

Interactive comment on “Bias correction can modify climate model-simulated precipitation changes without adverse affect on the ensemble mean” by E. P. Maurer and D. W. Pierce

Anonymous Referee #4

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The core of the study is fundamentally wrong. As already pointed out by reviewers 1 and 3 it is likely that much, if not most, of the observed and the simulated precipitation changes between the analyzed periods (1916 – 1945 and 1976 – 2005) are caused by random variability rather than by climate forcings. If this is the case a comparison of simulated and observed differences makes no sense at all when standard forced coupled atmosphere ocean GCM simulations are used, which is the case in this study. I find it quite surprising that there is not a single comment on this point in the paper.

A key conclusion is that the difference between the raw and the bias-corrected ensemble median change is small compared to the observed change. This is a meaningless

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statement if the simulated changes are random. With an increasing number of GCM simulations considered the median of the raw changes will approach zero, and so will the median of the bias corrected changes, and in turn their difference. This difference can thus in principle be made arbitrarily small if only a large enough number of simulations is considered, and comparing it with the observed change does not provide any useful information.

The paper does contain some useful thoughts about the effect of quantile mapping on simulated differences (eqn. 3 and related text) but this material on its own is in my opinion not enough to justify publication.

If another version is submitted the authors should distinguish between MOS and PP downscaling (as already pointed out by other reviewers), and also define the term 'bias'; at the moment it is used with varying meanings in the text.

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