



HTAPC Newsletter

Issue 7, August 2024



Highlights

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- Observational study of the Kuan Kreng Peat Swamp Forest, Nakhon Si Thammarat Province
- Joined HTAPC Activities at "Thailand Research Expo 2024"

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Stay tune with more update



Accomplished Activities

of Hub of Talents on Air Pollution and Climate (HTAPC)

Seminar on "Addressing PM_{2.5} in Southern, Thailand through Research and Innovation"



On August 6, 2024, the Hub of Talents on Air Pollution and Climate (HTAPC) under the National Research Council of Thailand (NRCT), Ministry of Higher Education, Science, Research, and Innovation, in collaboration with the Air Pollution and Health Effects Research Center, Prince of Songkla University (PSU), organized a national seminar titled "Addressing PM_{2.5} in Southern, Thailand through Research and Innovation". The event was held at the Twin Lotus Hotel in Nakhon Si Thammarat Province, and this event was also broadcasted online via Zoom Meeting.

The initial session of the seminar discussed about the sources of air pollution in the southern region, impacts on public health, and also presented strategies for preparing and addressing air pollution issues in the area were also presented. Moreover, the seminar was also illustrated a draft of action plans on prevention and mitigation of particulate matter pollution which demonstrated by a representative from the Pollution Control Department (PCD). There was also a presentation on research approaches related to PM_{2.5} management in the southern region for public hearing. The outcomes from this seminar will be consolidated into policy recommendations for future research and PM_{2.5} management.



Observational study of the Kuan Kreng Peat Swamp Forest, Nakhon Si Thammarat Province



On August 7, 2024, the Hub of Talents on Air Pollution and Climate (HTAPC) and the Air Pollution and Health Effects Research Center, Prince of Songkla University (PSU) held a field study of Kuan Kreng Peat Swamp Forest in Nakhon Si Thammarat Province. This field study was supported by the Protected Areas Regional Office 5 (Nakhon Si Thammarat), aimed to assess the current conditions of the area and examine issues related to haze from forest fires. The field study also included discussions on research strategies and management measures to prevent and mitigate the risk of forest fires in the Kuan Kreng peat swamp forest, especially considering the expected resurgence of the El Niño phenomenon, which may intensify drought conditions in the region in the coming years.



Accomplished Activities of Hub of Talents on Air Pollution and Climate (HTAPC)

Thailand Research Expo 2024

มหาวิทยาลัยวิจัยแห่งชาติ 2567
THAILAND RESEARCH
EXPO
2024



From August 26-30, 2024, the Hub of Talents on Air Pollution and Climate (HTAPC) participated in the "Thailand Research Expo 2024" held at the Centara Grand Hotel and Bangkok Convention Centre at Central World, Bangkok.



In the HTAPC's exhibition booth, the educational activities "the Conquer Dust & Win Prizes" regarding air pollution were organized including the Matching game, the "What is it...?" guessing game, the Dust Filter Mastermind game, and a Kahoot quiz competition. In addition, there were two creative activities such as "Dream Sharing and kindness Giving" and "Care Air, Care You," where participants could paint cloth bags and create postcards on the theme of healthy living free from dust. These bags could either be used by the participants themselves or donated to patients in public hospitals, particularly those facing a shortage of medicine bags for discharged patients. Our activities got a lot of attention over 1,000 participants during the event, especially students.



PM_{2.5} issue in Southern Thailand



Although the average PM_{2.5} levels in Southern part of Thailand are lower than in other regions, the region frequently experiences haze issues from May to October. This period coincides with the southwest monsoon season, which brings winds into Southern Thailand. These monsoon winds play a significant role in transporting haze resulting from agricultural burning in neighboring countries, particularly Sumatra, Indonesia, into Thailand. The primary cause of these fires is the land preparation for agricultural purposes, which generates air pollution with potential adverse effects on public health and environmental quality in Southern Thailand. The severity of the situation is influenced by weather conditions and the direction of the monsoon winds.

The study of transboundary haze in Southern Thailand, conducted by the Hub of Talents on Air Pollution and Climate (HTAPC), focuses on analyzing and assessing the sources of haze, such as forest or agricultural land burning in Thailand and neighboring countries. This analysis can be conducted by integrating satellite-based hotspot data with wind direction data during burning periods, alongside mathematical dispersion models. This approach allows for a comprehensive evaluation of the patterns of spread and concentration levels of PM_{2.5} across the Southeast Asian region.

