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Comment on nhess-2021-198

Anonymous Referee #2

Referee comment on "Investigating causal factors of shallow landslides in grassland regions of Switzerland" by Lauren Zweifel et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-198-RC2>, 2021

The paper represents a very interesting study to statistically evaluate shallow landslide occurrence for 10 different sites across Switzerland, characterized by grassland. Very nice and clear work. The abstract accurately reflects the contents of manuscript. All figures and tables included in the text are necessary and appropriate. The adopted methodology is clear, scientifically solid, and reproducible in other contexts. It should be strongly recommended for publishing.

However, there are some minor points that deserve further explanations:

- 1) It is not very clear what the authors mean by shallow landslide. In the work of Samarin et al (2020), shallow landslides represent a class of soil erosion (areas with displaced topsoil layers and clear boundaries to the surrounding vegetation). It is possible to insert some pictures of the studied phenomena?
- 2) The aerial images for the study sites were collected during different years (2013, 2014 and 2015). Which events reference the landslide inventories? Is it possible to include in the text the characteristics of the rainfall events which triggered the shallow landslides?
- 3) The authors have extracted the centre points of shallow landslide with ArcGIS. Nevertheless, I think that the landslide causal factors are better represented by the landslide source areas.
- 4) The authors selected a simplified geological data set containing only the three main rock formation classes (igneous, metamorphic, sedimentary). Generally shallow landslides occur in the soil cover. Why the authors have not considered the pedological map (or the

soil cover) of the study sites?