

Interactive comment on “Identification of climatic state with limited proxy data” by J. D. Annan and J. C. Hargreaves

Anonymous Referee #1

Received and published: 26 March 2012

The paper is devoted to investigation of how a data-assimilation method estimates the posterior in the case of reconstruction of hemispheric mean temperature by assimilating pseudo-proxies. Here, the prior is not updated accordingly to the weight of an ensemble member, and the method is applied in an idealised framework where no forcing is used during computational simulations which allows for a huge ensemble of 10000 members. There is also considered an influence of external forcing on the performance of the data-assimilation method.

My main comments are about the part devoted to the forced response. In this part, forcing is external, meaning it is applied after the simulations are performed, and it is the same for every ensemble member. Moreover, the same sinusoidal forced signal is applied to the pseudo-proxies. This is why, I believe, the weights of the ensemble

C169

members vary less than in the unforced case.

I am quite surprised by the almost homogeneous pattern of RMS error in the forced case. Could it be related to the common temperature pattern applied to the existing unforced runs? I would like the authors to comment on this. And it would be quite convenient to see this pattern.

Moreover, the authors show a figure of potential predictability in the unforced case. But it would be interesting as well to see potential predictability in the forced case, and the difference between two of them.

Interactive comment on Clim. Past Discuss., 8, 481, 2012.