



EGUsphere, author comment AC2
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Reply on RC1 and RC2

Tom Birien and Francis Gauthier

Author 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-AC2>, 2022

Please, note that this answer is common for the 2 reviewers.

Thank you for your relevant comments and for your in-depth reading of this paper. Your comments will for sure improve the quality of our manuscript. I will not give you a long answer because we have agreed with most of your advices and so we applied them. We have corrected all the minor errors that you had identified and we have also done these major changes:

- We described with lots of more details our methodology from LiDAR acquisition to rockfall volume calculation.
- In order to improve the reading fluency, we have reorganised in-depth the section "methods". We have added some subsections and we have moved Figures 3 and 4 (and their description) in the "result" section because, they actually are some results. This major new structure seems to us more consistent and helps the understanding of the text: all the codes/acronyms are now only used at the end of the result section and sometimes in the discussion section.
- With the new structure of this paper, we first of all discuss of raw data (included for site by site analysis) and then we discuss about the relation between rockfalls and weather conditions.
- We also have added some paragraphs in all sections to prepare the reader to our figure 10 (the matrix which is one of the aims of this paper).
- As you noticed, a paragraph to explain why we believe that a per phenomenon analysis is better than a periodic one was missing in the "discussion" section. We acknowledge you for this comment that we have corrected!

We have not included two of your propositions but we clarified our approach into the paper:

- We understand that our last figure (Fig. 11) is located in the "discussion" section even if it could be viewed as a result. Nevertheless, this picture (and its description) allows us to discuss about the efficiency of our results summarized in the matrix which is our main and final result. Moreover, it is not a result of this study since it does not come from our LiDAR surveys. We would appreciate to keep it in this section because we believe that it is interesting and useful to discuss about this event at the end of our paper, also to support our results.
- We understand your advice to present our results separately for the three study areas.

First of all, we want to mention that we have already presented individually for the three study sites, 1) the rockfall spatial distribution (appendices) as well as 2) its frequency and 3) the rock slopes erosion rates (Fig. 5). Nevertheless, we used the whole database to study the influence of weather conditions on rockfalls. This approach has proved necessary to avoid misinterpretation of the occurrence or non-occurrence of rockfalls during short microclimatic periods (e.g. heavy and high intensity rainfall or winter freeze-thaw cycles). We have added a paragraph in the "method" sections to explain our choice for the reader.

For the "minor changes at authors' choice" (reviewer1), we all considered them but we have sometimes chosen to keep our initial version. Attached, please find our version of the revised manuscript with all the visible changes with the tracking tool (figures in low quality for this version).

Thank you,

The authors

Please also note the supplement to this comment:

<https://egusphere.copernicus.org/preprints/2022/egusphere-2022-326/egusphere-2022-326-AC2-supplement.pdf>