Introduction

Page 15308, line 29: Please give the references for the existing literature on feeding experiments.

➔ Reply: The sentence has been deleted and references are not necessary anymore to give here.

Page 15309, lines 7-12: Write the diatom species nameentirely as it is the first time mentioned.

➔ Reply: The species name is now given entirely.

The objectives of this work need to be more explicit: simple biological quantification of foraminiferal consumption of phytodetritus under anoxic conditions? Determination of opportunistic behavior of certainspecies? Why do you use 15N? Quantification of the role of foraminifera in these anoxic environments in carbon cycling? …

➔ Reply: We agree with the reviewer that aims for the study are necessary and were included: "The following hypotheses will be tested within this study: (1) total uptake of phytodetritus by foraminifera is lower under almost anoxic conditions than in oxygenated environments (2) foraminiferal will demonstrate feeding response to phytodetritus within experimental phase of four days (3) foraminifera will demonstrate species-specific uptake rates, and (4) ^{15}N will be a suitable tracer for single foraminiferal species."

Material and methods:

Page 15309, lines 19-20: A localization map of the site would be helpful.

➔ Reply: A reference to Hunter et al. (2012) was added which gives a detailed map of the site and the locations of the other investigated sites during the cruise.

Page 15310, line 2: You should add the values of PP during the sampling period (satellite images)

➔ Reply: We agree that PP from the actual sampling time is needed and added the information to the manuscript.

Page 15311, line 25: That is very approximate as the tests may be filled with cytoplasm while individuals are dead, especially in those environments whith very little oxygen. A more accurate method would have been to observe pseudopodia deployment or to assess their vitalitity by placing them on sterile sediment; those who have moved leave the track of their movement on the sediment. Can you please specify the bias that this uncertainty could have on the values?

➔ Reply: We understand the point of the reviewer and the concern of overestimating living foraminiferal numbers. The proposed method of pseudopodia visibility and observation of moving foraminifera is a great tool but not applicable in our experiment as picking of the required amount of alive foraminifera on board of a research vessel is not possible. As time is limited, sediment samples including foraminifera are immediately frozen on board at -20°C after slicing the core. Later in the laboratory, sediment samples are thawed, forams are

picked and identified under cooled conditions as living or dead on the basis of filling degree, cytoplasm coloration and aperture filling with food particles.
The high signal of uptake that was measured and which can only derive from "living" foraminifera shows that our method of identification of living and dead is succesful. Of course a overestimation of living foraminifera is possible but at the moment there is no other method to deal with the problem. Staining with Rose Bengal which is also not 100% free of falsely stained specimens, is impossible as it would alter the carbon signal and hence impossible to use when analysing the carbon composition.

Page 15314, line 1: Can you please explain in material and methods how do you exactly estimate foraminiferal biomass?

➔ Reply: Species biomass and its estimation was added to the text under "material and method": "Species biomass for each species was estimated on the basis of mean individual TOC content and its abundance (in relation to sediment area)."

Results:

Page 15314, line 9: The living population density is surprisingly high. In the area (Jannick et al., 1998, Kurbjeweit et al., 2000; Schumacher et al., 2007: Caulle et al. under discussion in BG), the foraminiferal standing stock from the >125 µm fraction don't exceed 1000 ind./50 cm^3 at similar depths and within the OMZ. How can you explain the extremely high densities you are recording= Coul d it be an over estimation from live-dead determination? Specific ecological conditions in the sampling area?

➔ Reply: The three mentioned publications dealt with foraminifera from the Pakistan margin while our experiment was performed at the Indian margin. Differences to our study not only derive from different geographical location. Kurbjeweit for example took samples below 1900 m and hence described an assemblage from a different habitat and not within the core region of the OMZ. Differences in the fauna are also found in comparsion to Jannink et al. (1998) who also found agglutinated species which were absent in our study also indication a different environment. Both Schumacher and Jannink used Rose Bengal for identification of living/dead foraminifera. A method which cannot applied in labeling experiments due to C contamination of foraminiferal cytoplasm. An overestimation of living foraminifera in our experiment can be possible but also Rose Bengal is known to stain foraminifera weeks after their death. Woulds et al. (2007) who also looked on foraminifera on the Pakistan margin also found high abundances of foraminifera though lower than ours because they used a larger mesh size. And also as stated in the manuscript, at the site of investigation macrofauna was absent, possibly providing an advantage for the distribution of foraminifera in terms of less food competition. Therefore I would accept the observed foraminiferal numbers as stated.

