Simulation of Sediment Transport Caused by Landslide at Nanhua Reservoir Watershed in Southern Taiwan

Ming-Hsi Lee (1), Cong-Gi Huang (2), and Huan-Hsuan Lin (3)

(1) National Pingtung University of Science and Technology, Soil and Water Conservation, Neipu, Pingtung, Taiwan (mhlee@mail.npust.edu.tw), (2) National Pingtung University of Science and Technology, Soil and Water Conservation, Neipu, Pingtung, Taiwan (jamesinkaohsiung@gmail.com), (3) National Pingtung University of Science and Technology, Civil Engneering, Neipu, Pingtung, Taiwan (p10033002@gmail.com)

As a result of heavy rainfall, steep topography, young and weak geological formations, earthquakes, loose soils, slope land cultivation and other human disturbance, much area in Taiwan are prone to the occurrence of disastrous mass movements such as landslides and sediment disasters. During recent years, the extreme rainfall events brought huge amounts of rainfall and triggered severe changes in watershed environments. Typhoon Morakot in August 2009 caused severe landslides, debris flow, flooding and sediment disasters induced by record-break rainfall. The maximum rainfall of mountain area in Chiayi, Tainan, Kaohsiung and Pingtung County were over 2,900 mm. The study area is located at Nanhua reservoir watershed in southern Taiwan. The numerical model (HEC-RAS 4.1 and FLO-2D) will be used to simulate the sediment transport caused by landslide and the study will find out the separating location of erosion and deposition in the river, the danger area of riverbank, and the safety of the river terrace village under the return period of 50-year, 100-year and 200-year (such as Typhoon Morakot). The results of this study can provide for the disaster risk management of administrative decisions to lessen the impacts of natural hazards and may also be useful for time-space variation of sediment disasters caused by Climate Change.