Evening Talk on "Submarine Landslide Flows Simulation Through Centrifuge Modelling"

by Ir. Jack Pan

Ir. Jack Pan is currently a committee member of IEM Geotechnical Engineering Technical Division (GETD).

Dr Gue Chang Shin presented an evening talk on Submarine Landslide Flows Simulation Through Centrifuge Modelling at the Tan Sri Professor Chin Fung Kee Auditorium, Wisma IEM, Petaling Jaya on 25 March 2015.

Dr Gue explained that landslides occurred both onshore and offshore but little attention has been given to offshore landslides or submarine landslides. The main differences compared to onshore landslides are that submarine landslides cover large mass movements and long travel distances of more than hundreds of kilometres at very gentle slopes (can be as low as 1 degree).

Dr Gue introduced the concept of centrifuge modelling and how this is used in his studies of submarine landslide flows. The modelling was carried out at the University of Cambridge, United Kingdom. - The principle of centrifuge modelling is to reproduce the stress strain behaviour of a prototype in a small scale model. He also explained the importance of scaling laws in centrifuge modelling and the proposed centrifuge scaling laws for submarine landslide flows differ from conventional scaling laws. A series of tests were conducted at different gravity fields in order to understand the scaling laws involved in the simulation of submarine landslide flows.

The model slope was instrumented with miniature sensors for measurements of pore pressures at different locations beneath the landslide flow and a series of cameras were used to capture the landslide flow in flight. The proposed centrifuge scaling laws are validated through the experiments. In addition, numerical simulations through Depth Averaged Material Point Method (DAMPM) further complementing the centrifuge results and scaling alws. Dr Gue showed photos of a collapsed oil rig and other possible consequences of submarine landslide to show importance and relevance of this research study. The results provide a better understanding of the scaling laws needed for centrifuge experiments involving submarine landslide flows. The talk ended with presentation of momento by GETD Committee Member, Ir Jack Pan to Dr Gue as a token of appreciation for sharing his knowledge.