Geophysical Research Abstracts, Vol. 9, 04786, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04786

Chi Chi Earthquake and Typhoons Influence Debris Flows - 106 Debris Flow Events in Taiwan

T. C. Chen, H. Y. Wang, C. Y. Shu, W. S. Ming, S. OuYang, and R. R. Lin

National Pingtung University of Science and Technology, Taiwan (tcchen@mail.npust.edu.tw / Fax: +886-8-7740287 / Phone: +886-8-7723202-7169)

During the 1999 Chi-Chi earthquake, extensive slope failures were triggered by the earthquake in central Taiwan, the influences of Chi Chi earthquake still strongly today. The paper presents the 106 debris flow events in Typhoon Toraji ended on Jun 29, 2001, and Typhoon Mindulle ended on Jun 29, 2004, the initiation of debris flow events was discussed related to the Chi-Chi earthquake and rainfall.

Typhoon Toraji, 2 years after earthquake, introduced with a max rainfall intensity of 140 mm/hr and max. accumulation is 700 mm in central and east Taiwan. .Typhoon Mindulle, 5 years after Chi-Chi earthquake, introduced with a max rainfall intensity of 166 mm/hr and max. accumulation of 2142 mm of rain during July 2 to July 4 in central and south Taiwan. Through the interpretation of 106 documented debris-flows induced by rainfall, we identified that about 86% of debris flow stream had contained seismic landslides in the watershed. It were found that more 85% of debris-flow streams were within average slope of 10-40 degrees and about 60% of steams the average slope were less than 30 degrees. The above result is consistent with the occurrence characteristic of debris-flow in gentle slope terrain. Moreover, there were 63 % of steam length short than 3000 m and about 54% of stream possessing its area of watershed small than 200 ha, both of results illustrated the small to middle size of watershed are triggered most frequently.

The result also illustrated that the debris flow events for Typhoons Toraji concentrated in the region of PGA large 350 gal, the concentration was along with the raise of PGA. The PGA is down to 300 gal of debris flow events in Typhoon Mindulle, the debris flow event is few in the region of PGA more than 550 gal. The concentration of events was along with the raise of peak intensity rainfalls and especially for cumulative

rainfalls. It indicated that the influences of Chi Chi earthquake still much and widely but are progressively decaying. However, The Cumulative- and peak intensity rainfalls are the major key effect to trigger debris flow events still.