

## **Referee 1**

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 which was not illustrated clear enough.

We corrected various sections throughout the manuscript as explained below:

### GENERAL COMMENTS & KEY CONCERNS:

Comment: The manuscript sometimes suffers from very descriptive sections in the discussion. If the authors could limit themselves to discussing the ecological processes, functions, adaptations, and their applicability to OMZs in general and the Arabian Sea, readability and attractiveness would be substantially improved in my opinion. In essence, avoid listing species and studies where the same patterns have been observed. Rather, refer to tables for lists of species and include the references in more generally applicable sentences when talking about trends and potential explanations for them using ecological theory and observations.

Reply: We do agree with the first part of comments therefore it's improved by discussing more about ecological processes, functions, adaptations, and their applicability to OMZs. Moreover it's important to discuss the species pattern and it's equally important to compare the date. However the unnecessary discussion is avoided.

Comment: Whilst the strategy of the analyses has been explained, I have some questions regarding the tests that have been performed. There seems to be some redundancy (I have explained this in my in-text comments) and the BEST/BIOENV/DistLM analyses could be simplified I think. That being said, the authors have performed a substantial and deep-community analysis using the latest statistical procedures which is laudable.

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. For skewness natural logarithm transformation was applied to the response variable until assumptions were met by the best model.

We have done the redundancy test and the 4 variables salinity, temperature, water chl-a and C:N ratio with correlation  $r^2$  values .0.9 (considered redundant) were omitted for the DISTLM procedures; the remaining variables and their pair-wise spearman correlations are mentioned in Table 11. However the clear statistical procedure and results are discussed in manuscript and therefore the readability is improved.

Comments: The schematic figure that is the real product of the manuscript does not get enough attention in my opinion. Many if the findings make their way into the figure but with little discussion. This scheme could attract quite a bit of attention, but is not as well presented as it could/should. The authors could dedicate more text to the reasoning behind it, what it tells us, and what the more general implications of it are. I would also work on how it looks at the moment, has much more potential to be an important figure in meiofauna OMZ and deep-sea ecology.

Reply: We would like to thank the reviewer for nice suggestion in order to improve the schematic figure. A new schematic figure is produced according to the reviewer advice and all the data is represented very well. Moreover the reasonable text is dedicated to this figure regarding how it produced and what is the trend of data.

Comment: One last general comment I have is that the authors should come up with some clear hypothesis and questions from the start, which they then could answer in a logical sequence in the results and discussion. At the moment, it seems like the MS is a very descriptive piece of work and reads as if the authors have unleashed a suite of analyses without targeting specific research questions. The underlying strategy is there, the authors have identified that environmental variation (associated with different margin zones and the OMZ) could be the basis of structural and functional nematode community characteristics and they then go further to identify some specific structural and functional traits associated with OMZ presence and granulometry and food availability. . . These findings can be addressed by formulating a good set of questions. In my opinion, this may help the MS.

Reply: The questions which we framed are really important to answer because of pronounced OMZ. We examined the nematode community structure along a habitat gradient using traditional diversity measures, taxonomic properties, and the functional-group concept based on biological traits. The setting series (shelf, slope and basin) of western Indian continental margin could affect the benthic biodiversity and their functional aspects. Our study is from the Arabian Sea which is not studied interms of nematode community. The first question which we posed may be general but important to answer from Indian continental margin. The heterogeneity gradient which includes shelf, slope and basin acquire different condition therefore it's important to know their impact on nematode community both structurally and functionally. The questions are more specific and clearly add the value to our study. However it is modified according to the reviewer suggestion. Therefore our study revolves around the two questions which are mentioned in the manuscript.

Other specific comments are discussed in the section below.

#### Specific comments

Comment: this question is very general and has been answered in literature. The authors could specify with explaining what kind of heterogeneity they mean and were... specific gradient, location

Reply: The question is specific to Indian western continental margin however it is modified

Does heterogeneous gradient like shelf, slope and deep basin of western Indian continental margin affect marine nematode community structurally and functionally?

Comment: Study area description

Reply: Information related to the area characteristics,

Like; water masses, wind direction, monsoon seasons, upwelling and OMZ thickness, area.

Comment: Was there no upper sieve used (1mm, 500um, or 300um even?)

Reply: Samples were washed over a 300- $\mu$ m mesh and then sieved on a 32- $\mu$ m mesh and the retained meiofauna fractions then elutriated by the centrifugation-flotation technique. The following information is added to the method section.

Comment: Please make note that in Bongers and Bongers 1998 (Functional diversity of nematodes) monhysterids have been classified as having a c-p score 2. Often this is overlooked and they are regularly given score 1 as per Bongers 1990 and Bongers et al 1001.

