

Final response letter to the editor Etienne Berthier.

Dear Authors,

Thanks a lot for revising carefully the manuscript and taking into account the minor or technical comments made by both referees.

I am delighted to accept your study for publication in TC.

I have only a very few minor suggestions below, the most important in my view being the added value of providing the mean error for the modelled SMB vs. in situ data.

Best regards,

Etienne Berthier

We would like to thank the editor for his contributions and suggestions to this manuscript. We have carefully reviewed the latest comments and implemented the suggestions.

Specific comments:

L30. "Hamper" is rather strong : Miles et al., 2021 showed recently that the method can be applied to satellite data for glaciers larger than 2 km² in HMA. But it is true that uncertain ice thicknesses increases uncertainties from these remote sensing estimates so maybe modify the text a little bit.

We replaced the word "hamper" with "complicate" which in our opinion has the correct meaning in this context.

L75. Are there others studies than Vincent et al., 2021 doing so? Otherwise use singular form and do not use "e.g." before the ref.

We are not aware of any other study and therefore reformulated this sentence.

L470. "in consideration" not needed

Done

L489. "significantly" I think

Done

L495. parenthesis not closed

Solved.

L595. "elevation" seems better here

Replaced.

Fig 10. the -1 tick is shorter.

Adjusted.

L631. why not providing also the Mean Error (ME) to quantify if the SMB field has any bias? I really feel that it would be a useful information to confirm the almost unbiased nature of the UAV estimate.

Thank you for this suggestion. We added the ME which appeared to be indeed close to zero (as expected).

L699. "which.... Accuracy". You could simply write 'taken from Zekollari et al., (2013)'

Done

L712. It is not the surface velocity which has this SD, rather the SMB. Reword.

Done

L787. A reference for the 0.5% value? Maybe the paper presenting the ice thickness database (GlaThiData)?

We added this reference.

L806. "centimeter accuracy" maybe true for dh , but unit of velocity is distance per time so the statement is not homogeneous.

Solved.

L812. maybe quote the 0.5 m i.e. /yr bias that you found if stakes only were used?

This value concerns the deviation between measured and modelled SMB. We decided to not mention this value here.

L868. This came as a surprise to me. Was this an internal review? Then it should be in the acknowledgment section, not here. (or indicate clearly this is an internal review).

Alexander Raphael Groos gave a public comment on the manuscript which we considered as a review. We removed this sentence and included it in the acknowledgment section.