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Climate of the Past Discussions

Interactive comment on "Mid-Holocene climate change in Europe: a data-model comparison" *by* S. Brewer et al.

S. Brewer et al.

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Major points:

Interpretation of clusters. We have improved the spatial representation of the data clusters by a) using a gridded data set and b) including the coordinates in the cluster analysis. We believe that the more coherent regions obtained will result from similar causes, and that this spatial coherency helps in comparing the data and models.

Assignation of model grid points to clusters. The clusters represent a wide variety of possible patterns of climate change, which we believe to be sufficient to encompass changes during the mid-Holocene. The fit of any given model gridbox is assessed on the basis of its distance to the cluster, and the accumulation of these distances is the measure used to judge the overall fit. We have kept the assignation of all gridboxes, as

we wish to retain all distances, even large distance when judging the fit of the model. Any model that has a poor fit to the data may be identified by its large climatic distance. An example is the model IPSL that has a particularly cold climate for the mid-Holocene, and is shown as fitting poorly to the data. At present, we do not have a method for testing a 'significance' of these fits, and hope to work on this in a subsequent study.

Mismatch of data and model anomalies. To help reduce these mismatches, we have a) used a gridded data set to reduce the local site based effects and b) altered the comparison. We compare each model using values of changes in climatic parameters that are relative to the overall changes simulated by that model. This allows us to compare the sign of climate change, without this being obscured by differences in the magnitude of change. The differences in magnitude of change are now included as a separate comparison between data and model.

Minor problems

1) We have corrected the number of pollen sequences used

2) We have changed all instances in the text to 'drier' 3) We have changed the scales in figure 1

4) We have changed the caption of figure 3 (now figure 4)

Interactive comment on Clim. Past Discuss., 2, 1155, 2006.