

We thank the reviewer for the latest comments which improved our manuscript. In the following, we provide point-by-point replies to all issues raised. The reviewer comments appear in black/italics, and our answers are in blue/normal font.

*General comment:*

*Overall, I find that despite a very good conclusion, some parts of the text in the introduction and discussion lack clarity and structure, with the main messages not coming out so well. I recommend the authors to go through these sections again to restructure and streamline the text, which would likely improve the readability of the manuscript.*

Thank you for this comment. We made changes to the structure and text of the introduction and discussion sections, including a new paragraph on the applications of the results in section 5.4.

*Snow depth measurements:*

*Thank you for clarifying. There are no references in the text to Figs. S5 & S6. I actually find Fig. S5 very interesting and would recommend showing in the main manuscript the last 2 panels, with some changes:*

References to Figs. S5 and S6 were added in sections 3.1 and 3.2 respectively. Fig. S5 does not add valuable information to the current Fig. 2 and we prefer to leave it out of the main text.

- *I believe these are orthoimages (not just images).* Corrected
- *Indicate scale, north direction.* Added to figure
- *For the snow thickness also show the dh signal over rocky areas to get a sense of the uncertainties and choose a higher maximum value for the snow depth to avoid saturation.* Initial versions of this image included this color scheme, but it was graphically problematic. We prefer to leave the current color scheme of snow thickness.

*Thanks for updating section 3.1. For the quantification of the uncertainties over stable terrain I would recommend using the Normalized Median Absolute Deviation (NMAD) as well. Thank you for this suggestion. For the applications used in this work and the snow depth resolution of the model, we believe that a single method is sufficient for the quantification of uncertainties.*

*Line-by-line comments:*

*L126: Can you give an estimate of the image overlaps?*

Yes, good idea. Added in parentheses in line 126: "(80% and 85% overlap in the 2021 and 2022 mages, respectively)".

*L135-136: I do not find the reference (Jain, 2021) to be particularly relevant and the part about geometric errors and performance of the RTK approach seems wrong. This part should be removed. Johan?*

Removed.

L115: remove 'following' [Removed](#)

L140: change 'comparison' to 'surface displacement' [Changed](#)

Table 1: the last two cells should show the text centered [Corrected](#)

L167: no need to specify the axis in the caption if they are already indicated in the figure.

[Updated the caption](#)

L210-211: were these stations not used for the S2M-SAFRAN reanalysis? In which case that could influence the interpretation of these results?

Yes, that is correct. If the measurements of the meteorological stations are erroneous, it would lead to erroneous data in the S2M-SAFRAN dataset but will still show a good correlation.

Table 2: caption missing

[Added caption](#)

L280-281: this sentence feels like it's a repeat from the methods. Could be removed.

[Removed](#)

L299: I still think a clear definition of these different terms should be given earlier in the manuscript. Does 'runoff' correspond here to 'net snowmelt'?

We agree with the reviewer that the terminology is confusing. We changed the terms in the brackets to "total annual excess water (net snowmelt + direct rainfall)", which is more accurate.

L313: changed

[Done](#)

L313-314: remove 'slope' and 'direction' – 'aspect' is enough here

[Done](#)

Figure 8: I would recommend sticking to 2 significant numbers everywhere.

All numbers are with 2 significant numbers except when zero is the last number.

L352: space missing

[Corrected](#)

L358: I believe there is something missing. 'higher temporal and spatial resolution of what?'

Of snow accumulation. The sentence was edited.

*L374: I wonder, is this at all realistic in terms of computations, representativity and validation of the model? Before representing these processes in a model, shouldn't the main focus be on collecting the necessary data to validate such a model?*

Yes, this is realistic and we are actively working on it, in addition to collecting new data.

*L385: It would be good to give the actual literature values to compare the results with.*

The purpose of this sentence is not to advocate a quantitative comparison with other studies, but to support our finding that sublimation is a major flux in surface water balance - a surprisingly little studied concept. We do not see a reason to add information to this paragraph.

*L388: where can we see this? It would be worthwhile to add this in the SI, possibly even in the results.*

Thank you for this suggestion. See new figure S7 in the supplementary figures.

*L415: it would be interesting to show a summary figure about this, i.e. a diagram showing in which cases water vs hydraulic conductivity is a limitation for infiltration*

We accepted this suggestion and added a new supplementary figure supp. Fig. S8.

*Figure 9: this should be in the results.*

Moved to the results section.

*L472: 'correlated' implies a statistical significance, which I do not recall you testing. Likely needs to be replaced by a more appropriate term.*

Changed to: "We also found that snow accumulation thickness decreases as surface slope increases between 40° to 70°."