The Regional Network Office for Urban Safety (RNUS)

Monthly Report (June 2024)

Report to STE/SET

Prepared by RNUS

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Contents

1.1 Summary

This report summarizes the activities done in RNUS office during the month of June 2024. Progress has been summarized in the following orders:

1) RNUS Outreach Activities
2) RNUS Office Procurement Update
3) Progress on Research Activities
    - 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
4) Support in STE's Student Research
5) Plans

1.2 RNUS Outreach Activities

As part of RNUS outreach activities, the 3rd International Joint Student Seminar will be held from 6 to 8 August 2024. This is the third time in a row. Seminar is arranged as two days technical sessions and one day technical tour. It'll be jointly organized by OHOW (Institute of Industrial Science, University of Tokyo) and RNUS office (STE/ AIT). Expected participants are the Master and Phd students from Japan and Thailand (AIT), including other Asian universities, aiming for sharing research idea and networking among students. Seminar themes cover some aspects of disaster risk management, climate change, green recovery, infrastructure maintenance, RS/GIS etc. Seminar information was uploaded in RNUS home page and please go through this link for more information on Joint Student Seminar (https://rnus.ait.ac.th/archives/1610). Preparation works has been starting since end of May 2025. As of now, registration is accepting, and possible speakers were contacted for Invited Talk session.

Figure-1. 3rd International Joitn Student Seminar Brochure.

1.3 RNUS Office Procurement Update

The **DJI Phantom 4 Pro+V2.0** drone from Takeuchi Lab./UTokyo was brought to UTokyo as there's some flight monitoring software incompatible issue in current drone model. Drone will be replaced with **DJI Phantom 4 ProV2.0**. Sensor camera and image capturing capacity will be the same the previous drone model. Expected arrival date of new drone to RNUS office is in the 1st week of August 2024.

1.4 Progress on Research Activities

Research on "Water level measurement with low-cost device for CH4 emission mitigation in Thailand" is ongoing as part of RNUS research activities. Drone flying was conducted on 3rd June 2024 in RID paddy field (Nakhon Pathum province) for RBG image processing. Condition of installed water level sensor devices could be checked, and height of rice plant were measured during this visit.

Prof. Takeuchi and team visited to paddy fields in Suphan Buri and Chai Nat province, where GISTDA (The Geo-Informatics and Space Technology Development Agency, Thailand) is doing CH4 emission mitigation research. Possible research collaboration could be discussed.

Figure-2 RNUS team visited to GISTDA paddy fields in Suphan Buri and Chai Nat province.

Structural Health Monitoring with remote sensing techniques is also ongoing research topic in RNUS office. Preliminary result from Dhaka-Kasiani-Gopalganj railway line showed the applicability of this technique for infrastructure health monitoring and workflow will be replicated for linear transport infrastructures in Thailand. Discussion is ongoing with possible counterparts in Thailand.

Research on “Post-disaster recovery dynamics” is progressing with the sub-research topic “The dynamics of post-disaster recovery, relocation, and return -a study on the case of 2011 Canterbury Earthquakes” analysis initiated by Dr. Yasmin at Victoria University of Wellington and Massey University, New Zealand. The research intends to use migrational data through the Integrated Data Infrastructure (IDI) developed by the Statistical Authority of New Zealand (Stats NZ) to investigate the likelihood of long-term migration/return of different types of populations in the wake of the earthquake. The preliminary analysis for this topic was carried out throughout the month of June. However, due to the data confidentiality requirements and approval processes of StatsNZ, the analyses are not permitted to be reported externally at the current stage.

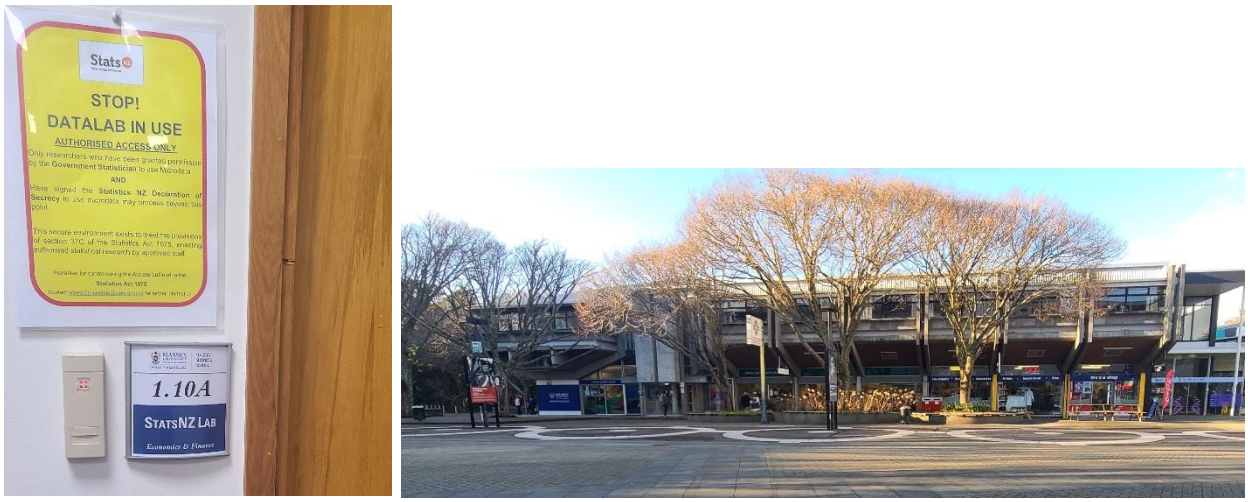

Figure-3 Stats NZ lab at Massey University, New Zealand.

We expect further work to be carried out to substantiate the preliminary findings of this study. Concurrently, literature review on the Christchurch recovery financing policies for homeowners and businesses is also being undertaken which will provide the context for the findings of the statistical study. The results for this are expected to be compiled in a report to the Obayashi Foundation (the grantor for this study) in the coming months.

1.5 Support in STE's Student Research

Dr.Khin is currently helping Ms. May Chue Nyeint (STE Master student) in her research on "Numerical Study to Evaluate and Use Sub-Structure Method to Retrofit a Case Study School Building in Dhaka". Online communication is ongoing as necessary.

1.6 Plans

LiDAR drone test flying at RID paddy field couldn't be done in last week of May due to schedule conflict. It's planned to visit RID paddy field on 30th July 2024 for LiDAR drone test flying over paddy field. DJI Matrice 350 RTK LiDAR drone will be used in that test flying.