Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2020-53-RC2, 2020

Biogeosciences Discussions
Open Access
EGU

Interactive comment on "Spring distribution of shelled pteropods across the Mediterranean Sea" *by* Roberta Johnson et al.

Anonymous Referee #2

Received and published: 7 April 2020

This paper presents an interesting dataset that was collected during a cruise across the Mediterranean Sea. The authors investigate the relationship between pteropods abundance and environmental parameters. They notably shows that the abundance of pteropods is generally higher in their study in the East Mediterranean compare to the West. They explain this difference between the two regions by the higher aragonite saturation state in the East basin. While the data presented are interesting they suffer from severe limitations that limit the validity of the conclusions made. The main limitation is that pteropods are migratory (daily and seasonally) organisms with very patchy distribution. It is therefore virtually impossible to draw any conclusion on the relationship between pteropod abundances and environmental parameters using 22 spot measurements over thousands of km. As an example of this patchiness, their

Printer-friendly version

Discussion paper

abundance was 0 in several locations in the East Mediterranean Sea where they are supposed to be the most abundant. Furthermore, samplings were done at different time of the day at each location, which is highly problematic when studying organisms that are daily vertical migrators. I have listed below more specific comments:

L 29: Probably not the best reference

L32: Comparatively to what?

L47: Two “this ”in one sentence is a bit awkward.

L54: Mediterranean Sea temperature?

L63: Why only ocean acidification?

L69-70: This sentence is not clear and true.

L72: Average by what? Yearly average? How much of this difference is due to temperature?

L123-124: Was the boat moving during the sampling? This could have big implication on what was sampled. A mesh size of 150 um is very small to capture large species. Cavolinia inflexa is for example relatively big (and can be very abundant in the Med). This could explain their low abundance.

L129: Were the samples fixed with buffered formalin? How long were the samples stored before species ID?

L144: Time of collection should be included in the PCA, this could greatly affects the presented results.

L177: Would the result of the study be the same if pteropod biomass rather than pteropod abundance was investigated?

L 235: It is not surprising to find Limacinedae as the most abundant species with this method of sampling.

Printer-friendly version

Discussion paper

L 243: If the energetic cost is driving the response of pteropod, why are they not more abundant (or at least not less abundant) in the region with more food resource?

L265: Kapsenberk paper shows data for 1 and 50 m depth.

L266-270: This sentence is not clear. What is the point made here?

L278-281: This is not true, western Mediterranean Sea temperature in winter are higher than 10. This is also not shown on Fig. 4.

L 290: Some stations are located in the Adriatic, I would not call this sea as ultra-oligotrophic.

L320: I don't see the point of comparing the data between pteropods and foraminifera here. They have been no mention of forams before in the methods and the results. This section comes from nowhere and should be deleted. I would rather like to see a comparison of the data collected here with the one collected previously in the Med Sea in other locations for example. How do those data correlate with previous data on pteropods from coastal stations or other cruises?

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-53, 2020.

Printer-friendly version

Discussion paper