

Interactive comment on “The assessment of earthquake-triggered landslides susceptibility with considering coseismic ground deformation” by Yu Zhao et al.

Anonymous Referee #2

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In this manuscript, authors present the results of statistical analyses done to the distribution of landslides induced by the Mid-Niigata earthquake (2004), Mw 6.8. Three different statistical methods (logistic regression, Artificial Neural Network and Support Vector Machine) are applied to landslide inventory at two different scales: regional and near field. In this last case, coseismic ground deformation is considered as an influencing factor in the susceptibility analysis. From the analyses, the ANN method gives the best results.

The objective of the paper is to analyze the importance of the coseismic ground deformation to explain landslide distribution and the benefits of using it when preparing

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susceptibility maps.

The paper is properly organized and most of figures and tables are of interest.

Regarding the main objective of the paper, I miss a reflection by the authors about the true usefulness of the parameter in question in the preparation of susceptibility maps. As the authors point out in the Introduction, these maps constitute the main tool that our society has to establish the areas prone to suffer seismic-induced landslides, and thus define an appropriate use (or restrict their occupation) of the territory. However, the parameter that constitutes the center of the article, the coseismic ground deformation, is a parameter that can only be evaluated afterwards, that is, once the earthquake has occurred. So what real use does it have? Personally, I see this parameter, as well as the distance to the surface of rupture, useful for subsequent studies, to explain why instabilities have occurred in certain contexts or areas, but not to predict their occurrence. In fact, the difference in AUC when considering/not considering this parameter is less than 5%.

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