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Climate of the Past Discussions

Interactive comment on "Spatial climate dynamics in the Iberian Peninsula since 15 000 Yr BP" *by* P. Tarroso et al.

Anonymous Referee #2

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The subject of the paper is quite interesting and is well written. However, the methodology is quite confusing and the results of the climatic variables reconstructed sometimes has no sense from a physical point view. In addition there is some other important issues that the authors should clarify before publication.

I am totally in agreement with all comments posted by referee #1. Following i highlight some of his comments and add some more others.

Major comments.

-Which is the temporal resolution of pollen data? 1000 years? if it is less why to loss this finer time resolution?

-I can not understand the election of the climatic variables employed in this study. The

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authors should first clarify the variables (see comments ref #1) and later to argument why they choose such variables. From my point of view probably each place and kind of pollen taxa should respond in a different way to different variables depending on the area, mainly due to the large spatial climate heterogeneity in the Iberian Peninsula. This means that in one place proxy data can give valuable information on one climatic variable while in other area this could be totally different. A previous evaluation of this would be desirable.

-The authors state that the main objective of the paper is to define areas within the Iberian Peninsula that share similar climate evolution. For this task they firstly construct the climatic fields and later apply a clustering method for grouping areas with similar time evolution. I can not find the sense of grouping Tjan, Tjul, Pmin in a unique area. Probably it has much sense to make a classification for each climate variable. In fact i can not find the sense of the regions obtained. For example in the south-east of the Iberian Peninsula there is a strain mix of clusters (probably this is connected with the next point). In addition it has no sense that regions that are together and that at annual time scales vary in a similar way present so strong changes at millenian time scales (for example for Tjan)

-Other aspect of the methodology i can not understand is why the final resolution is so fine. What is the sense of this? nicer maps? The effects of the repeated spatial interpolations performed could be quite dangerous, specially when there is some periods (the beginning) with just a few data. If the data purely reconstructed are the 31 points why do not perform the clustering exercises just over this data?. Why not working only with anomalies?. More examples of this can be the reconstructed maps of Figure S-1.

- Regarding the maps of the climate variables, do the authors really think that it is any probability that coastal areas of the mediterranean were much colder (Tjan) than the North Plateau (most than 10 degrees), or. differences of the anomalies of almost 30 degrees? I think that authors should check the physical consistence of this results because they are almost impossible from a climatic point of view. Other aspect probably

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related to interpolation is that some times the largest anomalies appear in places where data is scarce, like in the center/west of the iberian Peninsula or around the Ebro River mouth.

In summary, apart from the comments of referee 1, the authors first should argument clearly the selection of the climatic variables to reconstruct. Second they should check the physical consistency of the series reconstructed at places where they have proxy data. And if they desire to present full maps of the IP they should indicate the value reconstructed and the error associated to such statistical prediction. Kriging permits to do this and it is the most commonly used in the construction of climate grid data.

Interactive comment on Clim. Past Discuss., 10, 3901, 2014.