Reply: We would like to thank reviewer for that however we have got two species belonging to Monhysteridea and they 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”).

Comment: Is there a reference/basis for this methodology; why are these values the ones to distinguish between functional groups of individuals?

Reply: Nematode specimens were measured and assigned to four length groups (< 1 mm, 1–2 mm, 2–4 mm, > 4 mm) and three shape categories (stout with a length–width ratio < 18, slender with a length–width ratio of 18–72 and long/thin with a length–width ratio > 72). The same procedure is given in literature (Schratzberger et al. 2007, Marine Environmental Research) however they deduced the length data from literature while we measure every adult specimen.

Comment: have the authors used relative abundance and presence-absence data - what is the logic behind it? And, which resemblance measure was used on the presence-absence data. The authors say similarity measure but in PRIMER there are 19 similarity measures available. This information should be included here.

Reply: When it comes to ecological abundance data collected at different sampling locations, the Bray-Curtis dissimilarity is one of the most well-known ways of quantifying the difference between samples. This measure appears to be very reasonable way of achieving this goal but it does not satisfy as it is based on the relative abundance. Since it is likely that many of the species will be singletons and hence the chances of a species being absent are quite high. It is extremely useful in situations where sampling has not been intensive and when overall similarity, independent of species numeric abundances, is all that is needed to compare locations. We sampled with box corer and therefore the chance of losing fauna is higher hence it is important to carry both type of measures (Sørensen's similarity index based on presence-absence)

Comment: Also when PCOs are compared? It is difficult to compare different MDS because they have no scale, one can infinitely rotate the scaleless axes and data to come to a different image... spacing between samples is based on resemblance distances... and these are heavily reliant on the resemblance measure, unless you decide to rank the data.

Reply: As per the suggestion the PCOs based on functional traits and taxonomic data were compared and the results were similar as the MDS had produced. However this phrase was deleted as it was not required as suggested by another referee. The PCOs based on taxonomic and functional data are given down under;

Comment: It would be interesting to discuss species level knowledge in terms of life styles and tolerances (this information may be available for some species) in the light of depth-gradient, zone differences, OMZ and their environmental characteristics more specifically

Reply: As it is known that we don't have much information available on nematode species life style and tolerance however whatever the info was available it is discussed in more detail now. Moreover there are some speculations on species behavior but it's difficult to relate them with OMZ life style until it is not observed in laboratory. However much of the information is discussed and compared specially with zone gradient and OMZ influence.

Comment: If an upper sieve was used, could this not have had as effect that the larger nematodes (mostly 2B) were excluded from any community analysis? Potentially the real community may have a higher percentage of larger/predatory/scavenging nematodes

Reply: We used 500 micron sieve and it is ideal way in order to retain the real fraction of meiofauna otherwise the counts of macro size nematode will be more. The length of marine

nematodes is usually around 1-3 mm but sizes over 10 mm may be attained. The smallest adult nematodes (*Greeffiella* Cobb, 1922, a desmoscolecid) are shorter than 0.2 mm. Gambi et al. (2000) used 1000 µm mesh and a 20-µm mesh to retain the smallest organisms. However the predator nematodes were very less in the basin and they have increased in OMZ probably related to the availability of freshly dead organisms because they are capable of ingesting other animals.

Comment: For the deep sea, there is very little evidence of nematode-bacteria symbiosis, but they should probably be mentioned here... cf. Hope 1977 (gutless nematodes in the deep sea), Ingels et al 2011 (Plos ONE), Van Gaever et al 2006 (stilbonematids with ectosymbionts from the Darwin mounds), Bernhard et al 2000 (desmodorids with ectosymbionts from Californian deep sea) and Tchesunov et al (stilbonematids (ectosymbionts) and siphonolaimids (endosymbionts) in the deep Atlantic canyons), the latter gives some ecological insights into what advantages the symbioses could bring

Reply: A new modified paragraph is added on physiological and behavioural mechanisms (e.g., symbiosis with bacteria, which we also observed, and migration to “oxygen islands,” sensu Reise and Ax (1979) and Wetzel et al. (1995).

As suggested by the reviewer many sentences were rephrased and improved accordingly.

## Referee 2

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: At this point, I would ask the authors to be consistent using zones or regions, not both. The determination of functional traits along with identification of nematodes at the lowest taxonomic level contributes to a better understanding of OMZ ecosystem functioning; however, although valuable from the taxonomic point of view, perhaps for functional traits, genus level would be appropriate as several genera have common ecosystem functions. Understanding the structural and distribution patterns of the most abundant group in hypoxic/anoxic environments is crucial in order to understand the possible impact of OMZ expansion on deep-sea ecosystems.

