

## ***Interactive comment on “Spatial pattern analysis of landslide using landscape metrics and logistic regression: a case study in Central Taiwan” by Y.-P. Lin et al.***

### **Anonymous Referee #4**

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General comments 1) Please give your paper to a native English speaker to correct errors in English language 2) There are several inconsistencies in the text to which other referees already referred to 3) I would propose to use “frequency” instead of “occurrence number” (also in Figures and Tables). 4) I would also propose to use “low-frequency” and “high-frequency” instead of “low-occurrence” and “high-occurrence” respectively (also in Figures and Tables). 5) How would you justify the division of the factor “lithology” into separate classes before putting them through the logistic regression? 6) How do you justify the decision to use the metamorphic formation as a reference category in the modelling? Shouldn't it be more correct to divide all

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lithological units in similar proportion first part for the model development and second part for model testing or as you put it a reference category in the modelling? 7) Susceptibility, hazard and risk are three different terms with different meanings. You should distinguish between them and clearly state which of the three did you “produce”

Comments to the text 1) Line 74: The sentence “The geological and geomorphological properties affect landslide inventories (you probably meant occurrence; inventory is a database that is compiled by experts that are most probably not under the influence of geology or geomorphology)...” is unclear. 2) Line 106: ...watershed are above 1000 m of elevation and the average... 3) Line 116: Please correct the “Matamorphic” in the Figure 1 legend to “Metamorphic”. In Figure 1 it is Geological map of the study area. 4) Wherever you write distance to faults, rivers and roads you should use the plural instead of singular since you calculate the distance from a net of linear elements, not the distance from only one. 5) Line 129: The brief descriptions are given in the following text. 6) Line 133: ...significantly between lithological types... 7) Line 141: if you're referring to the data mean in the Figure, it should be given there (this comment goes for all factors in Figure 2). 8) Line 153: ...shallow colluvium... 9) Line 157: Sentence “In the area...” is unclear. 10) Line 220: Table 2 – Is the number under the column “Landslide patch number” the number of new landslides? If yes, how did you distinguished between the re-occurred landslide and already existing one? If no, results of analysis are biased since you included already existing landslides in the interpretation of impact of disturbances on landslide occurrence. 11) Line 237: Table 3 – Could the high(er) mean size of patches in the Pattern 1 (small landslides) be the result of overlapping effect of several small landslides, which could due to coarse satellite image resolution, result in their final classification as one little larger (i.e. of the size of one pixel) landslide? 12) Line 237: Table 3 – Could the high value of TE in the Pattern 8 be the consequence of longer landslides or debris flows? 13) Line 255: The statement that “...a longer landslide class edge is in the low-occurrence (you probably meant less-frequent) landslides.” is not exactly correct. If you compare TE/NP you get similar trends as with MPS and PSSD. 14) Line 286: You forgot to comment

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the importance of the lithology. 15) Line 326: What is a landslide source? 16) Line 332: I'm not sure that this statement is correct. According to relation between the Landslide patch number and 24-hour rainfall values (Table 2) the trend of landslide numbers increases years after the earthquake despite the fact that the trend of rainfall intensity slightly decreases. 17) Line 348: Where's the lithology? To your interpretation lithology is not important for landslide occurrence. So it doesn't matter whether the bedrock is flysch, metamorphic rock, marl or limestone or igneous rock? In your model the probability of landslide occurrence is the same whatever the lithology??? I could not disagree more!

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 3423, 2010.

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