

## ***Interactive comment on “Ocean Deoxygenation and Copepods: Coping with Oxygen Minimum Zone Variability” by Karen F. Wishner et al.***

**Anonymous Referee #2**

Received and published: 6 January 2020

In their manuscript “Ocean Deoxygenation and Copepods: Coping with Oxygen Minimum Zone Variability”, Wishner et al. explore the vertical distribution of the copepod community in the Eastern Tropical North Pacific by using D/N paired MOCNESS tows. The strength of the manuscript is also a weakness: it contains quite a lot of high-quality data (which is valuable to the scientific community) but as is, it does not well concatenate information, and a statistical analysis is entirely lacking. Given that mean T, S, O<sub>2</sub>, Chl-a values are available for each sample, it should be attempted to tease out the main environmental drivers regulating the vertical distribution at day and night, and to present a physiological niche in which the respective species is to be found. Since the metabolic implications are discussed in some detail, I was wondering why environmental oxygen concentrations, rather than pO<sub>2</sub>, are reported throughout

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the paper. It would be much easier for the reader to understand the constraints, in particular for those species where pcrit data are available (consider extrapolation as a function of temperature). Fig. 1: This map does not reveal much oceanographic information to the reader. Consider including e.g. oxygen contours or average annual surface productivity. Lat/Lon grid should rather be equally spaced (I understand that the goal was to add the approximate lat/lon values for the sampling stations, but the exact values are given in the metadata table, and linear axes make it easier for the reader to visually grasp area size and distances. Fig. 2: This is a very large and very busy figure, mainly due to the many different colors. First, I recommend using the mean profile instead of a chosen single profile for each station (maybe with shaded error, but this might overcrowd the graphs). Second, choose three colors that are the same or similar for the three regions. Try to make the figure fit into a page (lower panels are wider, legend is out of the figure). Oxygen profiles in these would be helpful. Plot area lines could be removed to make some space, but tick marks added because difficult to read with just one tick mark. Figure 4-10: These are way too many figures, they are difficult to read, and they don't convey as much information as they could. Sometimes the panels are organized in a confusing way (e.g. plots from the same area are not next to each other). I suggest to move the majority of these into a supplement, and only keep more integrative figures in the manuscript (which could be, e.g., scatter plots of multivariate analyses or histograms of abundance distribution against oxygen and/or temperature rather than single station profiles). As for the stacked bar charts, I recommend variable bar width so that the bar covers the entire depth stratum sampled as there are no “gaps” between nets (this way, also the colors are more visible). Bar area then is proportional to integrated abundance in the respective depth layer. Day/Night plots of the same station should be scaled the same, and might be mirrored against each other to save space and facilitate comparison. I have added some additional, specific comments to a marked-up version of the pdf.

Please also note the supplement to this comment:

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<https://www.biogeosciences-discuss.net/bg-2019-394/bg-2019-394-RC2-supplement.pdf>

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Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-394>, 2019.

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