

Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on **essd-2021-336**

Anonymous Referee #2

Referee comment on "Surface elevation and ice thickness data between 2012 and 2020 at the ablation area of Artesonraju Glacier, Cordillera Blanca, Perú" by Jonathan Oberreuter et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-336-RC2>, 2022

The authors describe the thinning of the Artesonraju Glacier, they analyse and compare surface elevation change measured by total station and ablation stakes, and ice thickness measured by GPR.

The case study is interesting and the dataset original, but the overall presentation of the manuscript is really poor. It lacks scientific rigour, many statements are qualitative and not supported by references or evidence. The introduction should be improved, but, more importantly, the description of the study area and dataset must be largely expanded. The description of the GPR system lacks relevant details and it is not compliant with the introduction. The GPR data processing description lacks rigour and it does not include any innovations, I think that could be shortened. I have doubts about the measurement using the total station. The use of a single reference prism does not allow correcting for atmospheric artefacts accurately. I cannot understand how the total station measurement error has been obtained and how can be so little. Moreover, it is not clear whether the prisms have been left onto the glacier or if they were replaced at each survey. In the first case, how their motion along with the glacier sliding was considered? In the second case, how their positioning was decided across the different surveys?. I think that the location of prisms and total station should be shown in a figure. Why the GPS measurements acquired during the GPR survey were not used to derive the glacier surface elevation? The error estimation is poorly described. It is difficult to understand how the error contributions have been derived/estimated. The quality of the figure, and especially their description, should be substantially improved. This is particularly evident in the results section (figure 7 remains a mystery for me). Also the tables are difficult to read. I think that a more robust cross-validation analysis could improve the robustness of the dataset and results, which are currently questionable. Finally, the dataset description is completely different with respect to the dataset included in Zenodo. I think that this is a serious flaw for a manuscript submitted to a dataset journal. I reported these and other comments directly on the attached pdf.

In the end, I think that the quality of the manuscript, the dataset description and the presentation of the results are too poor and that their solution cannot be considered only a major revision. As such, I do not support the publication of this manuscript.

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2021-336/essd-2021-336-RC2-supplement.pdf>