The results from satellite data indicate that significant sources of transboundary haze in Southern Southeast Asia are concentrated in Sumatra and Borneo, Indonesia, where dense clusters of hotspots are evident (Figure 1). When analyzed alongside wind direction data, it becomes apparent that wind currents pass through Sumatra and Borneo toward Southern Thailand (Figure 2). Furthermore, mathematical dispersion models assessing PM_{2.5} concentration reveal that hourly PM_{2.5} levels in Sumatra and Borneo exceed 150 µg/m³ and can spread to Southern Thailand at concentrations as high as 50-75 µg/m³ (Figure 3).

Therefore, effective management and control of PM_{2.5} pollution in Southern Thailand requires cooperative efforts to address the issue both domestically and with neighboring countries.

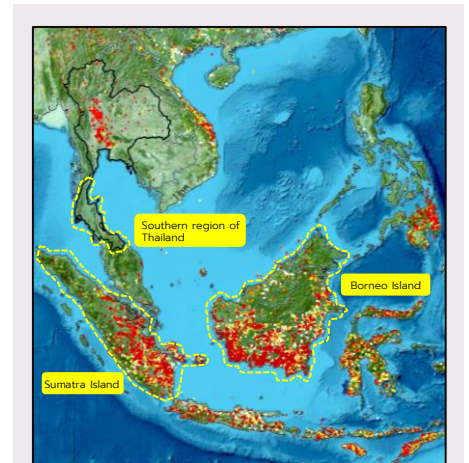
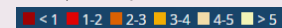


Figure 1: Hotspot map from satellite imagery

The color represents the cumulative hotspot in the past (days):



Hotspot Data on September 18, 2023 (5 Days)
Data is sourced from satellite sensors OLI (Landsat-8,9), VIIRS (S-NPP, NOAA-20,21), and MODIS (AQUA and TERRA)

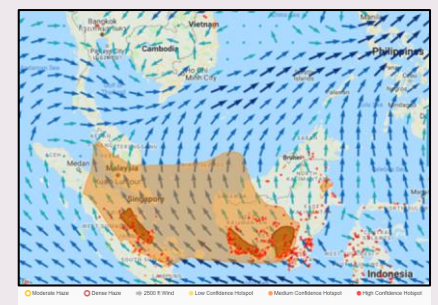


Figure 2: Hotspot, Smog Grouping, and Wind Direction Map
Dated: September 18, 2019

Source: <https://asmc.asean.org>

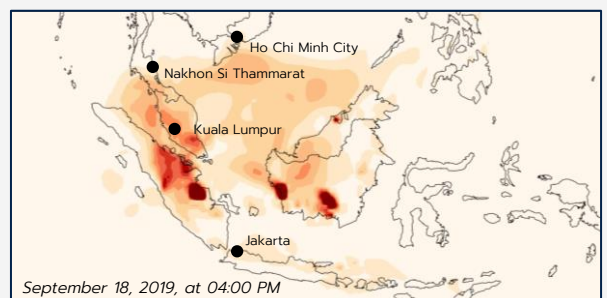
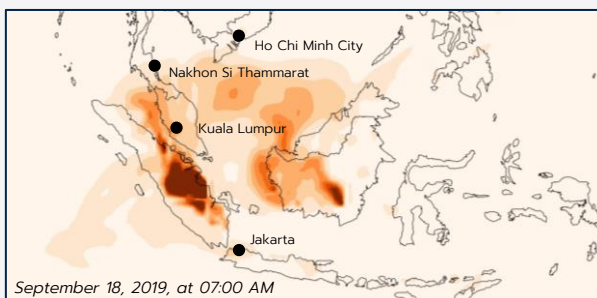
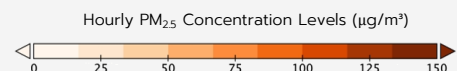


Figure 3: The Distribution of PM_{2.5} Concentration Levels Based on Mathematical Modeling

Source: Collaborating Center for Clean Air and Climate Change (CCCACC)



We cordially invite you to join us

Hub of Talents on Air Pollution and Climate

HTAPC Membership Form for Experts



Official website of Hub of Talents on Air Pollution and Climate (HTAPC)

<https://www.htapc.info>



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