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Comparison of landslide susceptibility models trained from inventories of different triggering events in the same basin

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In this study, we select 9 independent rainstorms or typhoon events at the Zengwen Reservoir catchment to build 9 event-based landslide susceptibility models. Each event-based landslide susceptibility model was built by logistic regression of topographic factors, geological factors, location factors, and triggering factors of landslide grids and non-landslide grids. It was evaluated by using success rate curve method firstly. And then, the 9 models were cross-validated between one event and another event by using prediction rate curve method. Results reveal that the prediction rates are fair to good and the performances of the 9 different models are stable.
We compare the 9 event-independent susceptibility maps and compare these with a traditional susceptibility map which was trained from a multi-temporal landslide inventory at the same region, and we found that they are similar in pattern, revealing that a common susceptibility pattern exists in the study region. This common susceptibility pattern was called basic susceptibility of the region (Lee and Chung, 2017), and can be used to construct a probability of failure relationship for further landslide prediction.