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Response to reviewers #2

Dear reviewer,

I would like to extend my sincere appreciation to the referees for their insightful comments and constructive feedback on this scientific manuscript. Your thoughtful inputs are invaluable and will significantly enhance the overall quality of the research.

Generally, the authors agree with most of the reviewers' comments and will use these inputs to better the quality of the manuscript

Below are the authors' comments on the review in general.

Referee 2

Need to start with a sentence giving broader scientific context for your study.

Authors' response: The abstracts will be revised as requested.

Macrobenthic – use a small 'm', not capital 'M' (many similar mistakes in ms with Macrofauna,

Macro-nematoda, Dominance (!) etc…). I suggest do the same for oxic, microxic and dysoxic

Authors' response: Authors will revise the capitalization of these words as requested.

Referee 2

Instead of Macro-Nematoda, just use 'nematodes' once you have established that you are looking at macrofauna.

Authors' response: Authors will revise as suggested.

Referee 2

Line 18: 'were present' not 'recorded abundances' (correct throughout ms)

Line 21: 'were absent', not 'no abundance'

Authors' response: Authors will revise as suggested.

Referee 2

There is no concluding sentence at end of Abstract

Authors' response: Authors will include a concluding sentence at the end of the abstract.

Referee 2

Regarding the question on other studies that can be cited regarding the Namibian shelf,

Reverse order of 1st and 2nd sentence.

Authors' response: Authors will revise as suggested.

Referee 2

Line 45: need references at end of sentence.

Authors' response: Authors will add references as suggested.

Referee 2

Line 56: need more details on OMZ communities and their function.

Authors' response: Authors will add more details on OMZ communities and their functions.

Referee 2

Line 57-61 – too basic, delete. Just define macrofauna by short sentence in brackets when first mentioning it.

Authors' response: Authors will revise as suggested.

Referee 2

Line 67 – need reference at end of this sentence

Authors' response: Authors will add references as suggested.

Referee 2

Nematodes are barely mentioned in the Introduction but they are main taxon of interest. Need info on nematodes in general and in OMZ in particular.

Authors' response: Authors will add more details on nematodes and more focus will be given to those from OMZ.

Referee 2

Line 73: specify where Walvis Bay is

Authors' response: Authors will revise as suggested.

Referee 2

Line 77: need reference at end of this sentence.

Authors' response: Authors will add references as suggested.

Referee 2

Line 78 – are there any other studies that can be cited in context of Namibian shelf?

Authors' response: The Authors will do further research and update the segment with more studies.

Referee 2

Line 82: you do not mention the focus on nematodes.

Authors' response: Authors will add more details on nematodes and more focus will be given to those from OMZ.

Methods

Referee 2

Line 95 – how low are the oxygen concentrations?

Authors' response: Based on Levin et al. (2009) the oxygen concentrations in was (<0.5 ml L^{-1}) in 55% of the total shelf whereas extreme anoxia (oxygen concentrations less than 1 µM) occurs over almost 900 km2

Table 1 – need to include number of replicates for macrofauna samples at each station

Authors' response: the number of replicates for macrofaunal samples at each station will be added during the revision period.

Line 114: why was 0.45 mm chosen for mesh size? Usually it is 500 or 300 microns. Not ideal for comparing with other studies.

Authors' response: Typically, macrofaunal studies call for a sieve size of 0.5mm (500 microns). However, it is important to note that during the course of our study, the only available sieve was 0.45mm. As per the reviewer's comment, the usual sieve sizes are either 500 or 300 microns, and the 450-micron size falls between these two ranges. Furthermore, other studies have also used the 0.45 mm (450 microns) mesh size for macrofaunal studies like Li et al. (2018) https://doi.org/10.1016/j.ecolind.2017.11.003 and Zhang et al. (2022) https://doi.org/10.3390/d14121072.

Line 130 – this info needs to be in Table 1

Authors' response: the number of replicates for macrofaunal samples at each station will be added during the revision period.

Lines 130-134 – not easy to understand what you mean here. Just say what you did and why. How were correlations conducted? What do you mean by 'highest correlation'? what variable was chosen? Text in lines 169-174 needs to move from Results to Methods.

Authors' response: As for lines 130-134. Similar comments were made by the co-reviewer, the Authors will implement the suggestion by the first Authors to prevent a trip-step and reduce confusion, the Authors will state upfront the approach of Levin et al. (2003) was used to classify the stations into the various oxygen regimes. And then use the SPSS results to justify the classification. This will also result in the implementation of corrections pertaining to the comments on lines 141-144.

Line 138: need details of data treatment eg data transformation etc. Much too brief. What is anosim for? Simper?

Authors' response: The Authors will input more information as requested.

Line 141: list the predictor variables in text or table. What is 'BUS'??? What selection criterion did you use for your stepwise regression? R2? Aikaike?

Authors' response: Refer to the corrections made on lines 130-134

Line 142-144 – I don't understand what you mean. You matched biotic and abiotic data at scale of site for the correlation analyses?

Authors' response: Refer to the corrections made on lines 130-134

Results

Line 149: these are huge TOM values

Line 167: give R2 values and P values in text.

Authors' response: Authors will revise as suggested.

Before giving results of correlation analyses, describe the microbenthic assemblages first (section 3.3. before 3.2)

Authors' response: Thank you for the suggestions, the Authors will describe the macrobenthic assemblages first and revise as suggested.

Line 176: what statistical test was applied? P value? Of course they will be different because that's how you defined the groups to begin with.

Reorganise 3.3 to describe each group of stations – one paragraph per group.

Authors' response: Authors will revise as suggested.

