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Climatic Hazards Programme

Community GIS System for Building Disaster Resilience

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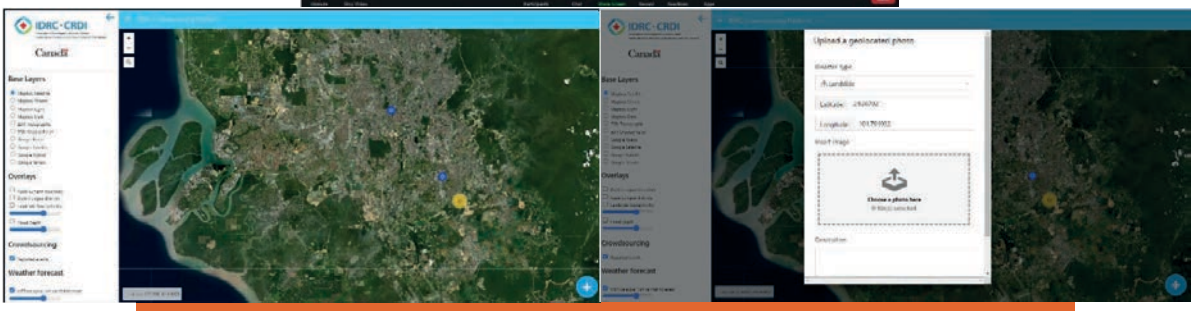
Photo by SEADPRI-UKM



The crowdsourcing data input window is designed for simple reporting of hazard events by laymen (citizen scientists). The users will need to upload a geolocated photo which will be used for the validation processes. Photos uploaded by the users will be displayed by placing the cursor at the reported events (blue dots). The interns hired to assist in the development of the system are Siti Hanna Sofea, Mohd Aniq Ikhwan and Nur An'Ummillah Fatihah, all of whom are geology undergraduates from Universiti Malaysia Kelantan (UMK).

The advancement of long-term disaster resilience is facilitated by access to scientific information and awareness of susceptibility to hazards, so that communities can self-organize to take appropriate actions to reduce their risks. An open-source digital platform with relevant data for disaster risk reduction is essential for building disaster resilience at the community level. The development of such a system is underway in the project on 'Promotion of Social Entrepreneurship in Disaster Risk Reduction', funded by the International Development Research Centre (IDRC) Canada. SEADPRI is collaborating with the Meteorology Department of Malaysia and other parties in a pilot study, to develop a system to inform communities of the susceptibility of their neighbourhoods and their exposure to hazards. The system also serves as a medium for users to partake actively by contributing data on hazards through a crowdsourcing platform. The crowdsourcing platform enables communities to become citizen scientists, who record data on hazards such as floods and landslides. To ensure better usability and attract a wider range of users, the project has developed a mobile-friendly application by which reporting of events can be made in a simple manner. Automatic location discovery and photo upload via the mobile application will facilitate data input by users and verification of reported incidents by the data manager. Further improvements are necessary during the incubation period to ensure its efficacy and reliability. Currently, the system is being updated for quality control based on feedback gathered from several pilot tests conducted. The IDRC Project is also supporting three interns from Universiti Malaysia Kelantan to assist with the development of the hazards database, which will be a component of the Community GIS System. The interns are collating information on hazards and disasters, and conducting initial screening for removal of spurious data. The capacity of the interns is being strengthened on mapping using the OpenStreetMap (OSM) platform, facilitated by the Asian Network on Climate Science and Technology (ANCST), a key collaborator of the project, and other parties.

The interns have also been equipped with a series of hands-on training of GIS applications, led by Ms. Siti Hasniza Md. Arshad, a Ph.D candidate and graduate researcher at SEADPRI. The training modules include plotting and mapping of hazard locations and elements at risk. Moving forward, the focus will be on field training to familiarize the interns with field assessment of high-risk areas. Understanding of conditions in 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. These technical skills serve as the foundation for building social entrepreneurs in DRR, who will then move on to further develop the open-source digital platform for building disaster resilience, in service of more communities and stakeholders from other neighbourhoods.