

We thank the anonymous reviewer for the feedback on the revised manuscript. We appreciate the time and effort invested in reviewing it again. We have addressed the comments and updated the manuscript accordingly.

Review by Anonymous Referee #2

Summary

I thank the authors for the revision of the manuscript and for addressing all my comments. I am satisfied with the response to the general comment regarding the use of volume as an observation. The restructuring of the Results section has clearly improved its readability and makes the progression of results much easier to follow. Although I would still like to see the aggregated results of the lambda sensitivity I understand the authors decision to keep it separated by glacier. I particularly appreciate the substantial effort that was made to improve reproducibility. I was able to recreate the now Figure 6 showing the difference between the synthetic truth and AGILE for Aletsch after the different iterations.

Thank you!

Parameters and variables

Thank you for addressing my comment. However, replacing all occurrences of “parameter” with “variable” was not the intention of my earlier comment. I recommend reverting most of these changes, as parameter is the appropriate term in the majority of cases.

Sorry for misunderstanding your previous comment. I understand your reasoning and adapted the wording in accordance to your comments below.

To clarify the intended distinctions:

- Line 70: Both terms could work here. Suggestion: “... of multiple model parameters and state variables.”

adapted

- Line 97: Suggestion: “A set of initial control variables, referred to as the first guess and which may represent a combination of model parameters, state variables or boundary conditions, is iteratively adjusted to minimize the mismatch between the output of a glacier evolution model and available observations.”

adapted

- Line 125: MB model parameters (e.g., the melt factor, ...) is correct.

adapted

- Line 182: Both the deformation–sliding parameter and the MB model parameters should remain labelled as parameters, since these quantities do not change during the simulation. Only the flowline-geometry quantity could be described as a variable.

Using ice volume as an example instead of bedrock elevation may make this distinction clearer, as ice volume evolves during the simulation whereas bedrock elevation stays fixed.

adapted

I realize my earlier comment about using the term control variable consistently may have caused confusion.

Technical Corrections

- Figure 6: Differences between the synthetic truth and AGILE guess **after every fifth** iteration along the flowline ...

adapted

- Line 425: evaluated

adapted