



With deepest condolences and most grateful remembrance of Her Royal Highness



Newsletter Hub of Talents on Air **HTAPC** Pollution and Climate



Hilights

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3

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HTAPC Accomplished Activities

- Seminar: "Spatial Forensics: Looking Through the Eyes of Space, Examining Traces on the Ground, and Reclaiming Clean Air" (May 22, 2026)
- Panel discussion: "Fighting Fire and Dust with Science, Research, and Innovation" (June 22, 2026)
- Panel discussion: "What Does the 2026 Notification on Ambient Air Quality Standards Mean from Academic and Legal Perspectives?" (June 25, 2026)

HTAPC Knowledge dissemination



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Seminar: “Spatial Forensics: Looking Through the Eyes of Space, Examining Traces on the Ground, and Reclaiming Clean Air”



On 22 May 2026, the TamRoyPao Project, led by Asst. Prof. Lt. Col. Dr. Sorawit Supawet from Kasetsart University, organized an academic seminar titled **“Spatial Forensics: Looking Through the Eyes of Space, Examining Traces on the Ground, and Reclaiming Clean Air”** at Maruay Garden Hotel and via online.

The seminar highlighted the use of empirical evidence, satellite data, field information, and geospatial technology to identify burn scars, reduce data discrepancies among agencies, and support systematic PM2.5 haze management. It featured special lectures by Dr. Weerasak Kowsurat and Dr. Supat Wangwongwatana, a research presentation on “The Data Sleuthing,” and a panel discussion on “From Space to Ground Action,” focusing on the practical use of the TamRoyPao system to support effective and sustainable haze management in Thailand.



Panel discussion: “Fighting Fire and Dust with Science, Research, and Innovation”



On **22 June 2026**, the National Research Council of Thailand (NRCT), in collaboration with the Hub of Talents on Air Pollution and Climate, organized a seminar titled **“Fighting Fire and Dust with Science, Research, and Innovation”** as part of the 21st Thailand Research Expo 2026 at Centara Grand & Bangkok Convention Centre at CentralWorld, Bangkok.

The event was honored by Ms. Saowanee Mungsucharitkarn, Deputy Director of NRCT, who delivered the opening remarks. The seminar presented five smart innovation systems designed to support systematic wildfire and haze management across three phases: before, during, and after fire events. These included FuelWise for fuel management, TamFai for decision support, UAV patrol technology, FireMan for field operation tracking, and TamRoyPao for satellite-based burn scar mapping.

The seminar also provided a platform to discuss data and platform integration under a single source of truth, aiming to reduce operational duplication and support the scaling up of wildfire and haze management at the national level.



Panel discussion: "What Does the 2026 Notification on Ambient Air Quality Standards Mean from Academic and Legal Perspectives?"



On 25 June 2026, the Hub of Talents on Air Pollution and Climate (HTAPC), supported by NRCT under MHESI, organized an academic panel discussion titled **"What Does the 2026 Notification on Ambient Air Quality Standards Mean from Academic and Legal Perspectives?"** as part of the 21st Thailand Research Expo 2026 at Centara Grand & Bangkok Convention Centre at CentralWorld, Bangkok.

The seminar aimed to promote understanding of the new 2026 Ambient Air Quality Standards, particularly standard values, measurement methods, data quality assurance, and implications for agencies involved in air quality monitoring and communication.

The event was opened by Ms. Saowanee Mungsucharitkarn, Deputy Director of NRCT, and featured a presentation on air pollution situations in Bangkok and Northern Thailand. The panel discussion, led by Dr. Supat Wangwongwatana with experts from Chulalongkorn University, the Pollution Control Department, GISTDA, and the Department of Health, provided academic, technological, legal, and public health perspectives to support more accurate, reliable, and standardized air quality monitoring in Thailand.



From Burn Scars to Legal Evidence: Adapting the EU's Satellite-Based Agricultural Monitoring Model to Curb Open Burning in Thailand

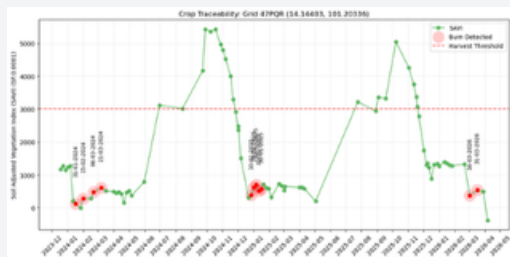


Fig. 1 Parcel-level crop phenology (SAVI) for a rice plot from the TamRoyPao Traceability function. Detected burns (red) and the harvest threshold (dashed) locate post-harvest stubble burning within the cropping cycle.



Fig. 2 Maize plot: a burn detected immediately before planting registers as a SAVI minimum at the start of the cropping cycle.

