

Dear Topic Editor

We have addressed the suggested technical corrections. Responses are in blue below:

- The abbreviation "Fig." should be used when it appears in running text and should be followed by a number unless it comes at the beginning of a sentence, e.g.: "The results are depicted in Fig. 5. Figure 9 reveals that....". Please consider this at multiple places within the manuscript.

All figures are in text are now addressed as Fig. , and if the beginning of the sentence, as Figure

- The abbreviation "Sect." should be used when it appears in running text and should be followed by a number unless it comes at the beginning of a sentence. Please consider this at multiple places within the manuscript.

Done

- Please ensure that figure labels have units, e.g.: in Fig. 3 the degree symbol ( $^{\circ}$ ) is missing in conjunction with Latitude.

Figure 3 now have the degree symbol in conjunction with Latitude

4) Labels of figure panels must be included with brackets around letters being lower case (e.g. (a), (b), etc.). Please consider this, since currently you use a variety of ways to denote individual panels on various figures: (a), a, A)... Please also correct the text when referring to figure panels accordingly.

All labels are now bracketed as (a), (b) etc

5) A few additional comments regarding abbreviations:

a) The abbreviation "RMSE" is first used and subsequently defined multiple times within the text. Please correct this and omit unnecessary definitions. I encountered a similar issue with "2-D" (first used and subsequently defined).

Done

b) Several abbreviations ("TOA", CESM2", "CAM6", "PPE", ...) are also introduced more than once within the main text - please omit unnecessary definitions.

Abbreviations need to be defined in the abstract (as you properly do) and then again at the first instance in the rest of the text (but please not more than once in the main text).

Done. Note, we kept the definitions in a few of the figure captions of Figs., 3, 4 and Table 2).

c) I would advise the following Title: "An Extensible Perturbed Parameter Ensemble for the

Community Atmosphere Model Version 6" - without introducing "(PPE)" in the title.

Done

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- Additional notes:

1. We added two more citations of newly published papers that also use the PPE datasets described in this paper:

Song, C., McCoy, D. T., Eidhammer, T., Gettelman, A., McCoy, I. L., Watson-Parris, D., Wall, C. J., Elsaesser, G., and Wood, R.: Buffering of Aerosol-Cloud Adjustments by Coupling Between Radiative Susceptibility and Precipitation Efficiency, *Geophysical Research Letters*, 51, e2024GL108 663, <https://doi.org/https://doi.org/10.1029/2024GL108663>, e2024GL108663 2024GL108663, 2024.

Gettelman, A., Eidhammer, T., Duffy, M. L., McCoy, D. T., Song, C., and Watson-Parris, D.: The Interaction Between Climate Forcing and Feedbacks, *Journal of Geophysical Research: Atmospheres*, 129, e2024JD040 857, <https://doi.org/https://doi.org/10.1029/2024JD040857>, e2024JD040857 2024JD040857, 2024.

2. I noticed that Figure 4 and 8 that in the revised manuscript did not have the correct updated Long/short wave radiative effect abbreviations. These figures still had SWCF/LWCF instead of SWRE/LWRE. This is now corrected in the final version.