

## Response to Comments from Referee #1

We thank the referee for insightful and constructive comments. Below is our point-to-point reply to these comments (the reviewer's comments are in blue, and our responses are in black).

Review of

"Transient climate simulations of the Holocene (version 1) – experimental design and boundary conditions"

by Zhiping Tian, Dabang Jiang, Ran Zhang, Baohuang Su  
for Geoscientific Model Development

The paper describes the experimental design of a small set of transient Holocene simulations, and a few results.

Part 1.1 is a honest summary of the present knowledge of the climate evolution over the Holocene. Part 1.2 is a honest summary of the main results from previous simulations of the Holocene by different groups. Both parts are based on a good review of the present literature, and I appreciated this synthesis. They provide a good base for part 1.3 which explains clearly why new Holocene simulations, with ESMs (not EMICs), unaccelerated models, etc ... might bring new insights about the Holocene climate.

Part 2 is a very short model description. There is no need to get more in depth, as the model is fully described in the cited literature.

Part 3 describes the experimental design. The description is comprehensive, and would allow any modeller to run a similar set of experiments with its own model (or with the same model).

Part 4 gives a few preliminary results.

In general, the paper is clear, easy to read, with a relevant structure and progression. Part 4 has been extended and some parts are now a bit hard to read. In this part, some

phrases contain a lot of figures, and it is sometimes hard to match up the figures and their region or season. Starting line 327 is a 5 lines sentence that contains 14 figures that describe 2 seasons and 3 latitude bands. Starting line 337 is a 4 lines sentences with figures. This part deserve some rephrasing. Maybe more tables could help the reader.

We have rephrased this part accordingly, and it is now much easier to read. The 5 lines sentence starting line 327 has now revised to three sentences (please refer to lines 327–331), and the 4 lines sentence starting the original line 337 has now revised to two sentences (please refer to lines 338–342). Since Table 3 has already given the global annual and seasonal mean temperatures in the simulations of HT-ALL and the 14 PMIP4 models, and Fig. 7 has further shown the corresponding zonal averaged changes, no more tables are given in the revised manuscript.

Abstract and conclusion are fully supported by the main text. The language seems good, but my own english does not allow me to have a relevant evaluation. I didn't find any typo. Figures are clear and readable. I thank the authors for the care taken with the manuscript.

I have no major concern about the paper, which perfectly fits the GMD category "Model experiment description paper".