

## Response to review from Veit Helm

The response to the reviewer from the author is show in blue text.

### Suggestions for revision or reasons for rejection (will be published if the paper is accepted for final publication)

We thank the authors of their detailed response to the 1st reviewer round.

All of the points raised in the 1st round were answered and the manuscript updated with more details of the uncertainty estimate and clarification in the text.

I recognized that the data set was not updated. So, my criticism of the very slow access rate of the data is still valid. The authors responded to take care of this problem, but I could not check if any improvement was made.

We apologies for this issue. There seems to have a been a problem with the dissemination of the product downstream from me/us. NSIDC have now updated the DOI so the new version with improved chunking is now available on the ITS\_LIVE website. We have provided the link in the response here below:

[http://its-live-data.s3.amazonaws.com/height\\_change/Antarctica/Grounded/ANT\\_G1920V01\\_GroundedIceHeight.nc](http://its-live-data.s3.amazonaws.com/height_change/Antarctica/Grounded/ANT_G1920V01_GroundedIceHeight.nc)

The authors also mentioned in their response that the uncertainty  $\sigma_m$  was changed. This means that RMSE in the netcdf file which reflects ( $\sigma_m$  in the text) was changed. Is this correct? I think it's worth to add to the netdf file in the long name of RMSE a note that RMSE equals  $\sigma_m$ .

No, this was an oversight in the actual manuscript itself at the time of writing (related to an old version of the dataset). The product "rmse" did not change and is the same. Further, we have updated the description for the "rmse" variable to point to the  $\sigma_m$  variable in the paper.

equation 7: Please check. It seems that there is a: above h

We have fixed this

Table 2:

please add in

column2: Bias equals  $\sigma_s^2$  and

columns 3: Error equals  $\sigma_r^2/n$

at least this is what I understood.

We added this to the caption of the table

Table3:

I don't see that this was updated. When you corrected something in your error budget shouldn't this be reflected in Table 3 as well?

The errors in the product have stayed the same so there is no change in Table-3. Table-1 was not used in the generation of the product errors it was only added for educational purposes to show the overall noise levels of the different missions.

Fig2: Could you please state in the figure caption if the curves were derived at a single grid point or are averaged over the lake area.

We have added the wording “area integrated” to ensure that the reader understand that the depicted time series are for the entire lake.

Suggestion:

One or two components of your area integrated error estimation is based on the difference between JPL and smith elevation rates (2003 - 2019). Why not add this difference field to the netcdf file. This would allow the user to apply your error budget procedure to any region and time period of their choice.

Thank you for the suggestion but we have decided to keep the product as is to keep the size down. However, this might be something to add on in future versions. The IS1/IS2 product can be downloaded from Smith et al. (2020) and can be differenced with rates generated from the cube with very little effort. We have expanded the supplement to include this information.