

Interactive comment on “Cluster-based ensemble means for climate model intercomparison” by Richard Hyde et al.

Anonymous Referee #1

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Summary: As an alternative to simpler multi-model means, the authors explore the advantages to applying a clustering technique to the analysis of ACCMIP modelled tropospheric ozone columns. They generally find that the multi-model mean agrees better (i.e. causes a reduction in the mean absolute bias) if generated using a clustering technique than when either a straight arithmetic averaging or even a weighting based on standard deviation are used. The improvement occurs not only in the global average but also in a majority of grid cells, particularly in polluted areas. Clustering is not often used in atmospheric science, but is more common in other areas. The authors suggest that there is scope for greater uptake of this analysis technique in areas such as atmospheric science.

The paper offers an interesting, not entire new but underused method to produce multi-

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model means. En route, it also produces by-products, such as highlighting regions where a model is or is not used to produce the mean. This information can be used to direct model development.

The paper is well written; the language and graphics are appropriate for ACP. Upon studying the paper, I have found no significant problems that require correction. Below are only two semantic issues. I recommend publication of the paper subject to addressing these minor issues.

Details:

P3I20: The word “hyper-elliptical” requires explanation. In the atmospheric sciences, few people will know what that means.

P8I12: Replace “greater to” with “greater than”.

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-317>, 2018.

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