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Climate of the Past Discussions

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

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Thank you for your comments.

1 We will discuss more clearly the relationship to the work of Goose et al. Although previously a degenerate particle filter, their more recent work (Dubinkina et al) is fully probabilistic and directly comparable to ours.

We believe our results should help in the interpretation of these results, in demonstrating the limits to skill that can be achieved with limited noisy data (while also supporting that significant positive skill can be found, especially in the large-scale averages).

2 The work by Goosse and colleagues has tested a range of intervals from 1 to 20y and mostly uses 10y intervals (I believe), but Dubinkina et al use annual data. It had

been our initial intention to look in more detail at truly sequential methods, but the lack of meaningful predictability makes this difficult, or perhaps pointless.

3,4 more discussion will be added.

5 Yes, we initially intended to use the trailing 20 years only for prediction, but ended up not looking more than 1 year ahead, so only used 121 years in all. We will tidy this up in the manuscript.

6 Note that the scaling is subsumed by the 0.4 signal to noise ratio, since this automatically implies a specific scaling. EG, for a standardised proxy with standard deviation of 1, then the 0.4 SNR implies it must be scaled to have 2.7x the standard deviation of the target.

9 Unrealistic variance is certainly part of the problem, but also it is partly just that RMSE and correlation are not linearly related.

10 The underlying assumption (approximation) is that all forcings are equivalent in that the response has the same pattern, which is most easily prescribed from the GHG case. We will clarify this.

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