

Response to Editor

In addition to the reviewers' comments, I have several additional suggestions for further improving this manuscript.

We thank the reviewer for his/her valuable and insightful comments and suggestions that help improve the manuscript. Following are the point-to-point replies to the comments (blue indicates original comment, and black indicates our reply).

1. I strongly suggest performing a thorough proofreading of the manuscript, as there are numerous grammatical errors throughout. Examples include: (L45) one of the most prominent "modes" of interannual variability, (L54) "overly regular ENSO oscillation"?, (L134) "uses", (L211) the first term "are", among many others not listed here.

Reply: We sincerely thank the editor for the careful reading and for highlighting these grammatical issues. We have thoroughly proofread the entire manuscript and corrected all identified errors. The specific corrections for the examples noted by the editor are as follows:

(L45) "one of the most prominent interannual variabilities" → "one of the most prominent modes of interannual variability"

(L54) "overly regular ENSO oscillation" → "an overly regular ENSO oscillation"

(L134) "the model use hybrid coordinates" → "the model uses hybrid coordinates"

(L211) "the first term on the right-hand side are the damping process" → "the first term on the right-hand side is the damping process"

In addition, we have carefully reviewed the entire manuscript for similar grammatical issues and corrected them accordingly. We believe the revised manuscript has been substantially improved in terms of language quality.

2. For Figure 4, I suggest also including the observed counterparts to allow for a direct validation of the model results.

Reply: We thank the editor for this valuable suggestion. In the revised manuscript, we have added the reanalysis counterpart (ORAS5) to Figure 4 to allow for a direct comparison with the model results. The reanalysis bars are displayed alongside the f3-L, f3-H, and their difference (f3-L minus f3-H), enabling readers to assess the model performance against the reanalysis benchmark. A detailed discussion of this point has been added to section 4.1 of the revised manuscript.

3. While the source code related to the diagnostics is provided in the data archive (<https://zenodo.org/records/17778266>), it needs to be well-documented with README files. Specifically, explicit step-by-step instructions for the calculations and figure plotting, along with the sample data, must be provided for each figure shown in the manuscript. This will ensure that readers can reproduce the results of this study and easily apply the approach to similar analyses. Furthermore, the current organization of the data structure (e.g., "BJ index", "TC Detection") could be improved, for instance, by sorting the files/folders according to the figure numbers in the paper.

Reply: We thank the editor for this valuable suggestion, which has significantly improved the transparency and reproducibility of our work. The files and folders have been reorganized according to the figure numbers in the manuscript, making the structure clearer and easier to navigate. In addition, we have prepared the README files that provide explicit step-by-step instructions for the calculations and figure plotting, together with the data required to reproduce each figure. We believe that these revisions substantially improve the usability and accessibility of our shared resources and will facilitate both reproducibility of the present study and application of the diagnostic framework to similar analyses. The updated source code and analysis data are now available at Zenodo: <https://doi.org/10.5281/zenodo.19552337>