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Biogeosciences Discussions

Interactive comment on "Salinity-depending carbon and nitrogen uptake of two intertidal foraminifera (*Ammonia tepida* and *Haynesina germanica*)" *by* Michael Lintner et al.

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ad Anonymous Referee #1

major points:

1: We agree with your suggestion– only values of the 1d samples are now compared.

2: There are several explanations for that listen here and we included them in the discussion. - An important aspect to consider is the method used when processing the samples. Foraminiferal tests are dissolved with hydrochloric acid and due to that carbonate is lost, but also new mineral phases are formed which influence the total

weight of the sample. This step is needed to remove the 13C, which may be bound in the test. Comparing with other studies like Wukovits et al. 2017, it can be seen, that the uptake values of our experiments lay in the same order of magitude. - Another aspect is, that foraminifera are stressed during experimental conditions and therefore may have a lower turnover. It should be noted, that the food uptake is determined by the isotope content in the cytoplasm, which, as recommended in major point 1, can also vary over time. - Since these experiment were all carried out under laboratory conditions, we would not consider pC and pN as absolute values, due to seasonal and environmental fluctuations. However, a difference in food uptake can be shown in our experiments with varying salinity.

Specific comments:

Title: Good point, title has been changed.

Lines 74-75: We added the tested temperature range (line 77).

Line 94: The meaning is the same; it only serves to avoid repetition. But we changed it now and wrote "salinity of 24" to avoid confusion.

Line 108: In the method used here, the algae were processed in the "most gentle" way, which means that no further degradation of algae or gross damage of the cells occured. During the "normal" freezing, the algae could be decomposed by further microbacterial activities or burst and therefore lose cytoplasm, which would lead to a change of the 13C and 15 N content.

Line 124: No, the algae powder was added directly into the crystallization dishes and mixed there. The algae settled down on the bottom of the dish and were available for foraminifera. We added this information now.

Line 135: Potential effect was added to the discussion. In general, all samples were always treated the same way, which means they were all washed with the same volume of distilled water. This way any impact that may have arisen from using the distilled

water has the same effect on all samples.

Line 229: It has been changed and all graphs are plotting in Fig. 1 now.

Line 275: The content of at%13C and at%15N was added in line 109. This helps to calculate the atomic C:N ratio. We added this information.

Line 310: “Labeling” was added.

Line 317: We corrected the sentence.

Line 326: 33 is the salinity used in the experiments. 37 PSU are extreme values, that Maywald (1991) has found in the North Sea.

Line 338: They used d13C to estimate the origin of OM and as a consequence they could differentiate between a brackish and marine milieu. Below, an example is described in detail, that can be directly related to our experiments (Mackie et al. 2005).

Line 341 and 349: We improved the text here in accordance to the reviewer.

Line 367: We added this information.

Line 371: We would suggest to keep the structure here and add only interesting aspects, that have not been mentioned yet. In our opinion, a new chapter would disrupt the flow of reading.

Line 377: . was replaced with ,

Line 395: We improved the text here.

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