

The seismic signals from the model slope failure and erosion tests

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High intensity rainfalls in mountainous areas often induce floods. The floods could erode riverbank slopes and cause them to landslide. This study selected Landao Creek of Huisun Experimental Forest (Nantou, Taiwan) as the in-situ test site for the model slope failure and erosion tests. We built a large size model soil slope and an artificial landslide dam in Landao Creek for the tests. The Nengau agricultural channel at the upstream of Landao Creek was setup to control the inflow to Landao Creek. Therefore, the artificial landslide dam were overtopped when the retention space were full by the inflow water. Consequently, the dam breached and caused the model soil slope to be eroded by the flooding water. The model soil slope failed partially due to the erosion and generated seismic signals during the slope materials sliding down. We installed of several accelerometers sensor on the model soil slope to collect seismic signals generated. We present two test results in this study. The seismic signals were analyzed using the Hilbert-Huang Transform for time-frequency spectrograms. We explored the characteristics of seismic signals due to the model soil slope sliding and the flooding. In addition, we can use the time-frequency spectrograms to identify the timings when the model slope slid repeatedly.

Keywords: Landslide, slope, erosion, seismic signal, flood, dam