Detailed comments on "Simple rules to minimize exposure to coseismic landslide hazard"

L10 - The abstract misses information on the fact that the study is on coseismic landslide hazard.

L15 - Do you present in the end primarily simple rules to identify hazard? Or rules to minimize exposure, cf title? I understand they go hand in hand, but it would be good in my opinion to be aware that the terms Hazard, Exposure and Risk are easily confused by readers. Being consequent in using terminology in the abstract might avoid confusion.

L18 - Not sure what you mean with "as a proxy for hillslope location".

L20 - From reading only the abstract it is difficult to agree that defining "the upslope area with slope >39° that reaches a location without passing over a slope of <10°" does not require prior knowledge or skills and that it is easy understandable.

L22 - Could you add the observation period covered by the inventories here between brackets to know what is 'recent' to you?

L23 - Show which other metrics were tested besides the two new metrics you introduce so this sentence ("most skilful") has more meaning.

L25 - If the rules should be simple and applied by people without skills, why not round to 40°? What is the sensitivity of this rule to a change in the slope of one degree?

L26 - How does that work, "minimise local slope especially on steep slopes"?

L26-28 - This rule seems dubious when stating at the same time "even at the expense of increasing upslope contributing area" and " but not at the expense of [...] hazard area" with the latter also comprising upslope contributing area.

L38 - I would suggest to use the updated paper of Petley, 2012:
Froude, Melanie J., and D. Petley. "Global fatal landslide occurrence from 2004 to 2016." Natural Hazards and Earth System Sciences 18 (2018): 2161-2181. Given the very extensive reference list I think that 'e.g. Froude et al. 2018' would do while omitting the other references if not necessary in the rest of the paper.

L46 - I think "respond to that hazard" is of lesser relevance here as you do not deal with hazard response in this paper.

L55 - I would add to "site-specific information that may not be available" something like "such as... " to make it more informative.

L62 – "hazard maps cannot resolve hazard at those scales" : I doubt that, with the current availability of high-resolution remote sensing data; yet I agree it could be time-consuming.

L97 - How does the "self-recovery" relate to the first part of the sentence? I don't see the relevance of it here.

L102 - Not only of "less use" but also inherently different; your rules aim to minimize landslide exposure, not to help in hazard response. Please modify.

L107 - Could you site a reference at the end of this sentence, in order to make "our" refer to the scientific background.

L110 - Add respective countries between brackets.

L112-116 - I don't see much difference between the two questions?

L116 - What kind of patterns? Temporal/spatial...

L118 - Which "combined datasets" you refer to? The landslide inventories or more specifically to the derived topographical parameters from the inventories?

L127 – This question is probably related to my lack of knowledge in the earthquake-triggered landslides, but to me it is not clear what you mean here with 'local slope', could you specify? Do you mean the slope at the landslide head ? What is the spatial extent of a "local" slope?

L129 - In Parker et al. 2017, who you cite, they find hillslope gradient as an important driver, which is different than local slope I would think? Parker et al. 2017: "We find that a simple model combining PGA and hillslope gradient provides the most numerically elegant and best fitting model. The use of topographic variables other than hillslope gradient were found to produce models with a lower fit,..."

L135 - Can you add a reference here, after "However, shaking for any future earthquake cannot be predicted due to lack of certainty on source location, magnitude, rupture style, and local site effects.

L194 - How is this "non-local" when accounting for local slope?

L323 - "conditional probability for landslide occurrence" seems more informative to me.

L324 – "Landslide hazard can be defined as..." should already have been clear from the introduction.

L342 - Make reference to preceding research using this approach, yet using rainfall characteristics (I,D) instead of landslide susceptibility (a). E.g., Berti, M., Martina, M. L. V., Franceschini, S., Pignone, S., Simoni, A., & Pizziolo, M. (2012). Probabilistic rainfall thresholds for landslide occurrence using a Bayesian approach. Journal of Geophysical Research: Earth Surface, 117(F4).

L383 - I would strongly reduce this section as readers of NHESS could be assumed to be acquainted with the concept of ROC curves.

L396 – "the naïve (random)" : Necessary to repeat (L394) the two terms here again?

L402 - Why would you use NED elevation data? Since SRTM covers each of the inventory, it seems more logical to use consequently the same DEM source to avoid bias. Certainly because you emphasize on the slope factor here, there should not be a biased introduced voluntarily (unless it would be used for an investigation of sensitivity to spatial resolution)

L416 - Avoid repetition, cf. L181

L420 - Could you clarify what you consider here as channel and channel spacing? How is channel spacing related to the skyline?

L421 - What is meant with 'characteristic hillslope length'?

L423 - What is the relation between the characteristic hillslope length and channel spacing?

L422-423 - Since these are parameterized by the chosen inventories, do you estimate that your rules might change for other areas? Or do you argue that the conservative approach is general enough?

L423 – The sentence "We choose larger window size because skyline angle estimates become asymptotically insensitive to window size" is not clear to me, larger than what?

L437 - Seems to be projected from point P?

L443 - With "non-local" you mean not at the landslide initiation location?

L464 - Avoid repetition with L453.

L547-548 - "on which people generally choose to live" : This statement is too vague to me without a reference, does this statement reflect to your inventories solely?

L567 - I do not see a significant difference in the point density (~number of observations) for observations with Upslope contributing area > $1000 m^2/m$.

L631- Make reference to the respective equations in the Methodology section for the parameters mentioned here.

L673- None, capital N.

L677 - Table 1 and Fig. 6 are redundant, you could add Fig. 6 in supplementary material?

L753-756 – I think it is very valuable that the authors take a step back from there rules while summarizing the main parameters to take into account for hazard assessment, being "hazard area, skyline angle, and the local slope in conjunction with each other". Yet this idea that is stated as a conclusion "We conclude that decisions on how to reduce landslide hazard most effectively need to be made on a case by case basis, …" is not repeated in the abstract or conclusion, which to me is confusing. It is even in contrast with the conclusion stating (L858-859) "suggesting that the average parameters can be applied to other inventories. These findings can be distilled into three simple rules:".

L764-L766 I am not sure what your message is here, helping in decision-making before an earthquake is the same to me as decision making after an earthquake which is in turn also before a future earthquake. What is the differentiation that I am missing here?

L770 - This statement is largely depending on which spatial extent you perform your analysis and therefore I don't think it is relevant, or should be said in a different way.

L849 - In "the highest area at a given slope" it is not clear what you mean with "highest area".