Page 15314, line 13: How can you quantify the uptake of phytodetritus studying only the >125 µm as much more forams are found in the smaller fractions?

➔ Reply: As mentioned in the text, the observed uptake is a minimum value for the foraminiferal assemblage as we also only measured 93% of the community >125 µm. In the manuscript we don't say the entire assemblage of foraminifera took up 114 mg C m^{-2}. We

always refer to the investigated number of species and size fraction. For us it would be also very interesting to see how much the smaller fraction of foraminifera will contribute to the carbon uptake but time and manpower is limited and it would greately exceed the counted number of 15000 individuals (>125 µm) by far. In comparison to other in situ experiments on foraminifera it can be seen that mesh size varies great and our size fraction is in between: Jeffreys et al., 2013 (250 µm), Witte et al., 2003 (30 µm), Woulds et al., 2007 and Andersson et al., 2008 (both 300 µm), Levin et al., 1999 (300 µm), Enge et al., 2011 (63 µm), Nomaki et al., 2005 (63µm), Moodley et al. 2002 (300 µm).

Page 15315, line 3: Please, mention the method in material and methods

➔ Reply: Species biomass estimation is now given in the material & method part.

Discussion:

Page 15316, line 21: So the oxygen is not a limiting factor for foraminifera in these environments as suggested in earlier studies

➔ Reply: It has been shown that foraminifera are highly succesful in carbon cycling in environments of low oxygen (e.g. Would et al. 2007, Andersson et al., 2008). The observed high uptake in our experiment in comparison to uptake rates in oxygenated environments lets assume that foraminifera can deal with these low oxygen conditions and they don't seem to be limiting from the results we have got.

Page 15325, line 18: Remove the comma after nematodes

➔ Reply: The comma was removed (page 15320).

Page 15325, line 25: You said earlier that macrofauna were absent!!!!

➔ Reply: According to Hunter et al. (2012) macrofauna is absent at 540 m depth in the OMZ core region but present at greater investigated depths (800 m, 1100 m) as stated in the text. As the referred sentence has been deleted due to a comment by another reviewer, information about macrofauna at 800 m and 1100 m is not needed anymore (page 15320)

Page 15326, line 12-15: Change the phrasing

➔ Reply: (I assume that the reviewer meant page 15321, line 12-15.) The sentence was rephrased as following: "In situ experiments in the core region of the Pakistan margin OMZ (300 m) showed greater uptake of phytodetritus by bacteria than by foraminifera (Andersson et al., 2008). Similar environmental conditions at 540 m depth as at the 300 m Pakistan margin site suggest that foraminifera at the Indian margin are also a group important to short-term phytodetritus processing."

Page 15327, line 13: I don't understand. The dual labeling was applied to the same batch of diatoms introduced in the in-situ experiments. So the difference in uptake between C and N should be equivalent to the original difference in the labeled food? Do you mean that the mechanisms within the cell favored more C that N? Please make this sentence clearer

➔ Reply: As the experiment has shown foraminifera take up more carbon than nitrogen as the C/N ratio of the foraminifera after the experiment is greater (11-14) than that of the alga (4). We have stated this observation and a possible explanation in the discussion part now.

"The nitrogen uptake was comparably lower than the uptake of carbon for all three species. The high demand of carbon by foraminifera as it has been also observed by Jeffreys et al. (2013) follows the natural higher demand of carbon over nitrogen to meet energetic requirements (known as the Redfield ratio with C:N of 106:16). Although all three species demonstrated higher carbon uptake, the absolute difference of C and N uptake varies strong between species (see chapter 3.3) suggesting species have different metabolic demands to achieve homeostasis (Raupenheimer & Simpson, 2004)."

Conclusions:

There is no conclusion about C/N ratios

Reply: We agree that this point is missing in the conclusion part and added the following to the conclusion part: "The ratio of C:N uptake is different between species which suggest different metabolic energy demands that can hint for nutrition preferences."