

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.**

Anonymous Referee #2

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In this paper, the authors present new d18O data from both diatoms and sponge spicules from the Bering Sea. This type of data is very new and should be published. The authors observe an offset between the signal recorded by the diatoms and the signal in the sponge spicules, while both diatom size fractions show similar d18O. This is very interesting and demonstrates 1) the ability of diatom d18O to reliably record sea water d18O in areas where carbonates are scarce and 2) that sponges on the other hand are not at equilibrium with bottom sea water and therefore their d18O signal can not be used in a straightforward way to reconstruct past d18O in sea water. Nevertheless, the authors show that despite disequilibrium issues sponge d18O signal follows the global benthic d18O curve based on forams. This relationship is interesting and

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needs to be further explored in the future.

Overall I find the manuscript clear and concise and the conclusions logical and interesting.

I agree with the other reviewer that it would be more appropriate to derive the sponge d18O estimates from the volume rather than the surface area of the spicules in the samples if at all possible.

In figure 5, the authors plotted the sponge d18O versus Lisiecki and Raymo's stack. It would be good to have the diatom d18O plotted as well on the figure (as these data are not shown in the paper).

What is the difference between surface and benthic d18O in the Bering sea today (for comparison with the variability observed in the sponge spicules)?

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

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