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Biogeosciences
Discussions

Interactive comment on "Negligible effects of ocean acidification on *Eurytemora affinis* (Copepoda) offspring production" *by* A.-K. Almén et al.

Anonymous Referee #1

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This paper focuses on the effects of ocean acidification on the reproductive success and antioxidant defense of the copepod E. affinis. The authors through measurements of various parameters attempt to identify if there are any direct or indirect effect of OA on offspring production of this egg carrying copepod. This holistic approach encapsulates the underlying mechanisms involved in the response of marine copepods to OA, providing a greater understanding of energetic allocations and trade-offs under this climatic stressor. There are some nice features in this study such as the fatty acid composition of the females and eggs as well the ORAC estimation of the females. Also the examined species, E. affinis, belongs to a group of copepods that we have little data on regarding the sensitivity to ocean acidification and the results presented

are therefore of interest to the scientific community. Given the amount of work that has been done on ocean acidification effects on copepods through Laboratory experiments there has been little work on how zooplankton organisms would respond in their (near) natural environment during mesocosm studies. Thus, I find this study relevant and of interest to the research community working on effects of ocean acidification on copepods. However there are aspects of this manuscript that can be improved. Please find a list of more specific comments below:

P.17098 L.26: Please, give a good reason for choosing these dates to perform the egg production experiments.

P.17099 L. 3: Give an explanation for why you didn't filter the incubation water to avoid in this way the other predators or nauplli produced from other species. P.17100 L.27-P.17101 L.12: Many methodological details for parameters (carbon and nitrogen concentrations, phytoplankton) that they are not presented neither in the results nor in the discussion.

P.17101 L.14. The authors have used C:N, dinoflagellates and other parameters for their statistical analysis however there is no any information or relative reference in this manuscript how these parameters changed over time and with the different pCO2 levels. I would be easier to follow the results and the discussion if the authors provide this information.

P. 17102 L. 4. Correct "fort" to "for". P.17104 L.5. The authors don't No discuss at all these two parameters and if they changed with the elevated CO2 or not. Please explain the reason.

P. 17106 L 4. "The abundance of diatoms was high during the first days but then declined rapidly" How and where did you show this in the manuscript. Please clarify how the estimated parameters changed during your experiments.

L.14-16. Statement which in not clear how this fit with your results.

L.18-20. Please make clear that besides E. affinis nauplii you didn't count also nauplii from other species.

L. 24-25. How this result is justified from your measurement? Do you have an approximate age for the recently matured adults? As age influences fecundity success it might be appropriate to put an approximate age of maturity to the individuals exposed.

L.26-28. PUFA of which (females or eggs), please clarify? It is better to remove this to the next paragraph. P.17107 L.20-28. Remove this paragraph to the previous chapter or modify it to attach better with this one.

P.17108 L. 19. "The possible pH stress E. affinis experienced in this study was rather via food. We found that the effects of food quantity had an impact on nauplii production of E. affinis. . .. For the time we conducted the laboratory based experiments, we, however, did not observe an indirect CO2 effect via phytoplankton biomass". It sounds as a contradictory conclusion. The indirect effect is not very well described and discussed according to the results of this experiment.

Figure 1. Please, add the standard deviations in the plot.

Figure 2. Add the trend line equation as well as r2 and P values.

Figure 3. Add the trend line equation as well as r2 and P values.

Figure 4. Add the trend line equation as well as r2 and P values.

Interactive comment on Biogeosciences Discuss., 12, 17093, 2015.