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Dear authors:

Thank you for your revised manuscript entitled “ **Regional modeling of the Shirase Drainage Basin, East Antarctica: Full-Stokes vs. shallow-ice dynamics**” that you submitted for publication in *The Cryosphere*.

As you may know, I requested a second round of review to address my specific concern regarding originality of the manuscript, as many papers have already been published concerning comparisons between SIA and Higher-Order formulations. This second round of reviews convinced me of the advantage of carrying out such comparison on equivalent framework and grid, which you did here. This concern being addressed, I believe the manuscript is acceptable for publication. However, I would like to see the concerns raised by reviewer #2 of the second round be addressed, in particular as they relate to:

- 1: the inversion of basal friction carried out using the FS formulation and then directly applied to the SIA formulation. Either a new SIA inversion should be carried out, or a serious discussion of the consequences of such an approach should be carried out.
- 2: the nature of icefront boundary conditions being significantly different between both formulations. I would like to see this discussed thoroughly, as it is an intrinsic result of the formulations themselves.
- 3: the absence of relaxation: this should also be thoroughly discussed.

Once these points are addressed, the manuscript will be published. I will carry out an editor review prior to final publication.

Dr. Eric Larour,
Editor *The Cryosphere*

Sincerely yours,