Clim. Past Discuss., 10, C487–C488, 2014
www.clim-past-discuss.net/10/C487/2014/

Climate of the Past Discussions

Interactive comment on "Pliocene diatom and sponge spicule oxygen isotope ratios from the Bering Sea: isotopic offsets and future directions" *by* A. M. Snelling et al.

A. M. Snelling et al.

asnel@bgs.ac.uk

Received and published: 17 May 2014

We thank Dr Hendry for her comments on our manuscript.

There are insufficient quantities of sponge spicules in the samples to pick pure aliquots for sponge δ18O by our method (fluorination).

With regards to the apparent match between the δ18Osponge and the stacked benthic δ18O record (Lisiecki and and Raymo, 2007), we do not have a conclusive explanation as to why the amplitude of the modelled δ18Osponge is much greater. Whilst we speculate in the manuscript that this could be due to a mixture of non-equilibrium fractionation and/or inter-species variations in the fractionation of δ18Owater, modern day

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

calibrations of δ18Osponge are needed to address this further.

With regards to whether we expect the Bering Sea to record a "global" δ18O signature, we would expect both surface and deep water δ18O to be strongly dominated by local oceanographic conditions including changes in the Bering Sea gateway and regional ice-sheet dynamics. We are currently working on a longer diatom δ18O record from which we hope to reconstruct some of these changes, which in turn may help to explain why the "relationship" between δ18Osponge and stacked δ18O appears to breakdown at c. 2.8 Ma. Whilst local effects may mean that it is not ideal to compare the δ18Osponge record to the global stacked benthic δ18O record, there are no local benthic δ18O records available from the Bering Sea for this time period.

References Lisiecki, L. E. and Raymo, M. E.: Plio–Pleistocene climate evolution: trends and transitions in glacial cycle dynamics, Quaternary Sci. Rev., 26, 56–69, 2007.

Interactive comment on Clim. Past Discuss., 10, 2087, 2014.