

## ***Interactive comment on “A new global reconstruction of temperature changes at the Last Glacial Maximum” by J. D. Annan and J. C. Hargreaves***

**J. D. Annan and J. C. Hargreaves**

jdannan@jamstec.go.jp

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Thank you for the review. We would like to give an initial response prior to the closing of the open discussion phase.

The main concern is over the robustness of the MARGO data set, and the implications of this for our result. We do acknowledge that there are some concerns over the calibration of the MARGO data, although its authors did make substantial efforts to reconcile and account for discrepancies between proxies (eg see Methods of Waelbroeck et al). We will certainly make clearer in our revision that our reconstruction is conditional on the proxy data. We would also like to add an additional sensitivity test

C2574

along the lines of the following: if we cool the entire tropical region of the MARGO data set by 1C (note that the resulting mean data anomaly in the Tropical Atlantic exceeds the 3.0C value used by Schneider von Deimling et al), the resulting land/sea ratio in the whole proxy data set is reduced to about 2.5, which is close to the mean of the PMIP2 ensemble. The resulting reconstruction based on this adjusted data set has a global mean temperature anomaly of 4.3C. The reconstruction also has a slightly worse fit to this adjusted data set, with a correlation of only 0.68.

We do also now have a more meaningful estimate of climate sensitivity to refer to (Hargreaves et al, GRL in press: <http://www.agu.org/pubs/crossref/pip/2012GL053872.shtml>), which again specifically emphasises the possibility of colder tropical LGM analysis, leading to a higher sensitivity estimate.

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