

Biogeosciences Discuss., referee comment RC2
<https://doi.org/10.5194/bg-2022-187-RC2>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on bg-2022-187

Anonymous Referee #2

Referee comment on "Technical note: No impact of alkenone extraction on foraminiferal stable isotope, trace element and boron isotope geochemistry" by Jessica G. M. Crumpton-Banks et al., *Biogeosciences Discuss.*, <https://doi.org/10.5194/bg-2022-187-RC2>, 2022

Crumpton-Banks and Tanner et al. did a great job in describing and evaluating various experiments using the ASE and its influence on geochemical proxies. They show that there is no effect between extracted and non-extracted sediment samples, which should encourage the community to share precious sedimentary material and generate biomarker, trace metals and boron isotope data from the same samples.

The manuscript is very well written and informative. In general, the references are up-to-date and the data support the conclusions. The figures are clear. I recommend to publish this paper in *Biogeosciences* after addressing my few (minor) comments below:

Minor Comments:

Line 50: be consistent with naming of sample ID, compared to line 48.

Line 52: same as above

Line 54: you state here that the samples were washed with miliQ and in line 59 you used deionized water.

Lines 56-59: I would like to see a better description for the extraction method: How long was each static cycle? What was the amount of solvent in the cell? What cell size? Would you expect it to also show no effect on different cell sizes, amount of sediment and number of static cycles?

Table 1:

- I don't understand the "number weighted and analysed" term. Could you explain that a bit better in the text or choose another title in the table?
- Be consistent with the naming of the core, also add the Leg number to Site 926 and 1406. Add. Hole to 1406. Should be hole B?
- Be consistent with the succession of the cores in the Tables and Figures. It makes it easier for the reader to look up values between tables and figures. Change the succession for Table 1, starting with 1168 ->1406 -> 926, like you do for the other tables and figures.

Fig. 1: are *T.trilobus* and *G.menardii* in a) and b) treated or untreated? And could you add this information to the caption?

Line 200: If the $\delta^{13}C$ and $\delta^{18}O$ variability is attributed to small sample size, wouldn't we expect the $\delta^{18}O$ for *O.univ* also to be high?

Line 204: (Fig. 4b)

Lines 230-271: it would help the reader to follow the figure in chronological order. For example, in Section 3.3 the authors describe Fig.4b->e->c->a->d->f. Wouldn't it be easier to sort the figures in the order they are discussed or is there a reason for the sorting now?

Lines 230-271: Can the authors doublecheck the difference values (in percentage) in this section? In some cases I don't get the same values when calculating them from the results in Table 3.

Line 245 (Fig. 4c)

Line 280: (Fig. 2d)

Line 312: A nice addition to the conclusion would be to point out that you can not only compare alkenone ep with d11B, but also Mg/Ca temperatures with GDGT-derived and alkenone-derived temperatures as the authors mentioned in the introduction.

General comment:

I am not fully convinced of the explanation that the sample size caused the differences in G.mio and O.uni in 1168. For Mn/Ca D.ven seems to have a big offset despite its big sample size. For Li/Ca and U/Ca O.uni seem to have no significant offset despite their small sample size. But due to the lack of consistent offset between treated and untreated sediments I agree that the ASE treatment should have no significant effect on the trace metals, especially not on the boron isotopes. A more in-depth study of the samples with bigger offsets would be interesting for the future.