

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2021-250

Anonymous Referee #2

Referee comment on "Insights from the topographic characteristics of a large global catalog of rainfall-induced landslide event inventories" by Robert Emberson et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-250-RC2>, 2021

This work by Emberson et al. adds to the existing rainfall induced landslides datasets and explores different topographic parameters associated with these landslides. These parameters are used to charactering landslide locations and differentiate scarps from the rest of the landslide body. While I think the overall analysis is well done, much work is needed in the writing to better communicate the methods and results. As it stands, these sections lack an appropriate level of organization and clarity required for publication. With that said, I do believe with some rewriting this paper will be a significant contribution to the field of landslide hazard mapping and should be published. Below I provide a few general comments and then provide some specific edits.

General Comments:

- The Paragraph formatting seemed a bit off. Probably just a pdf artifact, but double check to make sure the paragraphs are clearly delineated as you want them. As it stands, the apparent paragraph splits made it hard to follow in spots.
- Supplemental Figure naming is inconsistent.
- The methods really need a lot of work. It was difficult to follow what you were talking about and that made the results also difficult to follow. I've included a few suggestions, but I believe they largely need to be rewritten to improve the flow and organization. There was a lot of jumping back and forth between ideas in the paragraphs. Another thing that would help the reader is using consistent and clearly defined terminology throughout the methods and results.
- More references to your great figures need to be included in the text. There were several spots where I wanted to know which figure to look at to see what you the writers were describing but there was none.
- There are a few instances of using round brackets for citations.
- Grammar could use a little work. I pointed it out in a few locations, but rereading it with only grammar in mind would help.

Specific Comments:

Line 8: "4" should be superscript

Line 30: This second sentence seemingly contradicts the third. Is your point that some landslides not induced by rainfall or seismic activity are more localized while those that are can have a broader footprint? Or that small localized events can occur within a broad area? Please clarify.

Line 46: I would add Mirus et al., 2020

Line 59: Omit "for instance". It muddles the sentence.

Section 2.2: Paragraphs in this section were really distracting. If this is not a pdf error, please rework paragraphs to make the flow better.

Line 133: Is this supposed to be a new paragraph? If so, it's not a great introductory sentence since it only includes half of the new data described in the paragraph.

Line 134: Reference Table 1

Line 137: Why did you use two different approaches for making the inventories? Was it a question of data availability? Should be addressed.

Line 152: 'landslide' should be 'landslides'

Line 152: I don't follow why debris flows were omitted. Is it just so you can estimate debris volume? That can't be done with debris flows? Or is there another reason I missed?

Line 153: Please specify volume of what.

Line 156: Omit comma after 'interval'

Line 160: Should this be a new paragraph?

Line 163: Marc et al., [2018]

Line 182: Consider showing a figure of this. It's hard to tell from the table.

Line 191: What characteristics? How does this prevent inconsistencies? I found it hard to see the context of this paragraph. More detail I think may help.

Table 3: "Analysis datasets. Explanation of each of the variables in found *is* the accompanying text."

Line 196: Direct comparison of what?

Line 205: Insert "(TPI)"

Line 211: An equation describing this parameter (and TPI) or a more precise definition would be helpful. Why do you call CTI the 'wetness index' later on? I would delete that unless you mention it here.

Line 215: You never describe TRI. Please do so.

Line 218: The difference between Figure S1 and S2 is not clear. Please provide more descriptive captions.

Line 223: How? Are you referring to the relative ratio analysis or the LASSO? Better flow and organization would help readers follow this great work. Consider outlining this portion of the methods in an introductory paragraph. Something needs to be done to help keep the reader oriented in this section.

Line 226: Following up on the previous comment, the remainder of the methods is very difficult to follow. I believe this is largely due to poor organization and unclear language.

For example, what is meant by topography in this context? I think I figured it out by reading Marc et al., 2018 (which I shouldn't have to do to understand this paper) but it's not clear where the bounds are of the topography you're considering. The whole island, within 10 m of the landslide?

Why do you start this paragraph talking about the methods for figure 3, then go into the GLM, then later back to talk about the methods for figure 3 in more detail. Maybe I'm completely missing the mark here. If so, all the more reason to rework this section.

Line 232: Cite figure.

Line 235: Please add specific description of your choice of priors.

Line 251: comma after secondly.

Line 256: "than" should be "as"

Line 273: Median of which dataset? the topography, landslide? In the figure you say "landscape" is that just topography, or a combination of topography and landslide. Are the two mutually exclusive?

Line 285: When you describe the bivariate analysis in the methods I would call it by that to better orient the reader.

Line 285: In this paragraph, and really throughout the paper, more references to the figures your discussing need to be included.

Line 288: What figure(s) are you see this in?

Line 292: I would explicitly say that this is where the y-axis = x-axis = 1. I would also add lines to the plots showing this.

Line 297-298: I think this needs to be explained better using the figure as a reference. What are you looking at to pull this out?

Line 312: Should this be a new paragraph?

Line 325: I think drawing lines between the points of a given location would help the reader see this better. It would also make the plots generally more interpretable. I suggest doing it to all these plots.

Line 338: Please reference the appropriate figure.

Line 444: That the caption for Figure S5 says 'difference' is a bit misleading. Maybe substitute 'comparison'?

Line 491: Explain why the evolution of the regolith matters.

Line 501: I suggest omitting "Anyway"

Figure 3: Is landscape slope the same as topography slope?

This is just an example of how the other figures are made, correct? If so, why do you label the axes differently in the other figures?

Figure 5: Here and in other figures does "vs Inventory Median" mean the same thing as "/Inventory Median"? If it does, please change it to be consistent. If it doesn't, this needs to be clarified in the text.

Figure 6: In this figure you don't use the acronym, in others you do. Be consistent.

Figure 7: Make sure you define what TRI is in the text.

