



The forecasting and calibration of wide-area debris slide in Taiwan

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Catastrophic landslides and debris slides triggered by intense typhoons such as Typhoon Morakot (2009) occurred more frequently in the recent years, and caused many casualties and economic loss in Taiwan. For the purpose of reducing the damage resulted from geological hazards, this study collects multiple period landslide inventories which contain the information of occurrence time, location, magnitude, rainfall intensity, accumulated rainfall and attempts to establish the rainfall threshold for shallow landslides.

This study considers the concept of hazard matrix which combining the magnitude (landslide ratio of slope units) and the possibility of occurrence (historical disaster records) to set up the warning thresholds. The critical rainfall thresholds are build up according to the R_{24} (24 hours accumulated rainfall) and I_3 (3 hourly mean rainfall intensity) of historical records. The validation result shows the model can predict the possible hazard in 2~9 hours before occurrence of landslides. The web-GIS early-warning system is also developed to connect the real-time rainfall data and evaluate the warning signal immediately for disaster prevention and increasing the response time.