

***Interactive comment on* “Simulating the mid-Pliocene climate with the MIROC general circulation model: experimental design and initial results” by W.-L. Chan et al.**

W.-L. Chan et al.

wlchan@aori.u-tokyo.ac.jp

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My co-authors and I wish to thank the referee for his/her useful comments which will help us to improve the paper. Our responses to each comment are listed below.

»2023-20: Word choice or sentence structure could be improved: “. . . . recognize how large the calculated and prescribed SSTs differ.”

We will modify the first part of the paragraph to read: The ocean plays a key role in shaping the earth’s climate. It is therefore important to determine where and to what degree the model simulated SSTs differ from the prescribed values.

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Interactive Discussion

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»2015-25: How does the 2 grid gap for the Bering strait compare with the MIROC modern Bering Strait? What effect does it have on your Pliocene simulation for the arctic?

There were no changes made to the Bering Strait when running the model for the mid-Pliocene experiments. We will include a sentence to clarify this.

»2015-25: “Certain areas of water are represented as isolated basins, such as the Hudson Bay and the Mediterranean Sea” Do your present day simulations treat these areas in the same way? If not, how and why do you treat them differently? What effect does this have on the simulation?

Yes. Both the Hudson Bay and the Mediterranean Sea are represented as isolated basins in all simulations, although the former is reduced in size for the mid-Pliocene experiments.

It has also come to my attention that the values given in table 4 for rainfall are incorrect. These values should instead refer to the total precipitation. The correct values for rainfall should then be the difference between precipitation and snowfall. This does not affect the results in the paper. However, the ratio between the precipitation increase in the AOGCM and that in the AGCM is slightly smaller than before. I will make a minor correction at the end of the first paragraph in section 4.1.

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

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