



The relationship among probability of failure, landslide susceptibility and rainfall

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Landslide hazard included spatial probability, temporal probability and size probability. Many researches evaluate spatial probability in landslide susceptibility, but it is not many in temporal probability and size probability. Because of it must own enough landslide inventories that covered entire study area and large time range.

In seismology, using Poisson model to calculate temporal probability is a well-known inference. However, it required a long term and complete records to analyze. In Taiwan, the remote sensing technology made us to establish multi landslide inventories easily, but it is still lack in time series. Thus the landslide susceptibility through changed different return period triggering factor was often assumed landslide hazard. Compare with landslide inventory, collected a long term rainfall gauge records is easy.

However, landslide susceptibility is a relative spatial probability. No matter using different event or analyzing in different area, the landslide susceptibility is not equal. So which model is representative that is difficult to be decided. This study adopted histogram matching to construct basic landslide susceptibility of the region. Then the relationship between landslide susceptibility, probability of failure and rainfall in multi-event can be found out.