

Geological Hazards Programme

Disaster Resilient Cities: Landslide and Karst Susceptibility Assessment

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Photo by Mohd Faizol Markom

Dr. Helen Reeves, Dr. Christian Arnhardt and Dr. Vanessa Banks (front row, left table) shared their experience at the workshop.



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Group discussion led by Dr. Vanessa Banks on Kuala Lumpur Limestone Karst Conditioning.

On 1 March 2018, a workshop on Landslide and Karst Susceptibility Assessment was held at the Pulse Grande Hotel, Putrajaya. It was jointly organised by the Geological Society of Malaysia (GSM), SEADPRI-UKM and other Newton-Ungku Omar Fund (NUOF) project partners. The 67 participants were from various local organisations like the City Hall of Kuala Lumpur (DBKL) and State Disaster Management Unit of Selangor, as well as geoscientists from Universiti Kebangsaan Malaysia (UKM), University of Malaya (UM), Universiti Tenaga Nasional (UNITEN), and Institute of Geology Malaysia (IGM). Also present were representatives from the private sector.

This one-day workshop was split into two main sessions: the Landslide Hazards and Karstic Hazards sessions. They were led by NUOF project members from British Geological Survey (BGS) and covered the processes that cause landslides and karstic hazards in Kuala Lumpur as well as the experiences and methodologies applied in countries such as the UK. The event commenced with a presentation from Dr. Christian Arnhardt of BGS with an overview of the languages used, terminologies and definitions in the context of landslides, susceptibility, hazards and risks. The presentation highlighted different susceptibility and hazard assessment methods which are dependent on the scale of study, the availability of data and the data quality. This was then followed by the Malaysian approach presented by Dr. Frederick F. Tating from the Department of Mineral and Geoscience Malaysia.

The Landslide Hazards session led by Dr. Helen Reeves and Dr. Christian Arnhardt of BGS revolved around landslide inventories and methodologies of landslide susceptibility in different countries including the UK. The first part of the session emphasized the comprehension of landslide types and triggers as well as the importance of the inventories. This was followed by a fruitful discussion on the Malaysian landslide inventories, exploring the similarities and differences between UK and Malaysia, ways of utilizing the NUOF project to decide on a suitable methodology for Malaysia as well data sharing and planning in this country. The second part of this session described the methodologies developed by BGS to define and assess the landslide susceptibility. The importance of dividing mapped areas into different geological formations and processes that drive landsliding was proven through the effectiveness and applicability of the BGS GeoSure methodology at the UK national scale. A Q&A session followed which addressed the opinions and issues of the scale of study, and methods used for landslide susceptibility assessment.

Dr. Vanessa Banks of BGS led the Karst Hazards Session which centered on karst terminology, processes, karst event inventories and methodologies for karstic hazard assessment and susceptibility. A case study of the Peak District was presented to show ground conditions of surface and subsurface karst, and hazard assessment of the area. Participants were divided into four groups for a brief discussion on the karst processes and hazard assessment for Kuala Lumpur. The discussion has enabled participants to exchange knowledge on the processes and conditioning factors for the karst of Kuala Lumpur Limestone as well as the quality of available maps to assess the relationship of karst and structures. The last part of this session briefly discussed the karst inventories and the BGS approaches for karstic hazard susceptibility which include the domains approach and the GeoSure methodology. Participants highlighted many issues and made suggestions on the karst hazard susceptibility assessment. These include an overview of the extreme and complex classification of karst in Malaysia, the limitations in interpreting the relationship between karst and structures, as well as the importance of karst hazard susceptibility maps. The workshop concluded with a fruitful gathering of issues involved and recommendations on how to move towards the production of reliable landslide and karstic hazard susceptibility maps. This will advance the work of the Geological Hazards Programme in support of disaster risk reduction.