

Interactive comment on “A new ensemble-based consistency test for the Community Earth System Model” by A. H. Baker et al.

A. H. Baker et al.

abaker@ucar.edu

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Thank you for your review and suggestions for improvement. We address all comments below.

(1) It is desirable for authors to discuss the advantages and/or limitations of Z-score. As pointed out by the other reviewer, Z-score assumes a non-skewed distribution. However, for example, the vertical velocity distribution in cumulus regimes is often skewed. Is it valid to use Z-score for such fields?

We do not use the Z-score to evaluate consistency, but rather (optionally) provide it for climate scientists who find it useful (i.e., for legacy reasons). We instead base our evaluation on the PCA of the global means (Section 3.3). We see that Section 3 needs

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to better explain the role of Z-scores. In the revised manuscript, we clarify their role as well as rearrange the discussion so that the Z-scores are mentioned *after* the discussion of PCs.

(2) On P.3831, line 21 "to propagate though the system" should be "to propagate through the system".

We have fixed this typo in the revision.

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