

Interactive comment on “Decoupled carbonate chemistry controls on the incorporation of boron into *Orbulina universa*.” by E. L. Howes et al.

Anonymous Referee #1

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This study presents boron data (B/Ca and $\delta^{11}\text{B}$) for planktonic foraminifera *O. universa* cultured in a decoupled carbonate system. The authors concluded that the B/Ca ratios correlate with $[\text{B}(\text{OH})_4^-/\text{HCO}_3^-]$, while the $\delta^{11}\text{B}$ values depend solely on pH. Although the data are fundamentally valuable, the culturing system is a concept recycled from a report by Kaczmarek et al. (2015b, BG), who used benthic foraminifera *A. lessonii*. Moreover, the discussion is repetitive. In addition, the quality of the data and the discussion are inferior compared to that earlier report. If this work cannot venture beyond a case study, I think that it is difficult to justify its publication in BG.

Specific comments:

Methods: $\delta^{11}\text{B}$ data should be normalized to NIST SRM 951, not NIST SRM 610, as most of the cited reports of the literature do.

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L345: Is $\delta^{11}\text{B} = 18.8\text{‰}$ at pH 8.05 a mean value of the three experiments with different $[\text{CO}_3^{2-}]$ concentrations? Justify that calculation. This is also inconsistent with Fig. 3A.

L347-349: In spite of the large analytical error, it is difficult to conclude that no significant effect of $[\text{CO}_3^{2-}]$ on $\delta^{11}\text{B}$ was found. Is there any correlation between B/Ca and $\delta^{11}\text{B}$?

L447-448: The meaning of “The proxy should therefore be ground-truthed using core top samples” is unclear.

References: The cited Hanehan et al. (2015) is missing from the list of references.

Tables 1 & 3: Order the data at pH 8.05 in ascending order according to $[\text{CO}_3^{2-}]$.

Fig. 3: Put alphabet characters on each graph. The median values are shown as red circles, not black.

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