

Interactive comment on “Mid-Pliocene global climate simulation with MRI-CGCM2.3: set-up and initial results of PlioMIP Experiments 1 and 2” by Y. Kamae and H. Ueda

Anonymous Referee #2

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The two authors, Kamae and Ueda, carried out several experiments under the PlioMIP framework. They introduced their climate models, experimental design, and some results in the paper "Mid-Pliocene global climate simulation with MRI-CGCM2.3: set-up and initial results of PlioMIP Experiments 1 and 2".

These experiments are good contributions to the PlioMIP. Thus, I suggest the paper should be published in the PlioMIP special issue, after some minor but important points are revised or updated.

Major point

The two authors carried out AOGCM simulates with flux adjustment and without flux
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adjustment. In the paper, they described that the control experiment with flux adjustment produced a better simulation for modern climate. However, they did not explain how they adjusted flux for the Pliocene experiment. They should explain the method for flux adjustment, or show figures for the adjusted fluxes, in particular for the Pliocene experiment.

Did they use the identical flux adjustment to modern climate in the Pliocene experiment? If yes, why did they think that this adjustment was good for the Pliocene experiment?

I notice that there are clear differences between AOGCM_FA Cont and AOGCM_NFA Cont in the global mean SAT. However, why the differences between AOGCM_FA Plio and AOGCM_NFA Plio are so smaller (see figure 3)?

It is more important that the authors can add some discussions, to show which AOGCM simulations are better for future PlioMIP works, with or without flux adjustment.

Minor point

English should be improved in the paper. I suggest the authors can ask for some helps from editors of GMD/GMDD to improve the English, if it is possible.

The authors should notice the tense in the paper. When they described their experiments, they often used present tense, but suddenly changed to past tense. Try to make them consistent.

There are also some sentences that are too difficult to be understood. Try to improve them.

Page 389, lines 17. What is the meaning of “Over the off the western coast of the continent”?

Page 390, lines 24. “As with the present-day condition, any modifications were applied to 25 the land-sea mask in the Pliocene simulations (e.g. Central American seaway,

Bering Strait, Hudson Bay, and West Antarctica).” It is difficult to understand this sentence.

Page 391, lines 7. “The SiB distribution for the Control run well reproduced that for the present-day represented in Sato et al. (1989). ” It is difficult to understand this sentence.

Page 392, lines 2. “Any modifications are applied for initial condition of the sea salinity.” It is difficult to understand this sentence.

Page 400, lines 14. Change “Above two characteristics are not appeared in AOGCM runs.” to “About two characteristics do not appeared in the AOGCM runs.”

Interactive comment on Geosci. Model Dev. Discuss., 5, 383, 2012.