

## ***Interactive comment on “Coupled simulations of the mid-Holocene and Last Glacial Maximum: new results from PMIP2” by P. Braconnot et al.***

**J. Hargreaves (Referee)**

jules@jamstec.go.jp

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I am editing this paper, but while reading it shortly after submission I thought of a few comments that are, I think, beyond the “technical” revisions of the pre-review stage. Even though I have only a small number of comments, I thought this would be the more appropriate place for them, so I added myself as a reviewer.

### **Comment 1:**

When I questioned the length of the paper, the desire of the authors was that this paper not be split up into LGM and mid-Holocene sections because of the requirement for a single reference for the PMIP2 project. My first comment arises from this suggestion. If the paper is to be a reference for the project then it should present the set up of

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the experiments as far as possible to be reproducible by other scientists who were not involved in the project. The authors should bear this in mind while revising the manuscript and make sure all important details are included.

Examples:

### *Section 2.1*

Table 1 which contains most of the important details should be referenced sooner.

There should be a reference for the present day distribution of vegetation.

Perhaps the question of spin-up times should be further elaborated. Weber et al (this issue) found evidence that not all the models had reached equilibrium, so perhaps this problem needs highlighting.

Just my personal gripe, but I would like to see discussion of the extent to which the protocols are intended to produce realistic simulations of the climates in question and to what extent they are intended to be model sensitivity tests, only loosely based on the paleo-climate epochs in question.

### *Section 2.2*

It would be interesting to see some overview of which variables/times-scales were included in the database.

Should there be a reference for CMIP?

I think a column showing if the models listed participated in CMIP could be added to Table 2.

In Section 2.2 it says, “we also present model results from PMIP1”, and yet I do not think those models are included in Table 2? If that is the case, please label Table 2 clearly as PMIP2 models only.

*Throughout the manuscript*

In several places it is written “one model” or “most of the models”. Why do you not name which models show which behaviours? It seems like you are hiding something by excluding this information. For example, some people might assume that EMICs are the outliers! Also, don’t individual modelling groups want to be able to see easily where their model lies in the ensemble? As someone not involved in the PMIP2 runs, I would still like to know where “our model” (MIROC) lies, but I can’t work it out from the text or figures.

**Comment 2:***Section 3*

While the model results of PMIP1 and PMIP2 are compared and shown to have differences, there is no indication as to which is a better representation of the climates of 6ka and the LGM. While I don’t expect a detailed comparison with data, some discussion of whether the data are more consistent with PMIP1 or PMIP2 would add some useful context. Without this context I find this section rather meaningless.

**Comment 3:**

In general I find the manuscript rather rambling. I don’t really grasp the importance of all the details and wonder if they are all required. I am sorry to be so vague about this part but my impression is that a thorough revision of the text with the aim of increasing the clarity of the arguments presented could greatly improve the manuscript.

**Minor comments:***Section 1*

“Section compares the large...” A number “3” is missing?

*Section 3*

You might say what model variable you are using for the temperature. Is it surface temperature, or 2m temperature or some other variable?

I think “dispersion” is a confusing word and would just use “range” or “spread”.

In the text, “cooling between DJF and JJAS (Figure 2c)”. JJAS is not defined in the paper. In the caption to Figure 2 it says not “JJAS”, but “JJA”. Which is it?

#### *Section 4.1*

“panel”->”panel”

“..some of the additional simulations included in this set”. I am not sure what this means. Do you mean some of the simulations included in Figure 7 that are not included in Figure 6?

#### *Section 4.3*

“no show”-> “not shown”

“Part of it”-> “Part of this”

“Indeed, in order to quantify the vegetation feedback without ambiguity, one should compare the OAV 6ka experiment with an OA 6k experiment for which the vegetation is prescribed the vegetation simulated in the OAV 0k experiment, as suggested by the PMIP2 protocol.” As well as containing a number of typos, this sentence does not make sense to me in that I cannot work out what it is that is suggested by the PMIP2 protocol.

Is it OAV or AOV? There is an AOV in the first paragraph of this section.

#### *Section 5.1*

“account” -> “accounts”

#### *Section 5.2*

“In addition, it is difficult with standard model output...” What does this mean? I suspect you refer to the limited model variables available on the PMIP database, but I am not sure. Please clarify.

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“...estimations of cloud radiative forcing is ambiguous over highly reflecting surfaces..”.  
Do you mean, “...the estimate of cloud radiative forcing over highly reflecting surfaces  
is uncertain.” ?

*Acknowledgements:*

I think you had better clarify the date stamp. Is it 10th January 2006 or 1st October  
2006?

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Interactive comment on Clim. Past Discuss., 2, 1293, 2006.

CPD

2, S859–S863, 2007

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