

***Interactive comment on “The B/Ca proxy for past
seawater carbonate chemistry
reconstructions-laser ablation based calibrations
for *C. mundulus*, *C. wuellerstorfi* and its
morphotype *C. cf. wuellerstorfi*” by F. Kersten
et al.***

L. Skinner (Editor)

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Dear F. Kersten and co-authors,

Two reviewers have now posted comments on your manuscript in Climate of the Past Discussions. Both reviewers raise important points that I feel should indeed be addressed.

C2309

You will note that both reviewers refer to the need for greater attention/inclusion of statistical analyses (uncertainties and their propagation for example), and express some concern over the possible impact of a few unreplicated outliers on stated sensitivities/slopes.

Both reviewers also raise important concerns regarding the need to consider inter-method comparability (i.e. solution chemistry versus laser ablation; due arising from intra-sample variance aliasing and/or non-matrix matched analytical calibration issues), as well as the need to describe and document more clearly the *C. cf. wuellerstorfi* morphotype that has been analysed. The latter is clearly of great importance if the primary contribution of the present study is indeed to provide a usable calibration of an abundant, yet poorly recognised, epibenthic morphotype (other workers need to know what they are picking if they are to try to replicate or apply this calibration).

Both reviewers also picked up on the possible redundancy of section 4.2 concerning the link between carbonate saturation and water mass ‘age’ (where age is not clearly defined: ‘ideal age’, time since last surface contact, radiocarbon age?). I also found this section to be misplaced perhaps; it is clearly an aspect of seawater chemistry that is best addressed either via theoretical arguments (taking into account organic carbon remineralisation rates, water mass transit times, air-sea exchange effects etc...) or via direct empirical observations of seawater chemistry. I therefore would also urge that you reconsider the inclusion of this section in its present form.

Many of the comments made by the reviewers (e.g. including numerical dates for the core-tops, expanding the dataset to include more samples that replicate the highest and lowest B/Ca values in Figure 7a) are of a very substantial nature, and I would therefore encourage you to draft a complete point-by-point rebuttal of the reviewers’ comments, and to re-submit a suitably revised manuscript for further consideration for publication in Climate of the Past.

With best regards,

C2310

Luke Skinner

Interactive comment on Clim. Past Discuss., 9, 4425, 2013.

C2311