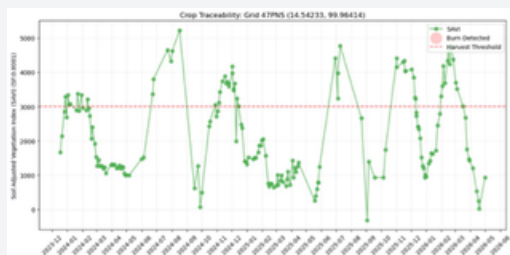


Fig. 3 Irrigated rice plot with no detected burn across three cropping rounds—the equivalent of a "green flag"



Fig. 4 Ground-truthing of a detected burn: (a) UAV/drone image and (b) field photograph confirming the satellite signal.

Open burning in farmland is one of the principal sources of fine particulate matter (PM_{2.5}) in Thailand. Many systems can detect that burning has occurred, but the real obstacle to control is attribution: existing thermal-hotspot products lack the resolution to tie a burn to a specific land parcel, and field verification is costly and slow. Curbing agricultural burning therefore depends less on detecting more fires than on building a defensible chain of evidence that links each burn to a responsible parcel.

Satellite imagery as forensic evidence

International legal practice offers a tested template. Satellite imagery has been formally admitted as evidence in environmental and human-rights cases before the ICJ, ITLOS, the ICC, and regional human-rights courts. The governing principle—set out in the Berkeley Protocol on Digital Open Source Investigations and the AAAS geospatial guidelines—is that imagery is powerful circumstantial, or "starting," evidence whose weight depends on transparent, auditable methodology and cross-validation against ground truth. The US EPA operationalised this through its National Enforcement Investigations Center in a four-phase workflow—targeting, planning, field inspection, and compliance monitoring—in which imagery directs investigators to the field rather than replacing them.

How the European Union enforces it

The European Union has turned this principle into binding policy. Under the Common Agricultural Policy reforms (Regulations EU 2021/2115, 2022/1172 and 2022/1173), the Area Monitoring System (AMS) has been mandatory for all member states since 2023, linking the Land Parcel Identification System and the Geospatial Aid Application with European Space Agency imagery to monitor every parcel continuously. A "traffic-light" system flags parcels green, yellow, or red according to whether observed crop behaviour matches the farmer's declaration; where a flag is raised, the farmer confirms compliance through geotagged photographs captured in official apps such as AgriSnap, whose evidentiary integrity meets the ISO/IEC 27037 standard. This moved enforcement from inspecting roughly 5% of farms on the spot to 100% monitoring, cut administrative cost to about 3%, and reframed the state-farmer relationship from punishment toward cooperation.

Thailand is technically ready: TamRoyPao

Thailand already has the technical foundation to do the same. The TamRoyPao (Burn Scar Tracking) system processes multi-spectral Sentinel-2 data with a Rules Chain Classifier combining the SAVI, MNDWI and NBR indices to detect burn scars at 20-metre resolution across 73 grid cells, served through a multi-channel platform (tamroypao.hii.or.th) with a parcel-level Traceability API. Its distinctive contribution is the integration of crop phenology—the phenotype signature from the SAVI time series—with burn-scar detection and True Color imagery. Reading the phenotype curve together with detected burns lets an officer locate each burn precisely within the crop cycle: post-harvest stubble burning in a rice parcel (Fig. 1), pre-planting burning in a maize parcel (Fig. 2), or no burning in a flooded rice parcel that correctly earns a "green flag" (Fig. 3). Validated against drone and field surveys (Fig. 4), this is functionally the same information the EU's AMS produces, organised by the same parcel-level logic as the GSAA.

The gap is institutional, not technical

The remaining gap is institutional, not technological: TamRoyPao already generates AMS-equivalent evidence, but Thailand lacks the legal mandate, the parcel-identification registry, and the aid-application linkage that give the EU model its enforcement weight. The recommendation is direct—designate high-resolution burn-scar data as part of the national spatial data infrastructure, formalise technology transfer through inter-agency memoranda, and embed the Traceability tool into the field inspections of authorities such as the Department of Agricultural Extension and the Office of the Cane and Sugar Board (OCSB). With an accuracy threshold suited to Thai legal practice, the remaining gap is institutional, not technological: TamRoyPao already generates AMS-equivalent evidence, but Thailand lacks the legal mandate, the parcel-identification registry, and the aid-application linkage that give the EU model its enforcement weight. The recommendation is direct—designate high-resolution burn-scar data as part of the national spatial data infrastructure, formalise technology transfer through inter-agency memoranda, and embed the Traceability tool into the field inspections of authorities such as the Department of Agricultural Extension and the Office of the Cane and Sugar Board (OCSB). With an accuracy threshold suited to Thai legal practice, the same satellite-and-phenotype evidence that underpins EU compliance could let Thailand confront farmland burning as systematically as the EU now does.



Be part of our initiative

Hub of Talents on Air Pollution and Climate (HTAPC)



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