# The analysis between factors predisposing to landslides and tendency of landslides using GIS in areas governed by the Taiwan Forestry Bureau

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There are many typhoons which bring much rainfall pass through Taiwan in the past years. The heavy rainfall not only causes Taiwan flooded severely but also serious landslide hazard in mountain areas, especially in the area governed by the Taiwan Forestry Bureau. In this study, we use three typhoon landslide inventories and GIS techniques to estimate the relationship between landslide indicators and landslide susceptibility in our study area, the area governed by the Taiwan Forestry Bureau. The three typhoon landslide inventories are: Typhoon Mindulle, Typhoon Sinlaku and Typhoon Morakot, which happened in 2004, 2008, 2009, respectively. The study area is about 15391 km2, nearly 43% of the whole Taiwan area, and the average elevation is 1471.3 m. As this study area is protected by law, there is not much human influence area. Besides, the study area is divided into 3704 small areas which are considered as watersheds in this study by the Taiwan Forestry Bureau. On the other hand, the indicators are elevation, geology, rainfall intensity, orientation and steepness of slopes. In this study, we aim to find the relationship between these indicators and landslide tendency. In order to assess the influences of each indicator on the watersheds, we first classify the 3704 small areas by its properties, the indicators we use in this study. And calculate the landslide ratio of each watershed. Here, we define the landslide ratio as the values of the area of landslide in each watershed over the area of each watershed. After that, we use statistical methods to find the correlation relationship between each indicators and landslide ratio for three typhoon incidents. By doing this we can find the critical value of each property for the Forestry Bureau of Taiwan. Also, we attempt to find the most relative indicators. These critical values and information could be useful for better future management, making emergency decisions and interpreting the existing landslides.