



Landslide area change and design storm evaluation - a case study in mountain area of Kaohsiung

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Recently, extreme rainfall events occur frequently and cause massive sediment related disasters in Taiwan. The disaster seriously hit the regional economic development and national infrastructures. For example, in August, 2009, the typhoon Morakot brought massive rainfall especially in the mountains in Chiayi County and Kaohsiung County in which the cumulative maximum rainfall was up to 2900 mm. The typhoon caused severe damage in southern Taiwan. The study searched for the influence on the sediment hazards caused by the extreme rainfall and hydrological environmental changes focusing on Kaohsiung city.

We collected the landslide records during the period year, 2008~2016 and analyzed the area change of landslide. We also analyzed bivariate frequency of Typhoon storm events, and then employed copulas to model the dependence between rainfall depth and duration/intensity in Typhoon storm events.

In this study, we discussed the hydrological and spatial variation during rainfall period of a typhoon storm by using big data, probability of landslide, copula and bivariate frequency to analyze the design storm and critical rainfall of landslide for setting warning criteria and building disaster reduction construction. We expect to give more information to decision makers to enhance the disaster prevention capability for the remoted mountainous communities in Kaohsiung, Taiwan.