

Referee 3

Many thanks for considering our manuscript for publication in Biogeosciences. The review helped a lot to improve our first version, and we hope that this revised version of the manuscript now fulfils the demands for publication.

We thank the reviewer for pointing out that the novelty of our work was not illustrated clear enough.

We corrected various sections throughout the manuscript as explained below

GENERAL COMMENTS & KEY CONCERNS:

Comment: The authors need to recognize the limitations of their sampling effort (few replicates, no true control for the OMZ) and consider their results in a broader framework of the available knowledge on macro- and meio-benthos at OMZ (references suggested by other reviewer). The latter entails a more focused approach around clearly formulated hypotheses and less over interpretation of the own results in the discussion section. The comments I made directly on the manuscript contain further major and minor corrections/suggestions

Reply: Yes we are agreed with the reviewer that the samples were limited however we put much focused on community analysis rather than discussing much about density. The data is enough to answer the questions which we posed. The introduction and discussion are much improved now with new addition and removal of unnecessary things. We would like to thank reviewer for improving our concept and manuscript.

Other specific comments are discussed in the section below:

Abstract comments

Comment: Mention here where the OMZ was situated along your transect.

Reply: The oxygen minimum zone was extending from 102 m to 1001 m and it is mentioned now in Abstract

Comment: add water depth or the range of water depths for the slope and basin as well.

Reply: Water depth is added with each station

Comment: Improve your writing style to smoothen the reading. e.g. write "Nematode communities differed in species composition according to the regions." Then mention which species were dominant in

each of the regions. After that you mention that regional differences were not found when considering the functional traits.

Reply: Yes it is rephrased and the composition in each zone is mentioned and list of species with their density at each zone is mentioned. The contribution of each species is mentioned clearly.

Comment: Shouldn't it be food QUANTITY if you measured organic carbon and chl concentrations?

Reply: It is corrected and it is food quantity

Introduction comments:

Comment: You mean "other meiofauna taxa"

Reply: They are more tolerant than macro- and other meiofauna to anoxic conditions (Giere , 1993; Moodley et al., 1997).

Comment: There are many more recent publications on meiofauna from OMZs or hypoxic conditions. Improve your overview. (see also comment and suggestions for literature made by other reviewer).

Reply: Many recent publications on meiofauna are included and discussed. More literature is included in the manuscript.

Comment: You don't mention any arguments why it is important to study nematodes at the Arabian OMZ. Improve or delete the sentence.

Reply: It is improved and clearly mentioned

In contrast to several studies on the effects of anoxia on Nematoda at higher taxonomic levels little is known about their response at species level.

Several transitional settings in the western Indian continental margin, including the shelf, slope (long stretch of OMZ) and basin, provide multiple oxygen and other environmental gradients. These settings allow us to investigate how oxygen and food availability affect and modulate the structure and function of nematodes community at species level.

Material and methods comments

Comment: Combine study area and sampling under one subtitle.

Reply: More information is needed in the study area like water masses, OMZ thickness and area, seasonal balance, wind direction, upwelling and topography.

Comment: add how large the area is and how stable this OMZ is in time and location.

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Do all the OMZ sampled stations have a 'control' station at the respective depths that were sampled? Add this info.

Reply: The Arabian Sea, is characterized by a very pronounced midwater OMZ between 150 and 1250 m and is over 1000m thick extends vertically from the bottom of the euphotic layer (~100 m) to ~1000 m (Wishner et al., 1990). The variations in the intensity of the OMZ, related to upwelling intensity and thermocline ventilation by Indian Ocean Water (Reichart et al., 1998). It is located directly beneath the productive upwelling region (de Sousa et al., 1996; Morrison et al., 1999).

No we don't have control station and moreover it is difficult to understand the OMZ control station. We have sample from three depths one stands for outside, one in the centre and one in the inside.

Comment: chl a in the water column was only determined from niskin bottle water below this depth?
Not in shallower depths??

Reply: We corrected the statement

Bottom-water dissolved oxygen (DO) measurements were taken with a DO sensor attached to the CTD for depths down to 1524 m, below this depth; water collected in Niskin bottles was used for DO.

Comment: Add the timing. How many hours after sampling? And were the samples kept cold (at what temp?) pre-analyses?

Reply: Dissolved oxygen was analyzed by Winkler's method (Strickland and Parsons, 1968). Sample bottles are stored upright in ice chest, dark location and were analyzed after a period of 8-9 hours.

Comment: spectrophotometric, fluorometric or chromatographic method?

Reply: Fluorometric

Comment: The samples were not centrifugated or decanted first to extract the organic material containing faunal fraction?!

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Did you use an upper limit sieve of 1mm or 500mm to exclude the macrofauna?

Reply: Meiofauna samples were washed over a 500- μ m mesh and then sieved on a 32- μ m mesh to retain the meiofauna fraction. The retained fraction on 32- μ m mesh was then elutriated by the centrifugation-flotation technique using LUDOX (Vincx and Hall 1996; Heip et al., 1985).

Comment: Bongers modified the CP score of the monhysterids in a latter paper. Is this correction taking into account?

