Earth Surf. Dynam. Discuss.,
https://doi.org/10.5194/esurf-2020-32-RC3, 2020
© Author(s) 2020. This work is distributed under
the Creative Commons Attribution 4.0 License.

Earth Surface Dynamics Discussions

Interactive comment on "Evolution of events before and after the 17 June 2017 landslide at Karrat, West Greenland – a multidisciplinary approach for studying landslides in a remote arctic area" *by* Kristian Svennevig et al.

Anonymous Referee #3

Received and published: 16 June 2020

The paper describes the application of an interesting and promising interdisciplinary approach to landslide monitoring to a remote area in western Greenland. By combining seismological and remote sensing data, the authors reveal important new information about the landslide history in the Karrat landslide complex. They further reveal three large areas of ongoing activity that are likely to fail in tsunamigenic rock avalanches in the future. The paper is well written and concise, and results are of interest to a wide community working on natural hazards monitoring and risk assessment.

I disagree with the conclusion of reviewer #1, that results are not significant enough to

render publication. In my view, the study does contribute important new insight on the previous landslide processes and definition of currently active areas. I find the workflow quite clearly described, though I agree that more details should be included on the data processing.

I recommend that the paper is then published after some further, minor corrections that I list in the following:

- I find the use of the terms "historic" and "prehistoric" confusing. For example, in line 23 and in Table 2, the events in 2009, 2016 and 2017 are referred to as historic, which is misleading. In my view, anything happening within the past 10-20 years is recent. Historic are events that are 100s years old, prehistoric goes back 10.000s of years. The authors may choose other definitions, but these should be defined.

- Line 124: It is stated that earthquake location uncertainties are up to 50 km, but what are typical "average" uncertainties? And what are typical magnitudes of the recorded events?

- Page 7: The 2009 and 2016 rock avalanches have similar volume, but quite different magnitudes (2.7 vs. 2.1). I would be interested in the authors' view on what may be the reason for this discrepancy.

- Page 10, "evaluation of workflow": I agree on the last sentence "... It is an effective tool for identifying and investigating active landslide areas, but actual field validation is necessary in order to further assess the risk", but it needs elaboration. What can we obtain from field data, that we cannot see remotely? And how does that contribute to risk assessment? (and should it actually rather be hazard assessment?)

- Page 13, first paragraph: have you compared spectral plots of cryogenic seismic events and small landslide events? Could such plots be added to Figure 5?

- Page 14, 2nd paragraph: I do not agree that being alert to smaller landslide events will mitigate the risk of large, tsunamigenic events, though it may allow for evacuation

of exposed populations before a large event. Consider rephrasing.

Interactive comment on Earth Surf. Dynam. Discuss., https://doi.org/10.5194/esurf-2020-32, 2020.