



The Regional Network Office for Urban Safety (RNUS)

Monthly Report (March 2025)

Report to STE/SET

Prepared by RNUS

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1.1 Summary

This report summarizes the activities done in RNUS office during the month of January 2025. Progress has been summarized in the following orders:

- 1) RNUS Outreach Activities
- 2) Progress on Research Activities
 - Satellite-based flood map (support in RIMES's project)
 - Water level measurement with low-cost device for CH₄ emission mitigation in Thailand
 - Structural Health Monitoring with remote sensing techniques
 - Study on post-disaster recovery dynamics
 - Study on Development of Land-use Optimization tool
 - Activities related to 2025 Myanmar Earthquake
- 3) Plans

1.2 RNUS Outreach Activities -Meeting with AIT president

On March 10, 2025, Professor Takeuchi held a meeting with the AIT president. During their conversation, they delved into the activities currently being undertaken by RNUS and exchanged ideas about its future direction. Key topics included plans for advancing student research initiatives through "OHOW International Student Seminar", and strategies for providing enhanced support to these efforts, aiming to foster academic growth and innovation.

1.3 RNUS Seminar Series: Session 1

The first RNUS Seminar Series of 2025 was held on 25, March, 2025. The speaker for this session was Dr. Pornchai presenting on: "Linear Modeling of PM 2.5 from AeroNet ground and Satellite data in Thailand". An attendance of 60 members were recorded with an interactive Q&A session.



Figure-1. RNUS seminar 1/2025 photo records.

1.4 Progress on Research Activities

1.4.1 Satellite-based flood map (support in RIMES's project)

No update for this month.

1.4.2 Water level measurement with low-cost device for CH₄ emission mitigation in Thailand

Professor Takeuchi and Khun-Metta made a visit to the RID paddy field in Nakhon Pathon to carry out the installation of CH₄ emission measurement sensors. These sensors were positioned within two distinct areas: one in the AWD-applied paddy field and the other in the Non-AWD paddy field. Looking ahead, subsequent activities will include calibrating the sensors, calculating methane emissions, and conducting satellite image analysis to enhance monitoring and data accuracy. There're two Farmo sensors in the field and they allow for real-time access to both water level and temperature data, providing valuable insights into the field's environmental conditions, as illustrated in the accompanying Figure-3.



Figure-2. The figure depicts the setup within the RID paddy field in Nakhon Pathon, showcasing CH_4 methane emission measurement equipment, accompanied by a closed chamber and sensors for monitoring water levels.



Figure-3 Real-time water level and temperature readings.

1.4.3 Structural Health Monitoring with remote sensing techniques

No update for this month.

1.4.4 Study on post-disaster recovery dynamics

No updates for this month.

1.4.5 Study on Development of Land-use Optimization Tool

As a precursor to the development of a Risk-based designation for tsunami risk areas in Thailand, a study which considers the current vulnerability and resilience levels of the communities in Phuket is underway. Specific consideration is given to: 1) assessing the vulnerability of buildings, infrastructure and the level of social and economic vulnerability to tsunami hazards; 2) assessing the current state of tsunami resilience planning in terms of urban planning, community awareness and involvement; and 3) proposing updated land-use planning strategies and identify suitable adaptation measures based on vulnerability assessment and current community contexts.

Under the guidance of Dr. Yasmin, semi-structured interviews and community surveys are being carried out by a Masters student in two case-study areas situated in Phuket (Bangtao and Patong). These coastal urban areas were selected due to their historical tsunami exposure, population density, critical infrastructure, and economic significance. Patong, a densely developed tourist hub, is highly vulnerable due to its low-lying geography and concentration of commercial activities, while Bangtao, with its long beachfront and dispersed development, faces unique evacuation challenges despite its slightly lower infrastructure density. Both areas have been identified in previous studies as high-risk zones, making them ideal for assessing the effectiveness of current urban planning and disaster risk reduction strategies aimed at mitigating future tsunami impacts.

Stakeholder interviews were carried out in last week of March as shown below. Further community surveys will be continued. This will give insight on the appropriateness of considering risk-area designation zones in the context of Phuket.

