

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC3
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Comment on nhess-2022-266

Anonymous Referee #3

Referee comment on "Earthquake-induced landslides in Norway" by Mathilde B. Sørensen et al., Nat. Hazards Earth Syst. Sci. Discuss.,
<https://doi.org/10.5194/nhess-2022-266-RC3>, 2022

I have read with great interest the manuscript prepared by Sorensen et al. about EQIL in Norway. I find the paper well written and easy to read. Figures and Tables are all relevant and needed for a complete understanding of the data and results presented.

From a scientific point of view, this paper is relevant because it clearly demonstrates the differences found in data (maximum distances, area affected) coming from stable, intraplate areas with respect to those more commonly available of (seismotectonic) active areas. In this sense, although uncertainties in some data presented are important (in most cases, authors cannot give a precise location of landslides), they are still relevant for demonstrating the effect of low attenuation patterns in these areas. To this respect, maximum distances found are high, sometimes extremely high, when compared with data published by other authors, but not so different from data of similar geological contexts.

I think that this manuscript may be enriched if authors could provide more data about characteristics of ground motion attenuation in their study zone (Norway and surrounding areas). I do not ask for a study of ground motion attenuation but for a comparison of already available attenuation laws (ground motion prediction equations, GMPE) for Norway with respect to that found for other areas (for instance, Mediterranean areas). This may help understanding how severe may be ground motion when triggering the rock falls mentioned in the manuscript.

In relation with this last comment, I find through the paper that authors make no attempt to estimate how severe ground motion was in any example. Given the GMPE currently in use in Norway, what is the PGA or PGV expected for such events at the range of distances found for EQIL? Values may be surprising when compared with those reported in recent studies. For recent events, probably, instrumental data are available.

Something similar occur when describing the size of landslides reported. Given that

instabilities reported were triggered by low magnitude events ($M < 6.0$) and occurred at very large distances, it is expected that size is small but how small? $< 1 \text{ m}^3$? $< 100 \text{ m}^3$?

Finally, given the uncertainties that affect the whole EQIL dataset, I suggest removing all no really confident data.

Other minor comments:

Line 164 (Abstract): Limiting rain period search to 24 hr (only) may underestimate the potential state of slopes. Please consider longer time periods.

Appendix A: It has no interest and I suggest removing it. Any interested researcher may find these data in the EQ catalogue web page (line 428).