

The effect of rainfall event characteristics on event-based landslide susceptibility map

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The landslide susceptibility models can be established based on either a long-term landslide inventory or a specified rainfall-induced landslide event. The susceptibility models established using different rainfall events may result in dissimilar susceptibility maps in the same area. The effect of rainfall event characteristics on event-based landslide susceptibility map needs to be discussed and as a reference for selection of a proper event to establish a susceptibility map. This study will be conducted in the Shihmen watershed, which has an area of 760 km² and is one of the main water sources for northern Taiwan. Landslide inventory caused by rainfall events in the Shihmen watershed will be collected during the period from 1996 to 2015. The intrinsic geomorphological and extrinsic rainfall factors of each individual slope unit will be derived, screened, and entered in the logistic regression to train the susceptibility model for each rainfall event. The prediction ability of the susceptibility model established based on one specified event will be compared according to the validation results of the others. The AUC values of the success rate curves (SRC) of the others will be calculated sequentially and then averaged to represent the ability of the model to predict landslide occurrence. This research is looking forward to understanding the relationship between the AUC values calculated for different rainfall events and the corresponding rainfall characteristics, and choosing the best susceptibility map to represent the characteristic of the Shihmen watershed.

Keywords: landslide susceptibility, event-based landslide model, rainfall characteristic, Shihmen watershed