



EGUsphere, referee comment RC2
<https://doi.org/10.5194/egusphere-2022-596-RC2>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on egusphere-2022-596

Anonymous Referee #2

Referee comment on "Potential of satellite-derived hydro-meteorological information for landslide initiation thresholds in Rwanda" by Judith Uwihirwe et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-596-RC2>, 2022

The work presents a comprehensive analysis of the possible combination of rainfall variables and soil moisture data (both measured and modelled) from ground and satellite for predicting rainfall-induced landslides. The outcomes of the analysis are based on ROC analysis, and skill scores, especially TPR and FPR.

General remarks

The title contains the term "landslide hazard", which is misleading if referred to the manuscript contents. Hazard is generally intended to be an "off line" property of a territory, which is a function of susceptibility, temporal and magnitude (size) probability.

Regarding the discussion of threshold results, in my experience, false negatives (i.e., missed alarms) are more important than false positives (i.e., false alarms), because the consequences of missed alarms (e.g., deaths and injuries) are certainly more severe than those caused by false alarms (e.g., the unnecessary evacuation of a school). Therefore, looking at the number of missed alarms in Fig. 8b and 8e, I would not rely too heavily on these thresholds in a LEWS (Landslide Early Warning System). I suggest you to review the Discussion and Conclusions.

Minor revisions

- Figs. 1, 2, 3, and 4 are similar and repetitive, and the 5-km buffers locally obscure the information from high-granularity maps in Figs. 1 and 2. For a better readability, my suggestion is to merge Figures (perhaps Fig. 1 with Fig. 3, and Fig. 2 with Fig.4) selecting two maps (perhaps elevation and geomorphology), and grouping sensor and landslide information, in Fig.2-4. By the way, I think that the year of occurrence is not that

important for this analysis given the relatively low number of failures. Other information on the landslide sites (mean terrain slope in ROIs, aquifer type) could be provided in a Table with the list of failures.

- I suggest using "cumulated event rainfall" for E, "event duration" for D, and "rainfall mean intensity" for I.

- A quantitative error estimation on your findings is lacking.

- Tables 4 and 5 are a bit confusing. If I understand correctly, the first group of 5 columns refers to the whole landslide area, while the second group only refers to the modeled catchments. If so, please amend the tables accordingly.

- In Section 4.2.3 on hydro-meteorological thresholds, I would suggest to calculate also classical ED thresholds, which could provide competitive skill scores.

- Figs. 8 and 9. You should improve the quality, especially that of 8d and 9d. Please, also avoid too small characters in the legenda, and instead use the caption to explain symbols and colors.

Additional minor revisions are in the attached PDF file.

Please also note the supplement to this comment:

<https://egusphere.copernicus.org/preprints/2022/egusphere-2022-596/egusphere-2022-596-RC2-supplement.pdf>