# Referee 2

Many thanks for considering our manuscript for publication in Biogeosciences. The review helped alot 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, no 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 fuctional

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 trai ts, 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 says “Body size was correlated with Sand, silt, an d 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 instea d nematode presence/absence

Reply: Yes we introduced new table

P11551 L7: Nematode density

Reply: Its corrected

P11552 L6: This patter suggests

Reply: correced

P11553 L910: special features. Indicate which ones. You may try to connect this with what is me ntioned 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) wherever co rrespond.

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

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