Line 197: not 'taxa counts', just 'taxa'

Authors' response: Authors will revise as suggested.

Line 202: This sentence is much too vague. Dissimilar in what respect? Multivariate community structure? Statistically significant? P value? Pairwise comparisons? Show anosim table.

Authors' response: Dissimilar based on multivariate community analysis using Bray-Curtis analysis of dissimilarity.

Lines 216-219: delete, sentence confusing.

Authors' response: Authors will revise as suggested.

Line 234: need to do multivariate community structure analyses, as per the macrofauna taxa data.

Authors' response: Authors will do multivariate community structure analyses based on macrofauna data as suggested.

Line 235: why did you look at feeding guilds? There is nothing about this in the Methods or Introduction.

Authors' response: Prior mention and information regarding the feeding guilds will be included in the introduction and methods as suggested by the Authors.

Discussion

Line 257: clarify where the groupings come from. You use a scheme previously published?

Authors' response: The scheme was based on Levin (2003) and this clarification will be added to the revision.

Line 264: 'abundance', not 'quantities

Authors' response: Authors will revise as suggested.

Line 273-275: I don't understand. If a group has highest relative abundance then it has highest absolute abundance too.

Authors' response: Relative abundance was calculated for each core then averaged. A hypothetical explanation can be for example, if one station had 3 cumacea and 1 polychaete, that means the relative abundance will be 75% and 25% respectively, then another core in the same oxygen zone has 5 polychaetes, 3 nematodes, and 2 cumacea. Polychaetes would have 50%, nematode 30%, and, 20% cumaceans. Hence the average relative abundance for cumacea will be about 47.5% and polychaetes will be 35%, despite polychaetes having 6 individuals while cumacea having only 5.

Line 275-278: confusing sentence. Delete.

Authors' response: This is well noted and the Authors will heed this advice.

Line 286: Vanreusel et al. make no such statement as far as I know. Indicate where in paper they say this?

Authors''s response: Regarding the correction on line 286 inquiring about Vanreusel et al. (2010). The statement referenced can be found on page 3, paragraph 2:

> "Increased standing stock is not only explained by increased densities. Some studies [37,44] found that longer nematodes dominate in cold seep and hydrothermal sediments, compared to oxic neighboring sites. In [37], nematodes present in the hydrothermal vent are on average twice as large (800 µm long, 20 µm width), as those in the reference sediment (480 µm long, 15 µm width)."

Based on this study, macrofauna size was set at 0.45 mm meaning the 800 µm size is macrofaunal size.

Line 299: reference needed at end of this sentence Following sentence too vague. Why does patchiness 'call for more studies'?

Authors' response: To address patchiness and have a comprehensive representation of the study area, more studies is required. The study area hasn't been given the necessary research attention that it requires. This study found a high abundance of macro nematodes in one of the stations, to address if this phenomenon is characteristic of the study site or just a congregation to a food source will need more studies.

Line 302: 'low', not 'meager'

Authors' response: Authors will revise as suggested.

Line 303: families are not italicised.

Authors' response: Authors agree with the Authors, and shall revise as suggested.

Line 309: "1234 ind. m-2 recorded per core" makes no sense.

Line 317: delete brackets and text within. This whole paragraph just repeats same things mentioned before.

Authors' response: Authors will revise as suggested.

Line 329: you cite a review paper, you need to cite papers providing actual data.

Authors' response: Authors will revise as suggested.

Line 331: nematodes may be larger in some areas because the species are different. Unlikely to be because conditions give them ability to grow bigger

Authors' response: The nematodes were large in size, unfortunately, we didn't analyze the biomass due to the limited functionality of the microscope used.

Line 336: why would meiofaunal nematodes differ from macrofaunal nematodes?

Authors' response: Macrofauna and meiofauna are mainly separated based on size, as most meiofauna taxa are also found in the macrofauna component. As our study was mainly based on macrofauna, the presence of nematodes (whereby in most cases dominate the meiofauna component) were large in size and dominant in the dysoxic area.

Line 339: families are not italicised

Authors' response: Yes, the Authors agree with the reviewer, this was a typing mistake.

Line 342: need reference for this sentence

Authors' response: The Authors will add the reference as requested

Line 343: nematodes do not swim!

Authors response: Regarding the ability of nematodes to swim. The sentence was extracted from Moens et al., (2013) page 126, paragraph 1:

> "Nematodes can actively emerge into and swim in the water column (Jensen 1981). After suspension in the water column, some nematode species (Theristus, Chromadorita, and Cobbia) are able to actively choose and swim toward sediment spots where suitable food is available (Ullberg & Olafsson 2003). Large-bodied nematodes of the family Oncholaimidae rapidly colonize carcasses of fish and macrofauna, probably at least in part by active swimming (Lorenzen et al. 1987)."

Line 360: so what? Did you record Antcoma in your samples?

Authors' response: Yes, we recorded them only in the oxic zone. We will add more to the statement.

Line 361: Wieser

Authors' response: Correction well noted.

Line 367: re-write this paragraph. Outline your main findings, how they compare with previous findings, and interpret their meaning.

Authors' response: Authors will revise as suggested.

Line 381-2: delete this sentence

Authors' response: Authors will revise as suggested.

Line 387: did you identify species or just genera? Are you talking about nematodes?

Authors' response: The Authors identified the genera of nematodes and major taxa classification for other macrofauna. In the statement, the Authors are referring to both the macrofauna and the nematodes.

The word 'species' will be replaced with the word 'taxa'.

Line 389: ok, so overall your findings confirm what we know already or is there anything different?

Authors' response: The Authors will add more regarding the study's findings in line with other studies and the additional information the current study adds.