<i>Stakeholder Agency</i>	<i>Designation/ Expertise</i>	<i>Expected Contribution</i>
Department of Public Works and Town & Country Planning (DPT)	Advisor of Town Planning	Provide insights on existing planning policies and regulations
DPT	Director of the Office of Analysis and Evaluation	Evaluate policy effectiveness and suggest improvements
DPT	Urban Planner	Share best practices in urban resilience and zoning regulations
Phuket Chamber of Commerce	Chamber of Commerce Board	Assess economic impacts and recommend business continuity strategies
Community leader from Bang Tao	Community Representative	Provide local insights on vulnerability, preparedness, and response efforts
Community leader from Patong	Community Representative	



Figure-4 Interview with community leader in Bang Tao.

1.4.6 Activities related to 2025 Myanmar Earthquake

Following the 2025 Myanmar Earthquake, the RNUS office initiated two primary activities. The first involves comprehensive ground truth mapping, which focuses on assessing critical infrastructure damage—including roads, railways, bridges, schools, hospitals, dams, and religious sites—alongside sinkholes, ground deformation, liquefaction zones, and areas with blocked waterways, in Myanmar and Thailand. These conditions of sinkhole, ground deformation, liquefaction and blocked waterways pose a risk of secondary disasters during the upcoming monsoon season. Social media platforms served as a key source for initial data collection, which was later verified and categorized into four usability levels. This effort is ongoing, with contributions from a small team of students affiliated with AIT Myanmar Alumni and W. Takeuchi Lab. The link provides access to real-time ground truth mapping data ([Infrastructure damage data collection - Myanmar earthquake 2025](#)). Figure illustrates an example of collecting and displaying real-time data. The second activity centres on remote sensing analysis, complementing on-ground data. More on remote sensing-based analysis will be reported in coming month.

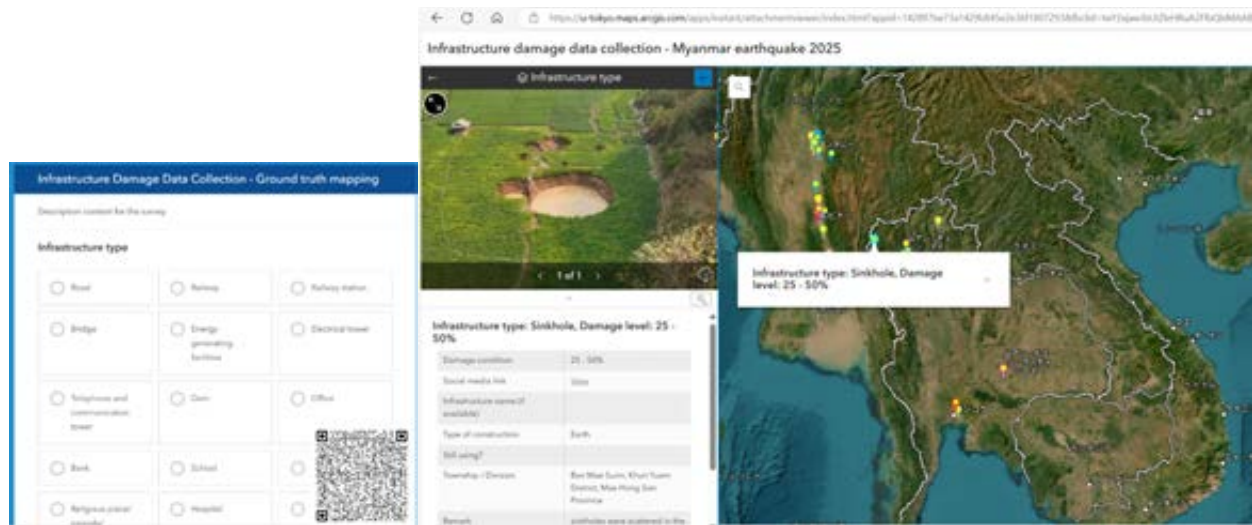


Figure-5 Survey form and real-time data display.

1.5 Plans

The second session of the RNUS seminar series is planned to be conducted in May/June, while the AIT-U-tokyo Student Seminar is scheduled to be conducted in July, 2025.

Prof. Takeuchi will visit to RID paddy field in Nakhon Pathom during his visit to AIT 28 April 2025~1 May 2025.

Air pollution measurement using portable pm2.5 sensor will be carried out in underground MRT station in the end of May 2025.