

## ***Interactive comment on “Impact of the Megalake Chad on climate and vegetation during the late Pliocene and the mid-Holocene” by C. Contoux et al.***

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This paper represents a step forward in simulating the climate of the mid-Pliocene, introducing new boundary condition changes that could improve simulations of Pliocene climate. It also makes an important contribution to the palaeoenvironmental constraints on the evolution of hominids. The paper is well structured and written and eminently suitable for publication in *Climate of the Past*. The comments I have are minor, but would improve the paper.

Page 1370, line 18. More description is required of the orbital configuration used for the orbital sensitivity simulations. What time during the mid-Pliocene does the maximum

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summer insolation at 30N occur and how does this compare to other orbital sensitivity simulations that have been run in palaeoclimate studies?

Page 1370, line 22. How well do the model simulations represent regional sea surface temperatures in the mid-Pliocene? There are no sites from the Gulf of Guinea, but there are a number of sites in the eastern Atlantic from which this could be assessed.

Page 1371, line 15. It would be good to again assess these mid-Holocene simulations against the available sea surface temperature data.

Page 1372, line 22. If you are to ascribe confidence from the closeness to the PlioMIP multi-model mean then the reader needs to be able to assess this. This could be achieved from a figure, table or some statistical measure.

Page 1374, line 5. The comparison with the results of Krinner et al., 2012 is further detailed in the discussion, but some of this should be moved to this section. Otherwise the reader is left wondering why there should be differences between these two studies and whether the results described in this section are robust.

Page 1377. What do the differences between Krinner et al., 2012 and this study suggest for the Pliocene simulations presented here and the robustness of the paper's conclusions?

Page 1395, Figure 8 caption. Are the differences plotted in this figure due to differences in the lake free vegetation distributions or is the lake roughness predicted? An extra sentence or two in the caption would tell the reader what they are seeing in this figure.

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