Natural Hazards and Earth System Sciences Discussions

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC3
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Comment on nhess-2021-336

Anonymous Referee #3

Referee comment on "Characteristics and causes of natural and human-induced landslides in a tropical mountainous region: the rift flank west of Lake Kivu (Democratic Republic of the Congo)" by Jean-Claude Maki Mateso et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-336-RC3, 2021

In this works, authors explore the impact of land use change in landslides activity. To this end, they consider the influence of forest cover dynamic (assessed as gains and losses), roads (looking at old and recent roads) and mining activity on landslides occurrence.

The paper is quite complex since, to achieve their main goal, authors had to: (i) compile an exhaustive and accurate landslides inventory; (ii) assess the susceptibility of the area to shallow landslides and to old deep seated landslides; (iii) assess the influence of geo-topographic and anthropogenic variables (i.e. forest loss, distance to roads and permanent anthropogenic environment) on landslides occurrence.

The paper focuses on an interesting topic, which is undoubtedly highly relevant in the field of landslides assessment. The overall manuscript is well structured, methods are appropriate, results are complete, accurate and reproducible. For all these reasons, in my opinion, it deserves publication on NHESS, with minor revisions.

As the paper is quite complex, it results too long. Therefore I suggest streamlining the content avoiding repetitions. Even if globally it is well written, sentences are quite long and need to be elaborated in a more succinct way.

Although the elaboration of a susceptibility maps is not the main objective of this research (indeed the authors applied to this end a classical and intuitive model both for susceptibility – i.e. logistic regression – and for the ranking of the importance of the predictors – i.e. frequency ratio –), other methods existing in literature to this end should be mentioned and cited and your choice for the selected method justified.

Line 225 – The analysis was performed at the scale of one point per landslides, namely the centroid. Other authors use to extract randomly a certain percentage of points per events, or they consider the slope unit, or the highest pixel of each landslides (where the scarp is generally located). Please elaborate more this to justify your choice and its limits.

Line 252 - OpenStreetMap (OSM) is a digital map database of the world built through crowdsourced volunteered geographic information (VGI). Therefore, there is no systematic quality check performed on the data, and the detail, precision and accuracy varies across space. Can you be sure that no major changes in the network have occurred over the last 60 years or maybe they could have not been detected?

Legend of Fig.2: I propose to change “Landslide events” with “Landslides clustered events” or “Shallow landslides clusters”.