

## ***Interactive comment on “An assessment of landslide distribution in the Faifa area, Saudi Arabia, using remote sensing and GIS techniques” by T. Alharbi et al.***

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The paper presents surely an interesting approach in the use of remote sensing data applied in the areas where the field investigations are very hard. However there are, in my opinion, several aspects which need a substantial revision. The main critical point is related to the generation of landslide hazard maps. The authors, in fact, obtain three maps of landslide hazard (related to debris flows in ephemeral valleys, overland debris flows on sparsely vegetated slopes and landslides caused by failure along fracture planes). These maps are generated on the base of an interesting methodological approach, but the final finding is a map where the danger levels aren't identified and

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instead each point (pixel) is considered prone or not prone to landslide. This type of hazard map (true-false) is, as i see it, scarcely pertinent to reality because the hazard is related to the probability of event. Moreover, the comparisons between predicted and observed landslides is performed only within the areas classified as prone to landslides but the authors don't provide the same information within the areas classified as not prone to landslides. The question is: there aren't any events in the areas that have been classified as non-prone? On the basis of the figures (6 and 9) it would seem that there are. Finally, since there is no information about the acquisition dates of satellite imagery is difficult to understand the predictive value of the maps. Another relevant element in the paper concerns the relationship between ndvi and slope to generate the hazard map. Some studies (see in particular Desmet at al. 1999) underline the importance of the upslope contributing area for optimal prediction of debris flows. This parameter isn't considered in the methodology adopted in the manuscript, but a discussion related to this exclusion could be useful considered the relevance attributed to upslope contributing area in other reference papers. Therefore i suggest a major revision aimed to adapt the methodology used to generate the hazard maps of debris flows in order to determine several danger classes (from null to high). I suggest also some minor revisions: 1) provide information about the acquisition dates of satellite imagery 2) assign a title more appropriate to the manuscript because it is more about landslides hazard rather than landslides distribution 3) justify the exclusion of upslope contributing area parameter in generating hazard maps

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