



Potential Evaluation of Sediment Disasters for Remoted Mountainous Communities and Its Adaptation Strategy by Climate Change in Southern Taiwan

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During recent years, the extreme rainfall events brought huge amounts of rainfall and triggered severe changes in watershed environments. Adding the steep slope, fragile geology, over development of slopeland and intensive rainfall, the sediment-related disasters frequently occurred in Taiwan. Typhoon Morakot in August 2009 caused severe sediment disasters (such as large landslides, debris flows, flooding) induced by record-break rainfall under climate change in southern Taiwan. The maximum rainfall of mountain area was over 2,900 mm during 4 days in southern Taiwan. According to Disaster Prevention Center NCKU (2013), there were 359 landslides occurring nearby the mountainous communities in Southern Taiwan in 2011, and increased to 608 landslides in 2013. The landslide area was about 968.2 ha.

The potential assessments of study area included 11 sediment disasters communities for remote mountainous areas nearby the river bank in Kaohsiung City were analyzed. The landslide area nearby the 11 communities in last 10 years was discussed, and the numerical models (CCHE-2D and FLO-2D) were used to simulate the scouring and deposition of river bank and alluvial fan of debris flow occurrence for the safety of communities under the different return periods. The results shows that 4 communities have high potential level to occur the landslide disasters, none of community has flooding disaster. The high potential area of debris-flow deposition is corresponding to the announce area of Soil and Water Conservation Bureau (SWCB). The adaptation strategies of each high potential community for sediment disasters have proposed by this study. The results proposed by this study can provide the disaster risk management of administrative decisions to lessen the impacts of natural hazards and may also be useful for sediment disasters caused by climate change.