

Interactive comment on “The metabolic response of thecosome pteropods from the North Atlantic and North Pacific Oceans to high CO₂ and low O₂” by Amy E. Maas et al.

Anonymous Referee #2

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This study deals with an interesting question: does life history (geographical origin) drive the response of pteropod metabolism to ocean acidification and low oxygen? This is a good manuscript that provides some critically needed data on the physiological response of pteropods to OA. While the presented data set is not perfect (missing treatments at some sites, problems with pCO₂ manipulations), this approach looking at the combined effects of high pCO₂/low O₂ on pteropods originating from two distinct ocean basins is novel and adapted to look at potential acclimation. I have reviewed an earlier version of the manuscript and I am pleased to note that the authors took in consideration the previous comments. I have listed few specific comments below.

Comments: Abstract: The first sentence is a bit confusing. It reads like the burning of

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fossil fuels directly cause a decrease in O₂.

L72: This sentence is misleading and tends to indicate that with OA all oceans will be undersaturated.

L79: Probably the change in saturation state is not the only driver (DIC/proton ratios, pH itself, ..). I would replace this by “modifications of the carbonate chemistry”.

L101: It would be good to compare this value with what is found in the other oceans.

L146-148: You mention it in the discussion, but it could be interesting to indicate here that they are potentially different species.

L-226: Add “Surface” before “carbonate chemistry”.

L340: The effect is probably minor, but pteropod calcification and excretion can change the TA.

L350: Could the difference in TA be due to the bubbling that caused evaporation?

L456: Increased not decreased?

The results section contains a large part of methods and discussion. It reads well but I wonder if for clarity the methods and discussion statements should be moved to the corresponding sections.

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