christian University*
- P47 Morphology and Elemental Composition of Single Aerosols at a Downwind Site in Southern Taiwan under SEM Observation  
*Ming-Yu Hung, China Medical University*

