Clim. Past Discuss.,
https://doi.org/10.5194/cp-2019-174-RC1, 2020

Climate of the Past Discussions

Interactive comment on "Large-scale features of Last Interglacial climate: Results from evaluating the *lig127k* simulations for CMIP6-PMIP4" *by* Bette Otto-Bliesner et al.

Anonymous Referee #1

Received and published: 27 January 2020

The manuscript covers a topic that can be of great value to the climate research community and the authors present a wide variety of data sets and analyses that can yield valuable insights. However, I feel that at present the manuscript is too incomplete for a thorough review and in the following I will confine myself to a number of overall remarks that I think the authors should carefully address in a resubmission of the manuscript.

-> Ensure that the set of climate simulations is complete and that whenever possible the same set is used in all figures and analyses. When this is not the case it should be clearly mentioned. How was the set of 127k simulations determined? Why are for instance some models from the recent publication by Scussolini et al. not included?

Printer-friendly version

Discussion paper

-> A similar remark for the 6k simulations: ensure that whenever possible the same set is used in all figures and analyses (in figure 17 there are only 5 6k models, is that all of them?).

-> Are the comparisons of 127k and 6k based only on models that performed both experiments?

-> If an analysis can only be done on a subset of models, make it plausible that the results are not impacted too much by leaving out a substantial number of models.

-> Show the robustness of your results and statements by statistical measures. Are the multi-model-mean results significantly different from zero considering the inter-model spread? Are the presented correlations significant?

-> Indeed PI biases in models can be important, but if these data are presented then a much clearer link to the ensuing 127k and 6k results should be made. Can some of the palaeo results be explained by the PI biases? Are the biases consistent across these different experiments? Present more real analyses like in figure 8, not only a description of the results.

-> Hardly any underlying mechanisms are described in the manuscript. Perhaps this is outside of the scope of this manuscript, but it appears to me that many of the mechanisms that can explain the PI, 6k and 127k biases or results have already been discussed elsewhere and references should thus be provided.

-> Why is no comparison of the 127k results made with previous last interglacial experiments? For instance Lunt et al. (2012)? Perhaps these experiments did not exactly target 127k, but this could well be of second-order importance for the results of the experiments. Did the model response change from PMIP3 to PMIP4?

-> Clarify what this manuscript adds to previous more targeted manuscripts on for instance precipitation (Scussolini et al, 2019) or sea ice (Kageyama et al., 2019).

Interactive comment on Clim. Past Discuss., https://doi.org/10.5194/cp-2019-174, 2020.

Printer-friendly version

Discussion paper