

## ***Interactive comment on “Large-scale features and evaluation of the PMIP4-CMIP6 midHolocene simulations” by Chris M. Brierley et al.***

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We would like to thank you for your diligent review. We believe that we can address the concerns you have raised in a revised manuscript – and that in doing so, the manuscript will be more helpful to a broader audience.

It is obvious that our discussion of the calendar issues has been unclear (it was raised by Reviewer 3 as well). We shall rephrase this subsection in the revised manuscript to improve its clarity. The insolation changes resulting from the altered orbital configuration are a key part of the experiment protocol. The problem that the adjustment resolves is to do with the aggregating of data during run-time to create monthly-resolution output. To fix this online can require substantial alteration of a model’s output processing

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code, which would act as hurdle to participation in PMIP. The calendar adjustment has never previously been implemented in a multi-model study, despite several calls for it (e.g. Kutzbach & Gallimore 1988; Joussaume & Braconnot, 1997). The creation of easy-to-use software by Bartlein & Shafer (2019) has meant it has been practical to include it for the first time here. This review requests a justification and assessment of its impact on surface temperature and precipitation. These are demonstrated in detail within Bartlein & Shafer (2019), but we shall a summary in the revised manuscript. We shall also correct the apparent contradiction raised by the juxtaposition of the discussion of fixed and varying monsoon domains during revision.

The review notes that Section 3.5 (on comparing the PMIP4 models to data) is relatively confusing, and then provides some specific sentences and paragraphs that were unclear or ambiguous. We shall rewrite this whole section to improve its clarity – in part by taking things more slowly. Finally, the review identifies a series of minor comments about specific sentences or words. We shall address each of these individually.

Given the unfortunate rush to submit papers before 2020, we had knowingly not adopted best practice in CMIP6 data citation and documentation. It was always our intention to have completed this at revision stage (whilst we incorporate the additional simulations that have since been uploaded to the ESFG), and we appreciate the timely reminder.

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