

Dear Editor,

We appreciate your consideration of our manuscript, which has been submitted for publication in *Geoscientific Model Development*. Detailed replies to each of the reviewers' comments and suggestions are outlined in the attached response letters and noted in the marked revised manuscript in red text. We thank the reviewers for their suggestions, and feel that the revised paper is an improvement over the previous version.

Detailed descriptions of the changes made to the text can be found in the replies to the reviewers and in the marked revised manuscript, but the most significant changes are summarized below.

1. Figure 1 has new additional panels showing global MLD, SST, SSS, SSH, and EKE correlation values and the text in Section 3.1 has been extended to discuss these and address Reviewer 1's question about the global RMSE increase in SSH.
2. We have now added a new Figure 2 showing the time series of the global SSH anomaly to further help address Reviewer 1's question about the global RMSE increase in SSH.
3. Additional details describing the MLE parameterization have been added to Section 2.1.
4. The hyperlink for the full list of code changes from v2 to v2.1 has been updated.
5. We have added DOIs for the permanently archived v2 and v2.1 code bases and have updated the Code Availability section to reflex this.

We believe that these changes and the attached letters address all of the comments from the reviewers and the GMD Executive Editor. We thank you for your consideration of our work.

Sincerely, the authors.