

# ***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 #3**

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### General comments:

The authors present a data set of d18O from biogenic opal extracted from marine sediment samples. They evaluate differences between the d18O of diatom opal from two different size classes and compare the d18O in diatoms and in sponge spicules from the same sample. The paper is well written and the data presented mainly support the conclusions of the authors. In general, I have no major concerns regarding publication of the manuscript, however, would like to suggest some clarifications to support the logic of the manuscript for the reader. In principle, the paper deals with two data sets – one regarding the diatom size fractions and one regarding the comparison between diatoms and sponge spicules. That is difficult to follow in the beginning and should be

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made absolutely clear in the nomenclature and presentation of results as well as in the discussion.

Specific comments:

Chapter 3.2: The present header is misleading since it only refers to the diatom – sponge spicule comparison. Probably introduce another sub-chapter to separate between the diatom size class topic and the diatom – sponge spicule topic. Similarly, it might be preferable to split up figure 3 to hold the topics separate.

Chapter 3.2.: The last sentence of the chapter claims that there is a common trend in the d18O diatom and sponge records, but only R2 is shown. The actual time series can be easily integrated into figure 4 to directly provide the original data.

Nomenclature of d18O sponge: It should be made absolutely clear that there is a difference between a sponge dominated size class and the respective measured d18O and the 'modelled' d18O (probably name the latter sponge asterisk). The sole subscript 'sponge' implies that you present real measured sponge data.

Discussion/Conclusions:

In the discussion it is suggested to use the size fraction 3-15 $\mu$ m for future interpretations, whereas in the conclusions it is referred to the bulk diatom sample. It should be consistent throughout the text what you suggest.

Comparison d18O sponge with the benthic foraminifera stack: Even if I can follow your suggestion to have a closer look at the d18O sponge figure 5 also gives some doubts and is not as convincing as is expressed in the conclusions. I would ask for a more cautious expression here.

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

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