

Inputs On Recent Disasters in Selangor

Extended landfall from a tropical depression 29W across the South China Sea in mid-December 2021 had caused severe floods in several states of Peninsula Malaysia and Sabah until mid-January 2022. Various struggles ensued and resulted in 54 deaths, RM5.3-6.5 billion worth of property damage and a total of 125,4890 people displaced. Selangor, especially, had experienced record-high precipitation during the storm event with several days of continuous heavy rains and was among the worst-hit states, along with Kuala Lumpur.

A quick probe of disaster-hit areas in Selangor was carried out by the Project’s graduate researcher at SEADPRI (Mr. Navakanesh Batmanathan, Ph.D. candidate) using Open-Access data, including satellite imagery from Sentinel-1, Google Earth, etc (Fig. 1). The Sentinel-1 satellite data was used as a tool to identify wet areas, giving estimation of the extent of inundated areas (on low-lying areas) and moisture-induced landslide-prone areas (on highland/slope areas). Based on the analysis, evidence of river swelling was found, such as along the Langat River (Fig. 2). Wet slopes were also identified including areas surrounding Kampung Palimbayan, Kuala Lumpur, which was affected by landslides on 19 December 2021 following the continuous rain (Fig. 3). High-risk slope areas need to be identified and monitored to better prepare for similar phenomena. For low-lying areas, including floodplains and coastal plains in Selangor, flood hazards may worsen, so areas already exposed need to prepare for more severe and frequent floods. New areas that will be susceptible to flooding must be identified using new approaches, considering the impacts of climate change. In Selangor, other factors were also found to compound the impacts of extreme weather events. These include high tide in the coastal areas and water treatment plants shutdown that resulted in water cut in the many areas.

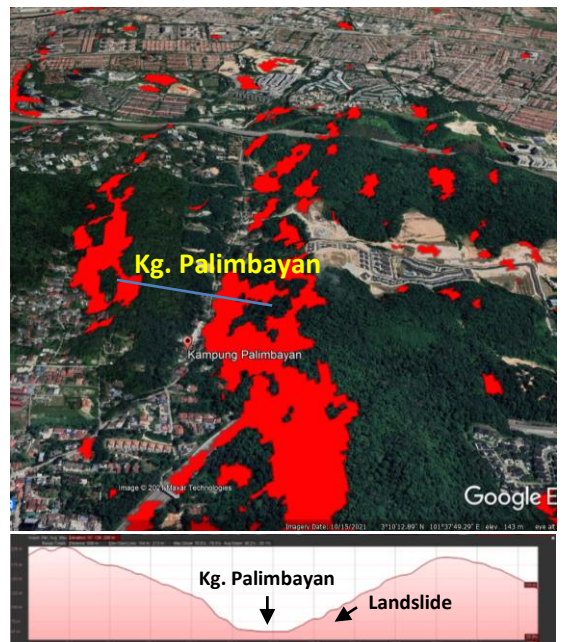
The extreme floods that occurred rapidly and simultaneously at many places in Selangor had left the local authorities struggling to manage the crisis. Following the event, the Selangor State Secretary Office had invited the Project Leader to present some inputs regarding the large floods in a workshop held in Langkawi on 24 February 2022. A presentation on the findings was delivered to the audience of the Selangor State Minister and members of the meeting. Emphasized was also given towards the need for a more enhanced DRR approach and the implementation of evidence-based decision-making in DRR.



1. Wet zones were delineated using open-access data. Snapshot from 19 December 2021 above shows the areas affected by the storm event, including the 3 pilot areas (Kuala Selangor, Shah Alam and Ampang Jaya).



2. Photo shows the evidence of some swelling of the Langat River that overflowed into the floodplain areas.



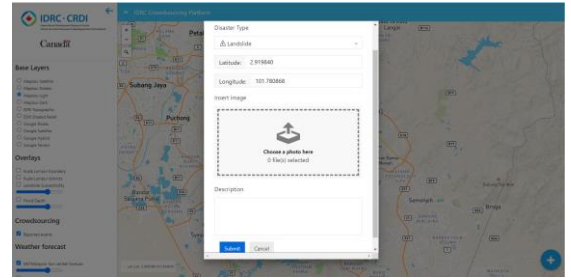
3. The storm event also led to landslides that had compounded the flood events in various areas of Selangor and Kuala Lumpur.



