

Interactive comment on “Environmental factors influencing cold-water coral ecosystems in the oxygen minimum zones on the Angolan and Namibian margins” by Ulrike Hanz et al.

Ulrike Hanz et al.

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First of all, we would like to thank the reviewer for the positive and helpful comments. We carefully went through all the comments and suggestions. We have adjusted the manuscript according to the comments made. Below we provide a description of the adjustments made, addressing the reviewers remarks.

Kind regards,

Ulrike Hanz (corresponding author)

Anonymous Referee #1 Received and published: 15 May 2019 The manuscript by

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Discussion paper



Hanz et al. titled 'Environmental factors influencing cold-water coral ecosystems in the oxygen minimum zones on the Angolan and Namibian margins' report observations of live and extinct coral mounds and associated fauna along the southwestern margin of Africa (South Atlantic). The authors contrast 2 areas showing distinct cold-water corals patterns, one barren (Namibian margin) and one thriving (Angolan margin). The authors couple these observations with oceanographic properties in the vicinity of these mounds acquired with benthic landers and CTD. The authors report interesting findings: cold-water corals (and associated fauna) are not thought to occur at such low oxygen concentrations, and therefore is provided a detailed rationale of the various physical processes that could maintain the existence of these corals in (perhaps short-lived) hypoxic conditions. The manuscript is well written and provide interesting insights and details on the ecology and physiology of cold-water corals, here the scleractinian *Lophelia pertusa*. Given that observations of other megafauna are reported – e.g. along the Namibian margin on extinct coral mounds – this study is also broadly relevant to deep-sea biology, especially in the context of the presence of Oxygen Minimum Zones. I enjoyed reading the manuscript and consider it an important contribution to the field of deep-sea biology. It is very relevant to obtain this ecological information to more accurately forecast impacts of a changing ocean and constrain habitat suitability models. I do not have major comments on the content of the manuscript. My comments are very specific (needed clarifications) and most relate to technical corrections.

Reply on specific comments:

L291-293: The South Atlantic Subtropical Surface Water (SASSW) is not described in Section 2.1.1. Oceanographic setting. Could you add a short specification about the origin of this water mass to situate the reader?

A short description of SASSW was added.

Figure 4: Please specify geographic orientation relative to land (i.e. on the right?). I'm also confused by the statement at L309 that the OMZ was stretching at least 100 km

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offshore. Only 50 km is shown in the figure. Is this accurate or am I misunderstanding the figure?

This is a misunderstanding coming from the Figure. Figure 4 does not show the 50 km closest to the shore, but the shore is about 45 km further to the east (right).

Technical corrections: L35: 'barotropic' Changed.

L104: What does the 7_ refer to? Geographic coordinates, temperature? Please specify. It refers to the geographical coordinate. We changed it to 7° S.

Figure 1: There is no a, b and c on the figure. The figure was changed accordingly.

L211: No comma after 'Both'. The comma was removed.

L226: water column in 2 words. Changed.

L242: The citation for R should read 'R Core Team, Year'. The citation was updated.

L243: 'shorter term trends' Changed.

L281: "free waves" Changed.

L284: using Changed.

L323: Is the date accurate? Year is 2018? Indeed this is not accurate. It should be 2016. We modified the text.

L470: a temporal Changed.

L517: Did you mean Namibian margin? Yes, we did. The text was changed accordingly.

L524: limits3 Changed.

L577: no comma after both The comma was removed.

L595: that Changed.

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-52>, 2019.