

Reply to Editor

We sincerely thank the Editor for the careful handling of our manuscript and for the valuable time and effort devoted to the review process.

Response to Reviewer 1

We thank the reviewer for accepting our manuscript for publication.

Response to Reviewer 2

I appreciate the authors addressing my concerns in detail and I consider that the new version of the manuscript represents an improvement with respect to the previous version. Particularly, my main concern was the novelty of the data with respect to data that is already publicly available, and the authors did a great job in clarifying to me what methodological novelties the paper and data represent. Accordingly, I suggest acceptance of the manuscript for publication.

Reply: We thank the reviewer for their appreciation of our work and for supporting its publication. We are also pleased that our response has satisfactorily addressed their concern.

There is a minor correction: in Line 255, the sentence "Because human emissions can modulate the characteristics of modes of variability (Klavans et al. 2025)." seems to be part of the previous one. Please adjust phrasing.

Reply: The sentence is now reframed as "We would like to note that a direct comparison between piControl simulations and the historical/observational record is not appropriate for a rigorous assessment of model skill, as human emissions can modulate the characteristics of modes of climate variability (Klavans et al., 2025)." (L250-252 of the revised manuscript)