The Cryosphere Discussions

The Cryosphere Discuss., referee comment RC2
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Comment on tc-2021-206

Anonymous Referee #2

Referee comment on "Towards accurate quantification of ice content in permafrost of the Central Andes – Part 1: Geophysics-based estimates from three different regions" by Christin Hilbich et al., The Cryosphere Discuss., https://doi.org/10.5194/tc-2021-206-RC2, 2021

This paper is a summary of an extensive geophysical survey field effort at the Central Andes of Chile and Argentine where the objective was to study ground ice content. The authors analyze an extensive set of geophysical surveys (53 geoelectrical and 24 refraction seismic profiles) ranging from high latitude locations ranging between 28 to 32 °S. The dataset covers different landforms including ice-poor bedrock to ice-rich rock glaciers and the authors analyze the thickness of ice layers at each survey location. In my opinion, the paper is suitable for publication in this journal. Here are some specific comments that could improve the quality of the manuscript.

Line 40: Maybe replace “key stores” with “main storage”

Line 98: A closing parenthesis is missing.

Line 138: Two “therefore”, consider changing wording of one if them.

Line 364: ZOI abbreviation has already been explained. I suggest just using “ZOI”. Same for PR and TS (Line 373).

Line 368: space after “10a,”? Same comment for Line 377.

Line 446-447. Is this sentence needed here? It seems misplaced and it is its own paragraph?! Consider “weaving in” somewhere else.

Line 524: consider writing "the periglacial belt (see sections 4.2 and 4.3)" to replace "Examples are given in sections 4.2 and 4.3").Table 1: CL and AR are not defined anywhere.

Lines 563-565. D09 are mentioned twice and it seems like D09 is for non rock and rock glaciers (can it be both?). First it refers to D09 as "non-rock glaciers" and the second time mentioned it says "observed in rock glaciers (D09)". Maybe there is a mistake in numbering?

Figure 1: The scale bars are really hard to see. I suggest that these are made in white or boxed in.

Figure 2: Consider making lines thicker and/or in a different color (white?). They are really hard to see now. Also, the name of the lines are almost invisible. Is it possible to add an approximate scale bar? a, b, c and so forth are not mentioned in caption. Some of the text is really hard to read (i.e., text in b, d, g).

Figure 3: Should it be a) rather than A)? Figure 2 uses a) but most figures use A).

Figure 5: It is mentioned in a "section of the ERT profile" but it isn't mentioned which section and this is true for all figures like this one. For example, I would have like to see, "section of the ERT profile covered by the RST profile (see x = A m to x = B m in Figure 3a doe full profile). Also, is the Ohmm scale different between Figure 5 and Figure 3? It seems like this is true for most of these comparisons.

Figure 8: Same comment as for Figure 5. It is unclear what section (distance) of the profile shown in Figure 7.

Figure 10: No c) in figure to the right.

Figure 13: and here "a" and "b" are written "(A)" and "(B)". Consider staying consistent between figures.

Figure 15: Consider labeling each line in the figure.

Appendix:

Table 1: Consider writing "Data quality overview of the" rather than "Overview about the data quality of the ".

Figures A1 – A4: None of these captions start with a capital letter and there are no periods at the end of the captions.

Figure A3 (Line 800): Add "Figure" before "A3".

Should A4 be A3? Also, add "Figure before "A4" (or A3).