Pape et al. (2013) e.g. mentions:

Monhysterid genera were assigned to the c-p 2 class ("general opportunists") as advised by Bongers et al. (1995), and as such there were no nematodes belonging to c-p class 1 ("enrichment opportunists").

Reply: We would like to thank the reviewer and this mistake is corrected. The species belonging to Monhysterid family were assigned to the c-p 2 class ("general opportunists") as advised by Bongers et al. (1995) and latter mentioned by Pape et al. (2013) and as such there were no nematodes belonging to c-p class 1 ("enrichment opportunists").

Comments: Did you test for collinearity between the environmental variables? If two variables were correlated you need to mention which one was deleted from the sequential tests. That's a requirement before finding the best explaining model.

Reply: Analysis of collinearity was tested using draftsman plot and the associated standard product moment correlation coefficient between all pairs of variables and those with correlations (r^2) > 0.9 were omitted from the model. If distribution of residuals was skewed, natural logarithm transformation was applied to the response variable until assumptions were met by the best model. Salinity was the parameter which was removed.

Comment: If you used the PERMANOVA add-on software of Primer, why did you use ANOSIM then instead of PERMANOVA to analyse the community? You need to test the effect of water depth (shelf, slope, basin) and OMZ (OMZ, control), so why not look at the interaction effect as well?

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you don't need the Kruskall wallis non-parametric test for univariate data, you can do this as well with the non-parametric PERMANOVA analyses

Reply: PERMANOVA is used and its results are included in the manuscript

Results comments:

Comment: The densities are very low. I want to know if this has something to do with your extraction method which you didn't report in the M&M?

Reply: The reason behind the low density could be due to the use of box corer however we have not discussed and compared these results because this is not included in our aim. Many authors reported that negative impact of box corer.

Comment: This is not formulated clearly. You mean that the statistics reveal that the OMZ community is different from the other communities based on abundances, but not based on presence-absence? Do not make conclusions based on the impression from the MDS, the MDS is only illustrative for the pattern that are being tested and supported or not by the statistics.

Reply: Relative abundance and presence- absence are two different measures. We always overlook this issue however this is not conclusion it's a finding to describe the pattern however it is supported with PERMANOVA results.

Comment: Isn't this contra-intuitive? You'd expect smaller nematodes with low cp score as they are the more opportunistic, faster reproducing species?

Reply: The results are rephrased

Certain trends has been observed for example, 1-2 and 2-4mm length size was generally correlated with slender to and colonizer (2-3 C-P score) whereas > 4 mm length size nematodes had higher C-P scores with long/thin body shape.

Discussion comments:

Comment: I don't see the relevance of mentioning this if you don't mention the location and depth of the study of Levin + oxygen concentrations.

Reply: It is rephrased completely with relevant information

Comment: I don't see the link with low oxygen levels and you don't provide any explanation, so it doesn't seem worth mentioning.

Reply: This paragraph is rephrased with valid information in order to explain their dominance in the OMZ and outside the OMZ

The dominant species in present study like *Terschellingia longicaudata*, *Desmodora* sp 1, and *Sphaerolaimus gracilis*, however, have been recognised extensively as tolerant (Schratzberger et al., 2006). Adaptations in *Terschellingia* sp and *Sphaerolaimus* sp—the presence of dark, often multilayered intracellular globules in the intestinal cells—are often pointed out typical for sulphidic muds. However, their significance is ambiguous and their adaptive value for the thiobiotic life rather disputed. Moreover, the deposition of insoluble metal sulphides in intracellular inclusions in *Terschellingia longicaudata*, has been suggested to be a mechanism of detoxification of sulfide (Nicholas et al., 1987). Further, some specimens belonging to OMZ showed some morphological differences while some were observed with epibionts like the greatest numbers of specimens of *Desmodora* sp. Some species were observed to have unidentified blackish gut content. A small nematode was found in the gut of the *Metalinhomoeus* sp 1, which has a very small buccal cavity.

Comment: About IndVal index Isn't there a minimum of number of samples required to perform this analyses? Two samples or even 3 or 4 seem very few to have a relevant determination of index species.

Reply: This is a very informative index and should be applied more irrespective sample counts. One just need different sites and we used it for indicator species. We recently used it in case of nodule vs sediment nematode community.

Comment: The study of Guilini et al. (2012) in Prog. Oceanogr. is very relevant in this matter.

Reply: Yes it is cited and thank you reviewer for mentioning this important paper.

Comment: This is about predator nematode

You need to explain. I don't understand why

Reply: Gambi et al. (2003) suggested that the low prevalence of predatory and omnivorous nematodes can be attributed to the absence of freshly dead organisms provided they acquire large teeth and capable of ingesting other animals.

Comment: Earlier you mentioned that low cp-score was accompanied with larger nematodes as the OMZ. I'm confused here.

Reply: This is corrected in the manuscript

Comment: Nematode is more tolerant then other meiofauna

You cannot say this, you did not analyse the rest of the meiofauna.

Reply: Yes it is removed