

In response to general comment: We also do compare our re-optimized algorithm to in situ SNOTEL data (Figure 7), although the in situ network is less dense across our validation sites than what is available in the Alps.

- These in situ stations are the ones in your LIDAR regions. I would recommend using the entire snotel stations in the Sentinel-1 frames you processed. I assume there should be tens of snotel stations in them. You don't need to just use the in situ stations in LIDAR data.

In response to 3: We disagree that this figure is misleading. In panel 5a the distributions are generated by grouping the lidar snow depths themselves. So we impose strict bounds on the lidar (blue) snow depths and compare the corresponding S1 (orange) snow depths, which have a much wider range of values and therefore wider/shorter distribution curves. When the selected lidar and S1 distributions have similar ranges (e.g. 75-100% forest cover in panel 5b or 500m spatial resolution in panel 5f) the relative height of the distributions is closer. The 25th, 50th, and 75th percentiles are notated with dashed lines in the distributions for a quantitative comparison; we have added this information explicitly to the figure caption.

- It is showing the mean and 75% but the histograms are not normalized. Like I said, the maximum of blue in 5a should be much bigger than the maximum of orange if they are normalized.

In response to 5: Revised this sentence to clarify we are talking about the spatial overlap of S1 swaths from different orbit geometries imaging a point every 2-6 days, while the revisit interval for a matching orbit geometry is either 6, 12, or 18 days. (line 148-150).

Also clarified we used all available images. Appendix A contains details on the separation and normalization of images clarifying that we used ascending, descending, S1A, and S1B.

- Again it is not clear when you are talking about 2-6 days, does it include ascending, descending, S1A, and S1B? If so, it needs to state it here.
- Also, I don't think the statement of "most locations" have 2-6 days acquisition is correct. It would be best if you show a heatmap for the study area to show the mean revisit time. If there is no overlap, you will have 6 days including asc des. If you have overlaps it should decrease to 3 days. And the overlap in mid-latitudes are not for most locations.
- I don't see explaining about all acquisitions in appendix A.
- The sentences explaining this needs some grammatical edits, very hard to read.

In response to 6: We are following the methods described in Lievens et al. (2019, 2022). There is a full description of this choice in Lievens et al. (2019) and in Appendix A of our manuscript.

- If you are explaining something in the text, it should be clear. I do not understand what you did here. You mentioned in order to resolve incidence angle difference, you are subtracting the mean so they all have the same mean? If so, mean of what? Spatial or temporal mean. What do you average? If I understand this correctly, shifting means will affect the CR from snow. I also read the appendix A. Over there it just explained how you manage the wet snow by looking signals with the same orbit configuration, not subtracting the mean.

In response to 9: We have changed to “volume scattering” to “depolarization” (line 294). Added definition of SNR term as we are using it here (lines 250).

- The SNR is used in an incorrect way. I am not sure why we use noise here anyway. If we are talking about signal, we can just say backscattered signal from snow increased or decreased. The new edit makes it even harder to follow.