

We would like to thank the reviewer for their constructive comments.

The authors have made careful changes to the manuscript according to both reviewers' comments, and I commend them for taking on board the suggestions. Here are a few very minor comments on the revised manuscript. (Line numbers refer to those in the manuscript showing tracked changes.)

Line 52: Number the sections when you refer to them, "See Section 2 for details"

We have incorporated this revision into the manuscript.

Line 53: "Given the low mantle viscosity below parts of Antarctica, ** viscous effects may also impact the relationship between ice surface height and thickness changes over time scales of a few decades (Powell et al., 2020)." I suggest adding a few words here ** along the lines of "meaning the Earth responds more quickly to changes in surface loading". Spell it out for the people at the back.

To the end of the sentence, we have added "and thus the use of purely elastic models may introduce an error even over such short timescales."

Line 107: is "85" a typo here?

It is – this has been corrected.

Line 123: Typo "web site" -> website

This has been corrected.

Section 3: you could consider having two sub-headings here, one for GIA and one for Modern Mass Change

The section has been divided as recommended.

Line 124: change Flux to "change" in line with the rest of the changes in the manuscript

This has been changed.

Line 127: is the acronym "GMSL" defined anywhere?

We have added a definition.

Figure 3: still missing the labelling in panel (a)

The figure has been revised to include the labels.

Line 218 ice mass flux -> ice mass change

This has been changed.

Conclusions: I'm being a bit picky here, but I don't think the new conclusions section flows very well. The addition of the last paragraph and reference to a new figure, to me, belongs further up in results/discussion. I suggest revisiting this and see if you can make it flow a bit better. If in the

case you decide to keep it as it is, then I suggest adding a concluding remark or two. The conclusions end very abruptly on some very fine detail. I scrolled expecting there to be more text to wrap up.

In addition to this comment, the Editor also raised a concern about our combining of text related to results and discussion into a single section. To address all these issues, we have revised the text to:

- (1) Separate the results and discussion into two separate sections. This involved some reordering of the text. The main changes include moving lines 170-176 of the original manuscript out of passages in the text that describe our numerical results and into the discussion section.
- (2) We have moved text (lines 199-228 of the original) and a figure (Fig. 9) from the concluding section into the discussion section. The conclusions are now summarized in a single, final paragraph of the paper.
- (3) . We have added the following overarching sentence to the end of the conclusion:

As altimeter measurements of ice sheet elevation changes continue and are used to estimate ice thickness changes, efforts should be made to rigorously estimate uncertainties in the correction for the GIA signal and to implement a more accurate mapping between GIA-corrected elevation changes and thickness changes due to crustal deformation resulting from modern-day melt.

We again thank the reviewer for their helpful comments.