



A new concept in seismic landslide hazard analysis for practical application

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A seismic landslide hazard model could be constructed using deterministic approach (Jibson et al., 2000) or statistical approach (Lee, 2014). Both approaches got landslide spatial probability under a certain return-period earthquake. In the statistical approach, our recent study found that there are common patterns among different landslide susceptibility models of the same region. The common susceptibility could reflect relative stability of slopes at a region; higher susceptibility indicates lower stability. Using the common susceptibility together with an earthquake event landslide inventory and a map of topographically corrected Arias intensity, we can build the relationship among probability of failure, Arias intensity and the susceptibility. This relationship can immediately be used to construct a seismic landslide hazard map for the region that the empirical relationship built. If the common susceptibility model is further normalized and the empirical relationship built with normalized susceptibility, then the empirical relationship may be practically applied to different region with similar tectonic environments and climate conditions. This could be feasible, when a region has no existing earthquake-induced landslide data to train the susceptibility model and to build the relationship. It is worth mentioning that a rain-induced landslide susceptibility model has common pattern similar to earthquake-induced landslide susceptibility in the same region, and is usable to build the relationship with an earthquake event landslide inventory and a map of Arias intensity. These will be introduced with examples in the meeting.