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Discussions

Interactive comment on "Ammonium excretion and oxygen respiration of tropical copepods and euphausiids exposed to oxygen minimum zone conditions" *by* R. Kiko et al.

Anonymous Referee #2

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Kiko et al. examine respiration and ammonium excretion rates of several calanoid copepods and euphausiids subject to OMZ conditions [with the use of apparently novel methods in simulating temperatures, oxygen and carbon dioxide levels consistent with those found in the ETNA and ETSP]. I recommend publication but do suggest that the authors consider my comments below.

The abstract needs to better reflect the work of the authors. At present much of the abstract is of an introductory nature with only the last 1 or 2 sentences reporting on the work/findings of the authors.

Of some concern is the low number of experimental animals in many of the treatments

in determining respiration and ammonium excretion rates at different temperatures, air saturation and CO2 –levels. In many cases the bars in figures 3 and 4 reflect the means of 3 animals [the authors need to comment on this]. The authors may consider revising the presentation of the data in figures 3 and 4 in the absence of any significant difference in the CO2 plus and CO2 minus treatments [and the low n].

At the very least better organization of the panels in figures 3 and 4 [by grouping panels of the same species] may facilitate easier reading/comparison. Better use of colour may also facilitate easier comparison. I also suggest repeating the labels "air saturation" and "oC" in each panel.

The authors should also consider combining figures 5 and 6 owing to the almost identical and very lengthy figure captions. Also the x-axes need to be labeled and ticks should be included on the x-axes of the upper panels in both figures 5 and 6.

I also believe that the inclusion of a "Conclusion" will assist in focusing the reader on the findings of the study.

Minor comments:

Pg 17330 line 6: possibly delete "depth"

line 13: replace "at" with "in" or "within"

Pg 17331 line 25: replace "impact" with "influence"

Pg17332 line 7: revise to "OMZs have expanded. . .."

line 9: revise to "An expansion of OMZs . . ..ecosystems. For example. . ."

line 13: revise to "Many organisms have adapted by developing enhanced. . .."

line 25: revise to "Many species inhabiting the OMZ have evolved. . .."

Pg17333 line 4: not sure that "constrained" is the right word here

line 6: should "is first of all" be replaced with "primarily"

Pg17336 line 4: revise to “Animals were not fed before or during experiments.”

line 25: revise to “0.2 μm Whatman GFF filter”

Pg17337 line 7: revise to “were treated with”

line 10: what is meant by “immediately on board”?

Pg17338 line 14: revise to “and the recording of data for the determination of respiration rates. . .”

line 21: revise to “obtained over a maximum incubation time of 16h”

line 24: revise to “Samples were incubated for 2 to 10 h for the measurement of ammonium concentrations.”

Pg17339 line 14: revise to “as the difference between the first and second measurement and the oxygen concentration was calculated as the mean of the initial and end oxygen concentrations” – not sure what the latter part of the sentence means.

Pg17340 line 3: revise to “Pairwise t tests were employed to compare the respiration and excretion rates of the two pCO2-treatments maintained under similar temperature and pO2 conditions.”

Pg17341 line 14: not sure what is meant by the sentence “Differences to the simulated environmental conditions were even larger. . .”

line 18: revise to “were slightly above those of the ETSP OMZ.”

Pg17344 line 15: revise to “at temperatures, and oxygen and carbon dioxide levels”

Pg17345 line 11: revise to “experienced by the animals when migrating”

line 25: should it not read “no significant changes” – otherwise “acute” needs to be quantified

Pg17346 line 24: delete “these experience”

Pg17348 line 3: revise to “Several studies have assessed. . .”

Pg17348 line 7: revise to “were obtained under mildly hypoxic to normoxic conditions”

Pg17348 line 9: revise to “For OMZs demonstrating only mild hypoxia, such as the ETNA OMZ, this approach. . .”

Pg17350 line 1: not sure what “[. . .]” means

Interactive comment on Biogeosciences Discuss., 12, 17329, 2015.