Reply: Thanks to the reviewer for suggesting the right word and it is followed in the manuscript. “Zones” would be an area or a region that distinguished from adjacent parts by a distinctive feature or characteristic. Therefore zones would be an appropriate term. The species level data provide more deep knowledge about the functional ecology and it improves our understanding about nematode community tolerance in OMZ. Most of the previous studies were restricted to the genus level but this study provides the list of only few species which can tolerate the oxygen minima. In future we can give more insight to these particular species. Every species was classified according to their buccal morphology, tail shape, adult length, adult shape, and life history. To calculate the length width, adult shape and tail shape all the specimens were drawn.

Comment: To my view, this is a valuable paper, in general well written although the introduction needs to be shortened focused given more information from previous studies along the Indian margin heading to clear and concise questions. Measuring many things without a question that support those measurements does not contribute to the quality of the work. Stating an overarching hypothesis that guides the work and the discussion would also be very helpful

Reply: We would like to thank reviewer for the valuable suggestion. We followed that in order to improve our manuscript.

The introduction part is shortened and focused now; we removed some of the part. Moreover, much of the new information related to Indian margin is added especially OMZ. The OMZ part is improved with the addition of new information from the literature. We removed much of the part which does not contribute. The main focused point of present study is to answer these questions

Does heterogeneous gradient like shelf, slope and deep basin of western Indian continental margin affect marine nematode community structurally and functionally?

What are the patterns and drivers of variation in nematode composition and diversity (structural and functional) along the western Indian margin; i.e., are oxygen levels the main driver, or are other factors (sediment, productivity etc.) more important?

Comment: The discussion is very descriptive and does not keep focused on discuss their results in relation to functional adaptations, structural diversity patterns and ecological processes relevant to OMZs. In addition, in my opinion, the literature on the topic was not properly revised. Several, relatively recent papers, relevant to this study, as they are either from the same Arabian Sea region or from the eastern Pacific OMZ, primarily focused on nematodes, are not cited, and in my opinion results should be discussed considering them: Sajan et al. 2010 (*Estuar. Coastal Res. Sci.*) Nanajkar et al. 2011 (*Italian J. Zool.*) Annapurna et al. 2012 (*J. Mar. Biol. Ass. of India*) Neira et al. 2013 (*DSRI*) Guilini et al. 2012 (*Prog. Oceanogr.*) Neira et al. 2001 (*Oceanologica Acta*); 2001 (*Contribution to Zoology*); 2005 (*Cahiers Biol. Mar.*) Muthumbi et al. 1997, 2004 (*Hydrobiology*); 2011 (*Mar. Ecol.*) Neira & Decraemer 2009 (*Organisms, Diversity & Evol.*) (General on oxygen deficiency over the Indian shelf): Naqvi et al. 2006. Seasonal oxygen deficiency over the Western continental shelf of India. In: Neretin, L.N. (ed.), *Past and present water column anoxia*, Dordrecht, The Netherlands, pp. 195-224

Reply: We are agreed with the reviewer however the discussion is improved with the addition of species level information related to their tolerance. The literature which is relevant to present study is cited and discussed. Most of the above mentioned literature is cited and discussed. The discussion part is much focused and clear now. All these recent and relevant studies are discussed and compared with present study.

Comment: Another aspect of concern is the sampling. It seems that the sample for meiofauna was based on a single subsample collected from a single drop of a spade box corer, i.e. there is not replication. This appears to be supported by the MDS plots where a dot per station is displayed. Similarly, nothing is mentioned about the fraction depth of the sediment subsampled with the 5.7 cm PVC corer, was the top 1 cm or 5 cm or 10 cm? Please indicate clearly

Reply: Yes the sampling is bit concern but one has to play with the available data. The samples were collected with box corer and there is no proper replication. That is the reason we have not put much focused on density distribution and the focused was on the community structure and their functional knowledge. We don't need many replicates for biological traits, however the information related to that is added. A PVC core (5.7 cm diameter) was used for sub-sampling. At each station, two sub samples were sliced per cm down to 5 cm sediment depth and fixed in buffered 4% formalin. Separate one sub-core was collected for organic carbon ( $C_{org}$ ), sediment chlorophyll-*a* (Chl-*a*) measurements, and grain size analysis and other abiotic parameters.

Comment: Regarding Tables and Figures. I think it would be more relevant for meiofauna ecologists to present densities of nematodes than presence and absence as showed in Table 2. I would suggest to omit or move Table 2 to supplementary material and put in its place a list of nematode with showing mean densities per zones (shelf, slope, basin) and their feeding modes and tail attributes. Table 8: The description of the results of BIOENV for body size and tail shape does not match what is indicated in the discussion page 11550, lines 11-12.

Reply: We are agreed with reviewer suggestion. We added new table mentioning the mean density per zone. The BIOENV table information is corrected and dbRDA plots with DistLM marginal test table has been added.

