



EGUsphere, referee comment RC2
<https://doi.org/10.5194/egusphere-2022-326-RC2>, 2022
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Comment on egusphere-2022-326

Anonymous Referee #2

Referee comment on "Assessing the relationship between weather conditions and rockfall using terrestrial laser scanning to improve risk management" by Tom Birien and Francis Gauthier, EGU sphere, <https://doi.org/10.5194/egusphere-2022-326-RC2>, 2022

In this manuscript, the authors use repeat TLS surveys at targeted times to explore the link between a variety of weather conditions and rockfall activity. Overall, I found this an interesting and relevant study, and I really like the approach of timing surveys to specifically target certain weather conditions. I found the freeze-thaw discussion particularly interesting - nice to see the link between thaw characteristics and timing and the rockfall occurrence and magnitude. The risk assessment matrix in fig. 10 is also interesting - it gives a succinct overview of your findings it's clear how this provides a nice framework for risk management based on weather conditions. The manuscript is well-written, clear, and nice to read. The previous reviewer mentioned the heavy use of the codes for the weather conditions in places; I do agree that this can take some getting used to and be a little clunky in some places, but I'm not sure what a good alternative would be.

My only major comment is with the description of the methods. I agree with the previous reviewer that there is important information missing about how the volumes were calculated, how the level of detection was determined (what are the thresholds for positive and negative change in fig. 6?), what the uncertainties are, and how real rockfalls were distinguished from other changes (i.e. there are positive changes from snow accumulation, so there must be negative snow-related changes as well in some scan pairs?).

For the precipitation and temperature gauges, can you give the locations? Were the borehole/thermistors in one of the scanned walls? If so, which one?

You might mention in the introduction that there are also an increasing number of seismic-based studies that link rockfall activity to triggering conditions. These can get very precise timing, but not precise volumes.

Figure 1: the site photos are pretty dark – could these be lightened a bit, to better see the cliffs?

Figure 3: I really like this figure!

Figure 11: this might also be nice for the introduction/motivation - based on the dates, I would guess that this event did provide some motivation for the study!

Some typos:

Line 145: slope

Line 180: from

Line 363: 2019