

Response to the Editor

Dear Dr. Mantelli,

We are delighted to read that you accept our manuscript after minor revisions suggested by Referee #2. We gladly addressed the referee's points. Please find below the *referee's comments in italics* and our response in [blue](#).

Best wishes,

J. Feldmann et al.

Anonymous Referee #2

I want to thank the authors for their detailed responses and their revision of this paper. The revised sections in the introduction do a very good job of making the key takeaways of the paper clear. Further, the reworked section on the physics underlying the sensitivity to melting is very useful and does a good job of connecting with previous studies, the authors' results, and connections to fundamental glacier physics. Further, the reworked section on "Further possible shear-margin effects and model limitations" does a good job of connecting with shear margin studies and identifying what these results can and cannot say about ice dynamics, and I very much liked the descriptions of the effect of localizing shearing and the changing width of the shear margin. Overall, I believe that the authors have addressed my previous comments very well and have only a few minor suggestions to strengthen the readability of this paper.

We thank the referee for taking the time to read the revised version of the manuscript and are delighted to read that the referee likes our changes.

While I believe that the section on "further possible effects" does a good job of outlining the studies that look at effects of shear margin heating and melting, I believe this section would be stronger with a few statements on what effect not considering the temperature evolution in shear margins may have on the results presented in this study (and/or what results one might expect if you did account for thermal structures).

We are grateful for this hint and extended Sec. 4.1, elaborating on what the inclusion of shear-margin heating in our simulations would mean for our results (P9, L14-22).

There are a few sentences that were quite long and/or hard to parse (for example, page 7 line 5 and page 10 lines 8-9).

Following the suggestion by the referee we split long sentences into two at several places in the manuscript (P7,L24; P7,L33; P8,L9; P9,L25) to improve readability.

Finally, on page 12 line 7, I think the verb should be "involves" rather than "involve".

Corrected.