Responses to Reviewers' Comments for Manuscript egusphere-2025-212

Improving dynamical climate predictions with machine learning: insights from a twin experiment framework

Addressed Comments for Publication to

Nonlinear Processes in Geophysics

by

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Authors' Response to Reviewer #1

Comment 1

By using a reduced-order coupled atmosphere-ocean model within a twin experiment framework, the authors demonstrate the capability of machine learning in correcting errors in various components of the coupled model on different time scales so that enhancing the prediction skill of the model. I found the results interesting and publishable and recommend a minor revision that addresses my comments below.

Response: We thank the reviewer for providing insightful comments that have helped to significantly improve the manuscript. We carefully addressed each concern and revised the manuscript. Below, we provide our detailed point-by-point responses to the reviewer's comments. To enhance the legibility of this response letter, all the reviewer's comments are typeset in blue boxes.

Specific Comments:

Comment 2

Line 22: "estimate best the state" should be "estimate the best state".

Response: We thank the reviewer for this comment. We have revised it to "estimate the best state" (L23 in the manuscript).

Comment 3

Line 127: Section 2.4. Experimental settings, "experimental settings" sounds like the setting itself is experimental, "experiment settings" sounds more like setting up an experiment.

Response: We thank the reviewer for this comment. We have revised it to "Experiment Settings" (L148 in the manuscript).