

Interactive comment on “Planktonic foraminiferal spine versus shell carbonate Na incorporation in relation to salinity” by Eveline M. Mezger et al.

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Further to the author's comments on my earlier review (included below), two points may be added. (1) It would always make sense to work on the highest systematic level possible, i.e. genotypes and morphotypes, if possible. (2) Both round and triangular spines differ in cross section at their base and are round at the top. It would hence be the base to look at for the respective difference in spine type. Both of the comments may be taken into consideration for future analyses to again improve the level of the scientific approach.

Earlier review:

It is a pleasure to read the considerate and well-written paper of Mezger and coauthors

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on “Planktonic foraminiferal spine versus shell carbonate Na incorporation in relation to salinity”. In addition to the review of Takashi Toyofuku’s, I only have two more comprehensive points to be considered by the authors, as well as some small points to be taken into consideration before publication of the paper.

It would be interesting and important to know, which of the morphotypes of *T. sacculifer*, and which morpho- and genotypes of *G. ruber* are analyzed here and are represented by the data. Since some of the different types have different ecological demands, the new Na/Ca possibly represent very specific ecological conditions, which in turn may be reconstructed when using Na/Ca as a proxy of past conditions. The data plotted in Figure 4 may even show more structure when being plotted separately for different morphotypes? Also, “variability within one species” (line 256) may turn out to make sense for different morphotypes (also lines 258-259) ?!

In section 3.2, Scanning electron microscopy, the authors may want to consider that there are two different types of spines both in *G. ruber* and *T. sacculifer*, one being round and the other being triangular (see, e.g., Schiebel and Hemleben, 2017). The very different spine widths reported in lines 205 to 208 may result from the two different types of round (thinner) and triangular (thicker) spines, and may hence represent two groups of data in each of the species, and, even more importantly, Na/Ca may vary between the two types of spines.

Minor points: Line 22: better refer to carbonate, not calcite, because of other carbonate species like vaterite (Jacob et al., 2017); in the entire manuscript Line 23: better use “taphonomic alteration” than “taphonomy” (also line 79) Line 56: bivalves have no spines (Zhao et al. 2017), and I cannot see any connection here Line 108: the “Whole shell” is called “test” in foraminifera; why do the authors avoid the term in the entire manuscript? Line 171: s-pecimen Line 179: *ruber* italic Lines 197-198: “in mixing signals between spine base and shell carbonate”, possibly resulting from the resolution of measurements Line 208: “Salinity correlates negatively with spine width”, may be turned around to keep the right order Figure 5: please indicate which data refer to en-

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tire test and which to shell (-only) measurments: One comma too many in the caption.
Line 355: better: "When spines fully account for. . ." Line 367: better "up to 2-3 mm long ..."
Line 374: (Figs. 5 and 8), check in the entire manuscript Line 378: ... sacculifer); open parentheses
Line 395: Na concentration?

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-454>, 2018.

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