

We are very grateful to both reviewers for taking the time to read the revised manuscript once more and for the recommendations for publication.

## Reviewer 1

This is the review for the revised manuscript "Exploring the Potential of History Matching for Land Surface Model Calibration".

Overall I am quite satisfied with the adjustments and changes made in response to my review of the previous version. To be honest, I still have fundamental reservations about how informative the comparisons between the VarDA and HM methods are, but it touches perhaps more on certain philosophical aspects of this particular field. And I can not deny that there isn't a history of VarDA use in these calibrations nor that even with that particular issue, the manuscript does excellent work with HM application. So it would be unfair of me to make such an issue a stumbling stone here as I can see another reviewer being fine with it.

Due to this, I am recommending the manuscript to be accepted as is.

Thank you for the recommendation. It is true that since this study intersects several disciplines, there are still philosophical debates around terminology and best practice methods. Hopefully these issues will be more fully addressed in future works.

## Reviewer 2

Two very minor comments:

Thank you for the comments, these have been addressed.

Line 31 - I suggest a slight rearrangement and addition to the sentence: "In contrast, in climate studies where we tend to be more interested in long-term trends, we rely less on initial state optimisation and more on parameter calibration or state adjustment. This is especially true for carbon cycle models, where, in addition, a lot of processes are based on empirical equations that may not be perfect representations of the actual processes.

Done

Line 355 - remove word 'remaining' to match response to reviewers

Done