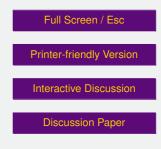**Climate
of the Past**
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Discussions

Interactive comment on "The influence of atmospheric circulation on the mid-Holocene climate of Europe: a data-model comparison" *by* A. Mauri et al.

Anonymous Referee #2

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Review on "The influence of atmospheric circulation on the mid-Holocene climate of Europe: a data-model comparison" by A. Mauri et al.

This study provides an extended spatial reconstruction of the mid-Holocene temperature and precipitation over Europe for winter and summer. Moreover, they compared this updated data set with climate simulations based on the Hadley Center coupled ocean-atmosphere model (HadCM3). The presentation of the work is mostly clear, the paper is written in a clear language, the data set and the model experiment design are properly explained and the figures (overall) are easy to understand (although the quality of some figures could be improved). Nevertheless, I think the authors have treated this manuscript in a rather simplistic way and they did not put much effort in putting this

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updated data set in a better light. To be more precise I have some major points (see my comments below) that I think should be addressed before this manuscript can be accepted to be published din CP. In summary, the manuscript needs to be significantly revised and improved, and carefully proof-read, before it should be submitted again for considerations of publication.

Major points

1. Pollen data set – Spatial coverage The authors should discuss in more details the influence of the spatial coverage. Central Europe has more data sets comparing to the eastern part. How do these differences in the spatial coverage affect the final data set?

2. Pollen data set – uncertainties The authors should discuss the robustness and uncertainties of the reconstructions. To be more specific, the authors should provide more information about how many samples has each grid point, what was the minimum number of samples that was used as a criteria for taking into account a grid point and what are the time windows (e.g. 5.5 – 6.5 kyr BP or 6.5 – 7.5 kyr BP) of the samples.

3. Pollen data set – standard deviation I think to better improve the manuscript the authors should show a figure for precipitation and one for temperature with the standard deviation of the reconstructions.

4. Comparison with other data sets Even it might sound trivial, I think showing a figure in which the authors compare their data (in terms of climatology) with the data from Davis et al. (2003) and Cheddadi et al. (1997) would give the manuscript more motivational meaning.

5. Model choice The use of a climate models in comparison reconstructed data is very useful. But employing just one particular model does not necessarily mean the all the models are missing the spatial structure capture by the data. The authors did not treat this aspect very carefully and this is one of the major drawbacks of this manuscript. Either they use more models (PMIP3 data base) or they do not take into account a

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comparison between their data and model data. The comparison with just one model data does not necessarily imply that the paper deals with model-data comparison, as implied in the title of the manuscript. I think the use of HadCM3 was more like cherry picking to prove that their data are much better compared to model simulations.

6. Novelty of the results. Although I do not contest the quality of the data, at the end it is just an updated version of previous published data sets. Just stating that this data sets includes more sites compared to previous reconstruction, does not necessarily mean that this data set is better or show completely different patterns. The authors should put more work in showing why this data set needs to be published.

Minor points and suggestions

1. Figures 2 and 3 - The correlation map between the modern climate and SCAND and AO. These figures should be treated separately. Moreover, I think showing a map with the precipitation and temperature climatology for the modern climate next to the correlation maps will improve the scientific quality of the paper.

2. The authors should show also the significance of the correlation coefficients. They should hatch the areas where the correlation is significant.

3. In there any particular reasons why the authors focused on the Scandinavian pattern in summer? It is a little odd that the East Atlantic pattern is not considered as a candidate explanatory circulation pattern, as the second ranked northern hemisphere teleconnection pattern in terms of variability explained in the study of Barnston & Livezey (1987).

4. For the paper to be publishable I would suggest to the authors to adopt a different structure: a) Make it a model-data comparison paper, in which they should include all the models available (see PMIP3 database) or b) make it just a data paper, in which the authors should show more results regarding their data set and why this data set is better than the other reconstructions available.

Interactive comment on Clim. Past Discuss., 9, 5569, 2013.