

## ***Interactive comment on “East Asian Monsoon and paleoclimatic data analysis: a vegetation point of view” by J. Guiot et al.***

### **Anonymous Referee #1**

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#### General comments

This paper discusses Holocene climate changes in China and Mongolia from viewpoints of both temporal and spatial variabilities, using several different proxy datasets and improved numerical reconstruction methods. The authors present (i) curves of several climatic parameters peaking at different ages, (ii) validation of inverse modeling technique of climate reconstruction, and (iii) spatial distribution pattern of climate at 6k time slice. The results are rich in implication for the researchers of monsoon climate changes. I particularly enjoyed reading about changes of hydrological stress for plants which do not coincide with changes of precipitation, possibility to reconstruct past climatic conditions which do not have their modern analogues, and north-south contrast of climatic anomaly from the present. Both datasets and approaches used in

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this paper seem to be robust, and I basically recommend this paper for publication in *Climate of the Past*.

I have two concerns about this paper. First, this paper clearly covers three different topics which are (i) temporal variability, (ii) methodology, and (iii) special variability. Though the valuation is ultimately up to the editorial policy of the journal, I got an impression that the scientific target/focus of this paper is a bit unclear. It is perhaps for this reason that, after reading through this very dense manuscript, I was left with a feeling that I was a little uncertain as to what the message of the authors is. I am not suggesting to divide the paper into three papers. However, I would encourage authors to explain in the introduction chapter more about the rationale to put those three topics together in one paper.

Secondly, I wanted to read more about implications of the results in larger pictures of palaeoclimatology and palaeoecology. In other words, it was inevitable to get impression that the paper is somewhat descriptive. Does the optimum hydrological condition to the tree growth contribute to reconcile any ongoing debates of paleo-biogeography? Does the trend of climate changes reconstructed using more robust method tell anything about forcing mechanisms of the Holocene climate changes? Does the spatial distribution of climate give any insight into mechanisms of Holocene climate changes? I strongly believe that addressing discussions to these questions would make the range of the beneficiaries of this paper much wider.

#### More specific comments

Location map of Bayanchagan site as well as other sites other sites mentioned in this paper (such as Dongge and Sambaocaves) is necessary. Otherwise it would be only Chinese readers who would be able to get proper message out of this paper. I am aware that this overlaps with the points raised by the other reviewer, but just thought that it would be good to make the voice louder.

It seems that the author considered possibility that a sort-lived cooling event at c. 8.5-

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8.3 ka in Inner Mongolia was equivalent of the famous 8.2 ka events, and rejected (or at least suspended) the possibility because "several such peaks are reconstructed during the Holocene";. I am personally interested in knowing if those "several peaks" have chance of being equivalents of the Bond events and/or the monsoon declines reported from Dongge cave by Wang et al. 2005 Science.

#### Technical comments

The manuscript seems to need checking for grammar by native English speaker.

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