

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1
<https://doi.org/10.5194/nhess-2021-336-RC1>, 2021
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Comment on nhess-2021-336

Anonymous Referee #1

Referee comment on "Characteristics and causes of natural and human-induced landslides in a tropical mountainous region: the Rift flank west of Lake Kivu (DR Congo)" by Jean-Claude Maki Mateso et al., Nat. Hazards Earth Syst. Sci. Discuss.,
<https://doi.org/10.5194/nhess-2021-336-RC1>, 2021

This study explored the impact of forest cover dynamics, roads and mining activities on the occurrence of landslides in the study area. The results showed that susceptibility patterns and area distributions are different between old and recent deep-seated landslides, and natural factors contributing to their occurrence were either different or changed over time, additionally, the forest dynamics and the presence of roads play a key role in their regional distribution pattern. I enjoyed reviewing your paper and believe it contributes to assess landslide susceptibility/risk for the local government. I have made comments in the hopes that they will be useful to improve the manuscript.

General comments:

- The abstract should be simplified, and it is the embodiment of the core of the article, so you can delete descriptions that are not very important. In addition, I suggest that research methods of article can be added in the abstract.
- In the introduction, you should be added some contents: (i) background information on the hazards of landslides, (ii) the methods of landslide susceptibility, and you can analysis the advantages and disadvantages about different methods, (iii) influence factors of landslide should be listed and analyzed based on the previous achievements, especially in the study area or similar area, (iv) you can simplify some contents, such as lines 60 – 75.
- In the section 1.1, you can further analyze the relationship between LULC, population and landslides, because the article results showed that the forest dynamics and the presence of roads play a key role in their regional distribution pattern.
- Authors have chosen 10 predictor variables use for the landslide susceptibility by applying different method, however, the triggering factor may be very difference for the shallow landslide and deep-seated landslide, and the assessment result will be changed, have you ever thought about that? If you considered, and you should be list evaluation factor for different landslide type.
- Fig 7a and 7b presented the shallow landslide susceptibility and old deep-seated

landslide susceptibility, authors have analyzed the reason of differences, however, the results of fig 7a and 7b were also similar in a certain, you should be further explained.

- The distribution of different landslide was presented in the figure 8, meanwhile, authors should be further analyzed the reason.
- In the section 4.3, authors have said rainfall is the trigger of the shallow landslides that we have identified in this study, and the reason explanation was lacked, however, this part have discussed that anthropogenic factors have an obviously effected on landslide, so you need further analyzed the relationship between shallow landslide and rainfall.

Minor comments:

- Lines 95-100 or 205: you can draw a figure about the change of LULC in the different years.
- Line 110: you can draw a figure about population density or the change of population.
- Lines 155- 160: add the website of different source data.
- Line 175: you can read the relevant references about landslide types, such as Varnes, 1984; Cruden and Varnes, 1996; Hungr et al., 2014, and it may be better for your research.
- The section 2.2 may be put into section 1.1, you can check it.
- Lines 300-3015: you can simplify.
- The format of Table 3 should be nice.
- Lines 530-545: authors have discussed the difference between Van Den Eeckhaut's achievements and this study, and this is well. If you can add others' achievements that is in similar area or nearby the study area, and it may be better.
- I suggest that the previous achievements (similar results or research) should be added, and they can abundant your research in the section 4.1-4.4.