

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
<https://doi.org/10.5194/nhess-2021-333-RC2>, 2022
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Reviewer comment on nhess-2021-333

Anonymous Referee #2

Referee comment on "Pre-collapse motion of the February 2021 Chamoli rock-ice avalanche, Indian Himalaya" by Maximillian Van Wyk de Vries et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-333-RC2>, 2022

The manuscript focuses on investigating pre-failure surface displacement for the case study of the 2021 Chamoli avalanche. The case is undoubtedly interesting but, in my opinion, the manuscript should not be considered for publication in NHES. In the aims and scope of the journal it is stated that "The following are generally considered out-of-scope or we do not encourage: [...] Localised case studies with no broader implications (in other words, ask yourself, what would someone else in another region learn from the case study that you have done; what is the broader context?)." While I recognise that the authors' work could have broader implications, these are not discussed at all in the manuscript. The manuscript is indeed completely focused on the case study and the authors make indeed conclusions (e.g., the unpredictability of the timing of collapse) only for the case study and do not discuss what they learned in terms of general implications. Could the timing have been predicted if more images were available (e.g., 24 prior to the collapse, 8 hours prior to the collapse, etc.)? Is it just a matter of noise or, even without noise, no trend to failure could be seen? Is it a matter of resolution, instead? Is it a matter of mechanism of failure (e.g., a very steep tertiary creep that causes orders of magnitude of acceleration in a matter of minutes/hours?). Is this mechanism rare or typical in such a type of failures? What is the general conclusion in terms of remote sensing capability in predicting failures/timing of failures? What types of landslides could be predicted, instead? Are there examples in the literature of successful/unsuccessful predictions of other case studies based on similar data sources? Will we ever be able to predict the timing of failure based on satellite remote sensing alone?

In addition, with reference to the specific case study, I found the discussion speculative, for instance, when it came to the safety factor as all discussions on driving and resisting forces were based on general knowledge/speculation and not supported by, e.g., geomechanical data of the case study. Also, the introduction is too generic, describing information that is very well known to researchers in the field. Perhaps the introduction could have focused only on recent advances in remote sensing techniques for natural hazards that are perhaps closing a knowledge gap and enabling the type of analysis conducted by the authors, albeit with remaining limitations.

