**Climate
of the Past
Discussions**

Interactive comment on "Clustering climate reconstructions" *by* G. Bürger

Anonymous Referee #2

Received and published: 7 June 2010

This paper presents two related ways to compare ten reconstructions of temperature for the last millennium (1000-1850). The author uses the "coherence" notion to build a distance metric which is employed in a hierarchical ascending clustering (HAC) method to define "clusters" of reconstructions techniques. Any two clusters are supposed to be inconsistent between them, while reconstructions in one same cluster are coherent (see my comment/question below about that). Based on the same distance metric, a multi-dimensional scaling (MDS) technique is applied to visualize on a 2D-projection the reconstructions and their associated clusters.

This paper deals with an important topic within the scope of CP. It presents interesting statistical tools (although not new, HAC and MDS) that seem to be correctly applied, although MDS would deserve a few more explanations. The author gives proper credit to related works. The paper is well structured and written in good English (although I am not a native English speaker).

My concerns are minor, and are related to clarifications of some parts of the manuscript. Hence, I recommend publication of this article in CP after some minor revisions.

I must say that I share most of the remarks raised by rev.1. Since I have read the response made by the author, in the following, I will not come back to those points.

Detailed comments:

p.2, lines 13-16: The example does not seem right. Indeed, if truth is 57.5%, then both models are correct. So, why must one of them be dismissed as wrong?

P.2, lines 18-19: I agree with rev.1. I don't know what "reasoning under uncertainty" and "paraconsistent logics" are. Instead of dropping these references, a very short idea of what they mean or imply would be nice.

p.4, lines 18-21: I do not see why "any two clusters" would be "inconsistent". Clustering methods provide a way to structure/understand the variability of the data (here reconstructions). Since the distance is based on coherence, that basically means that two reconstructions in the same cluster are more coherent than two reconstructions in two different clusters, not that they are inconsistent. I guess that the notion of "inconsistency" would depend on the signif. level used. Some more explanations are needed here.

p. 5, about table 2 and after: Although the author has correctly answered to the main part of rev.1's question about the significance level, I would like to reformulate a small part of it. What happens to the results of this paper if a 95% or 90% significance level is used instead of the 99% one? Does only the clustering result change (at least in terms of number of clusters)? Or also the MDS projections?

p.6: a short but informative description of how MDS works (e.g., what MDS1 and MDS2 are) would be much appreciated.

p.6, line 9: "The clustering process is shown in Fig. 1" -> "The clustering result is

shown. . ."

C277