Dear Editor and Reviewer,

Thank you for your valuable comments. We have improved our manuscript according to the comments and concerns from both of you:

"*1. Address Oversimplification: Revisit the model to ensure it better represents realistic scenarios in ice front migration, testing maybe for another geometry and addressing the oversimplifies velocity field.*"

- We would like to highlight that all the parameters chosen in the manuscript (e.g. glacier size, ice front periodicity, ice speed, etc), are representative of Greenland glaciers. We include an additional experiment in the Appendix E to improve the realism of the frontal velocity representation. In this experiment, we introduce seasonal variations by changing the frontal velocity to $v(t)=v_0\sin(2\pi t)$, simulating the dynamic nature of ice front movement influenced by seasonal changes. Notably, the results of this experiment align precisely with those of all other experiments presented in this paper.

2 "*Add a calving term to the velocity profiles, as it is crucial for the realism of the model. Or at least make some systematic investigation on the front dynamic for similar settings.*"

- We acknowledge the importance of calving in modeling realistic ice dynamics. However, it is essential to note that the frontal velocity ($v_f = v - c$) used in the level-set equation **implicitly incorporates the effects of calving or calving rate**. Our study primarily focuses on comparing different stabilization and reinitialization strategies for solving the level-set equation. Incorporating a "realistic" calving term may not necessarily provide additional insights into our study, as it would already be accounted for through v_f in the level-set equation. Moreover, introducing a calving law would preclude the availability of analytical solutions, complicating the interpretability of our results. We add some justifications in the discussion section 5.3.

"*3. Provide a more detailed explanation of the level-set function reinitialisation process, possibly exploring different approaches mentioned in literature.*"

- Our reinitialization approach is very similar to the one described in \cite{Touré.2016}. We add one paragraph in the method section 2.2 to describe in more detail how we implement the geometric reinitialization algorithm.

"*4. Include a discussion on how the penalization in the stabilization technique might reduce or eliminate the need for reinitialisation.*"

- The whole idea of the penalization in the stabilization is to enforce $|\nabla\phi|=1$ (Eikonal equation) when solving the level-set , which is similar to \cite{Hartmann.2010}. We add a paragraph in the discussion section 5.1 to discuss the details.

"*5. Perform additional experiments to show how asymmetry in results reduces with the refinement of the structured mesh, or figure out why there is an asymmetry.*"

- The observed asymmetry is attributed to the use of the diagonally aligned triangular mesh. To elucidate this aspect, we incorporate additional experiments in Appendix D featuring a symmetric structured mesh alongside our previously utilized diagonally aligned structured mesh. These supplementary experiments are designed to underscore that the observed asymmetry arises from the specific structure of the diagonally aligned mesh.

"*6. Review and integrate the provided level-set literature into the study to enhance the methodological approach and discussion.*"

- We add literature review in the introduction and in the discussion section 5.1