

Interactive comment on “Pliocene Model Intercomparison Project: implementation strategy and mid-Pliocene Global climatology using GENESIS v3.0 GCM” by S. J. Koenig et al.

Anonymous Referee #2

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The manuscript “Pliocene Model Intercomparison Project: implementation strategy and mid-Pliocene Global climatology using GENESIS v3.0 GCM” by Koenig et al. is a contribution to the Geoscientific Model Development Special Issue “Pliocene Model Intercomparison Project (PlioMIP): experimental design, mid-Pliocene boundary conditions and implementation”. It contains a brief description of the GENESIS atmosphere-only general circulation model used in PlioMIP Experiment 1. The authors explain in detail the experimental design and how mid-Pliocene boundary conditions were included in their model. They provide initial results including surface air temperatures, precipitation rates and energy balance, as a fruitful basis for further model intercomparison studies.

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This is a clear, well written and structured paper, appropriately illustrated. It follows closely the guidelines set out in PlioMIP.

Below is a list of minor points/technical comments which may require some attention:

1. *Title/Abstract*: It should be stated explicitly in text that this is a contribution to PlioMIP Experiment 1 with an atmosphere-only GCM.
2. *Model description, page 2580*: I would suggest to provide a bit more details about the atmospheric climate model and land surface scheme features.
3. *Model spin up, page 2581, lines 11–15*: Please provide a time series of global 2m air temperature to demonstrate that the model reached equilibrium in the atmosphere, as recommended in the template for model description papers.
4. *Page 2584, line 9; page 2585, line 4; figures 1 & 2 captions*: I would write “plio.genesis” for more clarity.
5. *Soil texture, page 2585, lines 22–27*: It is not clear whether imposed distributions of soil texture in Pliocene simulation are consistent with the prescribed Pliocene vegetation (PlioMIP “preferred” solution).
6. *River routing*: Please specify which option, “preferred” or “alternate”, was specified as regards river routing and if necessary how river routes were altered.
7. *Polar amplification, pages 2587–2589*: Results regarding polar amplification could be grouped together.
8. *Discussion, page 2588, first paragraph*: PlioMIP–GMD template for group papers indeed suggests to include references to NAO, ENSO, ITCZ and monsoon behaviour but I wonder if it is worth briefly mentioning these issues without any figure nor quantification.

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9. *References*, page 2590, line 16: “Hydrographic” instead of “hydrogrhic”; page 2592, line 10: “J. Geophys. Res.” instead of “Jo. Geophys. Res.”; page 2592, line 23: BIOME 6000 Participants in author field, remove duplicate date; page 2593, line 9: rewrite $\delta^{18}\text{O}$.

Interactive comment on Geosci. Model Dev. Discuss., 4, 2577, 2011.