Nat. Hazards Earth Syst. Sci. Discuss., 1, C166–C168, 2013
www.nat-hazards-earth-syst-sci-discuss.net/1/C166/2013/

Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Integrating spatial and temporal probabilities for the annual landslide hazard maps in Shihmen watershed, Taiwan" *by* C. Y. Wu and S. C. Chen

Anonymous Referee #2

Received and published: 2 May 2013

1. GENERAL COMMENTS The manuscript "Integrating spatial and temporal probabilities for the annual landslide hazard maps in Shihmen watershed, Taiwan" describes the evaluation of the spatial probability, temporal probability and landslide size probability to perform a landslide hazard assessment in a study area in Taiwan. The issue of the paper is within the scope of the NHESS. The paper presents a consolidate methodology to assess a landslide hazard zonation. The applied methodology is not original and the paper doesn't reveal a new scientific relevance.

The title of the manuscript is partially pertinent to the topic, and the authors don't cite the landslide size probability that is evaluated in the work to assess the landslide

hazard.

The abstract results ambiguous and generic when the authors describe the process of evaluation of effective intrinsic and extrinsic factors and the authors don't mention the study area.

In the introduction the authors, after a long description of the background about the landslide hazard topic, present their work too shortly, without highlighting the news of their experiment.

The manuscript is not well organized; in my opinion the study area should be presented at first and the available data both intrinsic and extrinsic factors should be described precisely, and the landslide inventory that the authors managed must be illustrated more accurately. The methodology section should be postponed after the presentation of the study area and data and including the procedure for screening the variables. The methodology should be comprising the description the subdivision of the study area in slope units the authors should clarify which software GIS they've used to perform this subdivision.

The Conclusions are generic and the author don't present any new findings, the authors present the possible future works without a previously discussion about a connection between the landslide distribution and sediment transport.

2. SPECIFIC COMMENTS The new finding regards the evaluation of the landslide spatial probability that is derived by using relationships between the landslide ratio and the susceptibility index. The lack consists in a scarcity of reference regards the meaning of the landslide ratio and in the absence of the relationship equation.

The introduction of the landslide ratio in the evaluation of the spatial probability must be explained clearly, the authors have to do reference and must indicate the relationship equation used to calculate the landslide spatial probability.

The evaluation of the temporal probability using the Poisson model is a standardized

methodology, but it is not clear which temporal interval the Multi-temporal inventory covers and how the authors perform the calculation of the mean occurrence probability or the mean recurrence interval. The validation of temporal probability is not clear; the author must describe how they calculate the mean recurrence interval for the rainfall events used to validate the one-year probability. Do they have event landslide inventory map?

In the section 3.3, the selection of extrinsic triggering factors is based on a geostatistic analysis; the authors should present a figure showing the geographical distribution of the rain gauge stations and an histogram and cumulative graph that can illustrate the meteorological event.

In the section 3.4 the sentence "the higher the λ value, with the lower ratio of landslide with large areas" needs an explanation or a reference.

3. FIGURE COMMENTS Figure1 – The picture showing the location of the study area should be enlarged. Figure 3 – figure 4 should be represented in one figure. Figure 7 – the picture showing the relationship between the landslide ratio and the landslide susceptibility index should be enlarged. In the legend of the map it is represented the landslide ratio or the landslide spatial probability? All the figures representing the study area should have a frame with the coordinate system. The figure captions are very poor written.

Please also note the supplement to this comment:
http://www.nat-hazards-earth-syst-sci-discuss.net/1/C166/2013/nhessd-1-C166-2013-supplement.pdf

---

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 471, 2013.