Comment: The schematic model (Fig. 7) of all biological traits, being an interesting product of this study is poorly discussed and practically gets lost. Very little is said about the concept behind, implication and applicability to other OMZs. Visually, it could be improved with color. By the way, text on page 11558, Lines 12 and 20 referred to this figure as

Reply: Yes we agreed with the suggestion and it is improved accordingly. The new figure is prepared with well resolution and clear view. More text related to that added in the discussion and methodology. The schematic figure gives the whole summary of the pattern about the nematode community structure in the continental margin. This idea explains everything about the functional traits pattern and how they behave according to the different zones.

Comment: To summarize, in general this paper makes a good contribution to meiofaunal ecology of OMZs. However, this MS should be revised and improved in its structural organization, with a clear hypothesis guiding the work and specific questions to be addressed, and considering missing, relatively recent literature relevant to OMZ meiofauna/nematodes

Reply: The MS is revised properly with caring all the mention points. Much of the new information is added and the questions are specific and focused.



Other specific comments are discussed in the section below:

P11541 L6: In the present study we describe.

Reply: Modified

P11542 L4: ...extending from 102 to 1001 m

Reply: This is corrected with the support of previous finding (Ingole et al. 2010) and present oxygen data.

P11542 L18: Coulometer

Reply: Coulometer automatically measures the absolute mass amount of carbon dioxide

P11545 L13: delete “was”

Reply: Deleted

P11545 L18: .....above extended from 102 to 1001 m

Reply: corrected

P11545 L24: delete double parenthesis in (Fig. 2). ...accounted for about 77%

Reply: Corrected

P11546 L 1--3: you refer to station 34 m, not 102 m

Reply: Corrected with adding depth to each station

P11547 L16--24. Too long, Please try to summarize

Reply: Its shortened

P11547 L25 & 28: delete “value of”

Reply: Deleted

P11548 L17: do you mean “significant” as  $P = 0.021$  (L18).

Reply: The results has been replaced with PERMANOVA analysis

P11549 L17&18: replace of by in

Reply: Corrected

P11549 L23: delete “Equally”

Reply: Deleted

P11549 L25: delete commas

Reply: Deleted

P11550 L1: See also general comments. You may start: Based on a combination of functional traits, we built a model showing functional diversity across zones (Fig. 7)....

Reply: Yes we followed that with the addition

P11550 L12&13: According to Table 8, it should say “Body size was correlated with Sand, silt, and C:N ratio, whereas tail shape was correlated with clay and DO”....

Reply: We have corrected and replaced

P11550 L23: Chl a

Reply: corrected

P11550 L 24: delete “with”

Reply: Deleted

P11551 L3: see also general comments, suggestion to show in a Table nematode densities instead nematode presence/absence

Reply: Yes we introduced new table

P11551 L7: Nematode density

Reply: Its corrected

P11552 L6: This patten suggests

Reply: correced

P11553 L910: special features. Indicate which ones. You may try to connect this with what is mentioned on L13--15.

Reply: It is replaced and corrected

P11553 L1618: The dominant species such as.....have been recognized extensively to be tolerant to what?

Reply: These species were known tolerant to anoxic condition reported by previous worker. However more related supportive information with other genera is added

P11555 L6--10: see/discuss also other papers on nematodes, e.g. Neira et al. 2013.

Reply: we added the relevant information from this paper

P11555 L2028and along text: add in parenthesis Wieser terminology (1A, 1B, 2A, 2B) w herever correspond.

Reply: Its corrected

P11556 L15--16. This statement on BIOENV seems to contradict what is mentioned before on P11554 L25--27. Please check.

Reply: Its replaced and corrected with the supportive statistics

P11557 L23--25: Re--write

Reply: Improved

P11557 L26--29. Although relative, there are examples of large nematodes too, e.g. in the eastern Pacific OMZ (see for example Neira's papers on Glochinema and Desmotersia)

P11558 L12 & 20: Fig. 7

Reply: Yes we have added this info in the paper.

P558 L14--15. I suggest to omit this.

Reply: Its removed

P11559 L2: .....water circulation

P11559 L8--10. Tab 9 does not show that DO was correlated with functional biological traits, only chl a, and TOC

Reply: Its corrected with the more statistical test

P11559 L 19--20: This does not match what is indicated in Tab 8. See above P11550

L12&13

Reply: Its corrected

### **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 mention 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.  
+

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?!

+

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

Reply: Meiofauna samples were washed over a 500- $\mu\text{m}$  mesh and then sieved on a 32- $\mu\text{m}$  mesh to retain the meiofauna fraction. The retained fraction on 32- $\mu\text{m}$  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?

+

you don't need the Kruskal 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 > 4mm 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 thioautotrophic 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

