

I have copied the major comments of the reviewer in black, along with my responses in blue.

Fei & White (2025) examine the effect of stationary forcings (e.g., topography, SSTs) on quasi-stationary wave (QSW) characteristics using a set of 100-year CAM6 simulations with varying SSTs, topography, and land-sea distribution. The authors find that background conditions associated with stationary wave number and transient eddies explain most of the variance in spatial QSW distributions.

Overall, the manuscript is well organized and well written. The authors provide a thorough introduction with a nice overview of how quasi-stationary waves relate to other atmospheric and environmental features/processes. The methods, overall, appear sound and in line with previous work, and I appreciate the organized approach to isolating different stationary forcings with the model simulations. The results are also generally well presented—the authors do well to walk the reader through fairly detailed comparisons. I also appreciate the inclusion of various sensitivity tests throughout to test robustness of presented results.

Thank you very much to the reviewers for their thoughtful and helpful feedback. We greatly appreciate the recognition of the contributions and clarity of our work.

There are a few places in need of additional information or clarification after which I believe this manuscript to be suitable for publication in Weather and Climate Dynamics.

Comments L50–52: In addition to ENSO, how would convection related to the MJO impact QSWs?

Thanks for your suggestion. We will include a discussion of the MJO in the revised manuscript. Generally, both ENSO and MJO influence QSWs through convection, with no fundamental difference, since the heating released by convection is considered a source of Rossby waves, regardless of the source of the convection.

L60: Remove “this” between “in” and “highly”.

Thanks for your suggestion. We will remove the word ‘this’ in the revised manuscript.

L100: Replace “resolution” with “grid spacing” as the two are not synonymous (i.e., features are resolved at 4–6 times the grid spacing).

Thank you. We will replace resolution to make the terms consistent.

L100–101: Given the time spent in the Introduction on diabatic heating influences, it would be worth a short discussion (perhaps in Section 4) on how this coarse grid spacing (and therefore, lack of diabatic processes) may influence your results.

Thanks for your suggestion. We will add more discussion about the impact of the coarse grid spacing in the discussion.

L122–125: How was the spatial extent for the HEAT SST anomalies chosen?

To replicate the temperature contrast between Siberia and the western Pacific Ocean, we defined the SST anomaly region to span 60 degrees of longitude in the midlatitudes, mimicking the order of magnitude longitudinal extent of an ocean basin or continent. We will add one sentence in the revised manuscript to explain this.

L155, L162: Suggest putting two equations on separate lines.

Thanks for your suggestion. We will put two equations on separate lines in the revised manuscript.

L176: Should “CESM2” be “CAM6”?

Thanks for your suggestion. We will replace CESM2 by CAM6 in the revised manuscript.

Fig. 1: I wonder if making each line slightly transparent would help the reader with interpretation, especially with identifying areas of overlap between experiments.

Thanks for your suggestion. That’s a great suggestion. We will make the lines partially transparent to improve clarity when lines overlap.

Fig. 2: Missing y-axis labels.

Thank you. This figure will be removed based on the other reviewer’s suggestion.

Fig. 2: Missing reference to panels (d), (e), and (f) in figure caption.

Thank you. This figure will be removed based on the other reviewer’s suggestion.

Fig. 3: Suggest including a pattern correlation coefficient analysis here to strengthen your ERA5- CNTL comparisons more objectively.

Thanks for your suggestion. We will add the pattern correlation coefficients to the upper right corner of the CTRL experiment figures later.

L260: Specify which section “later” refers to.

Thanks for your suggestion. The “later” refers to subsections 3.3.1 and 3.3.2 as a whole; we will clarify this in the revised manuscript.

L279–281: Remove parenthetical sentence structure and split into two sentences to increase readability.

Thanks for your suggestion. We will remove the parenthetical content and use another sentence to illustrate it in the revised manuscript.

L316: Add “Figure” before “A7a to A7d”.

Sorry for that and thanks for noting this. We will remember to add ‘Figure’ wherever necessary in the revised manuscript.

L320: Suggest reordering Appendix figures so they are referenced in order in the text.

Thanks for your suggestion. We will double check and reorder the Appendix figures in the revised manuscript.

L326: Should the last “value” be “Ks value”?

Thanks for your suggestion. We will specify the 'Ks value' explicitly, and we will ensure that all values are clearly defined in the revised manuscript.

Fig. 6: Suggest smoothing contours to help reduce noise and highlight signals.

Thanks for your suggestion. We will smooth contours in the revised manuscript.

L355: Is this really true for (a)? The correlation is only 0.19.

Thanks for pointing this out. We will be more careful about our description in the revised manuscript.

L357–358: It appears the right correlations are weaker in (a) and (c) but right and left correlations in (b) and (d) are fairly similar. Please add additional discussion to explain this difference in result.

Thanks for your suggestion. We will discuss the potential distinct impacts of topography and diabatic heating in the revised manuscript, which also aligns with our planned response to a related comment from another reviewer.

L440: Acronym already defined in L70.

Thanks you. We will remove the second reference to the acronym in the revised manuscript.

Section 5: The conclusions would benefit from bringing the presented results back to some of the implications of QSWs discussed in the Introduction. For example, what do these identified

relationships between QSWs and certain variables mean for, say, forecasting QSWs and their effects on weather conditions?

Thanks for your suggestion. We certainly consider that aspect—for instance, in relation to midwinter suppression. Although we have not yet begun analyzing it due to PhD graduation commitments, we will include this discussion in the revised manuscript.