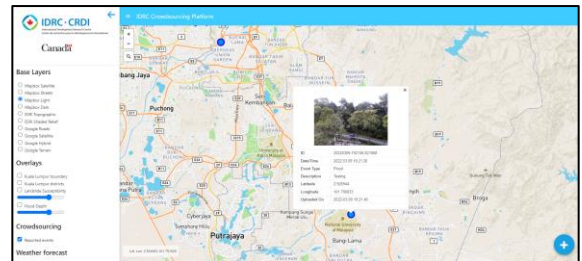
Progress of the Community GIS System

Since the development of the prototype during the first year of the Project in 2020, the Community GIS systems has undergone a series of improvements, including the inclusion of the mobile-friendly crowdsourcing function. The purpose of the crowdsourcing is to record locations of hazards including floods and landslides from the communities. Further improvements are currently being made during the incubation period including several pilot tests of the crowdsourcing platform to ensure its efficacy and reliability. Among the priorities being ensured is user-friendliness of the application, to attract more willingness from the communities to contribute. Therefore, the function is designed to be as simple as possible, while capturing reliable information. At this stage, the platform is made accessible on mobile web browser, without the need to download an app. The location coordinate is the critical information being captured automatically by the phone GPS. The user will then need to report the type of hazard and upload a geolocated photo for verification purpose by the data manager. Up to now, the system is being updated to address troubleshoots as identified from several pilot tests conducted.

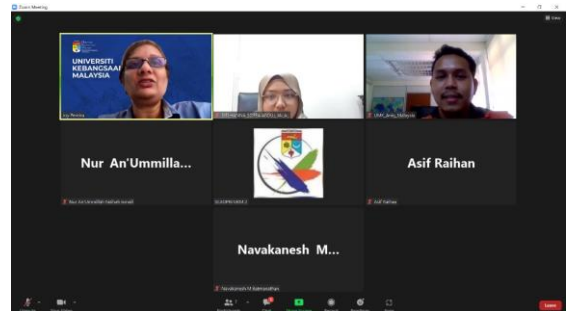
To assist with the development of an open-access hazards database in Selangor that will be a component of the Community GIS System, the Project has also hired three internship students starting from 21 March 2022. The interns are assigned to help with the collation of data on hazards and disasters as well as initial screening for removal of false data (data training). At the same time, the interns are provided with capacity building sessions including training on mapping using OpenStreetMap (OSM) platform, which was organized by ANCST (Project partner) and its key partners on 29 and 30 March 2022. To further equip them with skills necessary for their tasks, the interns are also being given a series of hands-on trainings of GIS applications, led by the Project’s graduate researcher, Ms. Siti Hasniza Md. Arshad (Ph.D. candidate). The training modules include plotting and mapping of hazard locations and elements at risk, among others. Moving forward, the Project is also coordinating field trips to familiarize the interns with field assessment of high-risk areas. Understanding of conditions at the field will be crucial towards the identification of potentially high-risk areas based on satellite imageries and verification of reported events that they need to filter for, based on crowdsourced photos.



- 4. The crowdsourcing data input window is designed for a simple reporting of hazard events by laymen (citizen scientists). The users will need to upload a geolocated photo which will be used towards event validation processes.



- 5. The reported hazard locations will be plotted automatically on the platform (shown as the blue dots) based on the inputs from the pilot testing. Photos uploaded by the users will be displayed by placing the cursor at the reported events (blue dots).



- 6. An internal meeting of the project team at SEADPRI with the interns, namely Nur Hanna Sofea (top, middle), Mohd Aniq Ikhwan (top, right) and Nur An'Ummillah Fatimah (second row, left), all of whom are geology undergraduates from Universiti Malaysia Kelantan (UMK).

