

Interactive comment on “Pliocene Model Intercomparison Project (PlioMIP): experimental design and boundary conditions (Experiment 2)” by A. M. Haywood et al.

Anonymous Referee #1

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This paper follows on from Haywood et al.(2010) and describes the setup of the second experiment in the initial phase of the Paleoclimate Modelling Intercomparison Project (PlioMIP). It explains what levels of greenhouse gases and what orbital configuration are to be used in the experiment and the reasoning behind this. Implementation of mid-Pliocene ocean temperatures and topography are also explained, followed by a brief description of how the PRISM ocean temperature (to be used as initial conditions) have been reconstructed. Finally, information on storing model output in the PMIP database is given. The paper is compact and written clearly, although it could have been combined with the previous one to form a complete paper on the first stage of PlioMIP. Nevertheless, this paper will serve as an important document for the small,

C38

but growing mid-Pliocene modelling community and will be essential for those who wish to participate in PlioMIP. I would recommend this paper for publication in GMD after the authors have addressed some questions and minor comments which I have listed below.

1) Little is mentioned of mid-Pliocene bathymetry. Although the bathymetry in the experiment is assumed to be the same as that for present-day (except in the West Antarctic region), would the authors care to mention briefly how good an assumption this would be? In particular, I am thinking of changes in bathymetry which could affect the North Atlantic Deep Water.

2) The initial ocean temperatures to be used in the experiment come from PRISM3 reconstructions for 1 December. Does this mean that models have to be integrated from 1 December as it is not made clear in the paper. Perhaps 1 Jan would have been a more obvious choice.

3) Would the authors consider plotting a map of the initial SST difference? Although it appears in Dowsett et al.(2009), I think it would be handy for readers to see it without having to refer to another paper since PlioMIP participants will be using the data.

Minor points:

4) There does not appear to be any reference to figure 1 in the text.

5) In the abstract, line 7, change 'is utilising' to 'utilises'.

6) On page 448, line 21: change 'Such that' to 'In other words,'.

7) On page 448, equation 2: Change 'OceanTemp' to 'OceanT' for consistency.

8) The last sentence on page 449, which continues onto page 450 has some grammatical mistakes: '.....depth of 500m, flat, and the grade this bathymetry into the modern bathymetry'.

9) On page 451, line 11, change capital S in 'Sites' to small s.

C39

