

Dear Dr. Räss,

Thank you for your detailed feedback and for providing your interpretation of the reviewer’s comments. We appreciate the time and effort taken to review our revised manuscript and are pleased to hear that it is in much better shape. We are committed to addressing the remaining minor points you have outlined.

1. I recon that it would be valuable to have an experiment to assess whether the asymmetry vanishes on the triangular (diagonally aligned) mesh, upon mesh refinement.

Response: Thank you for the suggestion. We have added an additional experiment in Appendix D, Figure D4, by refining the mesh to 50 m and 25 m. Our results indicate that the asymmetry does not vanish on the diagonally aligned mesh, but it becomes less pronounced as the error decreases with mesh refinement.

2. If relevant, please cite Li et al. with respect to the FAB method.

Response: We added the citation of Li et al. concerning the FAB method.

3. Calving; calving velocity is typically orthogonal to the front, which is at odds with the front velocity being aligned with x. This is a recurring remark and I would also like to see this point addressed. Keeping the benchmark’s idealised configuration, it may be relevant to consider some calving orthogonal to the front in order to cover this.

Response: We understand the reviewer’s frustration, maybe we have not been clear enough yet. The velocity of the front is *not* the calving velocity. It is a sum of ice speed (which is not necessarily normal to the ice front) and the calving rate (which is generally defined along the normal). So the ice front velocity is not necessarily orthogonal to the front in practice. Note that we did add a case where the velocity of the ice front is orthogonal to the terminus in Appendix A already, so we believe that this case is covered in the manuscript as it stands.

The main purpose of this manuscript is to show that even with such a ‘simple’ prescribed frontal velocity, stabilization and reinitialization can a significant impact depending on the choices that are made. We need to make sure the error introduced by the numerical method is under control before moving to more complex situations. As we mentioned, in the CalvingMIP project, we are testing more realistic calving velocity on more complex geometries.

We appreciate your guidance on these points and will address them carefully in our revised manuscript. Thank you for your patience throughout this process. We aim to resubmit the revised manuscript promptly.

Best regards,
Cheng Gong, Mathieu Morlighem, Hilmar Gudmundsson