Ocean Science
Discussions

OSD

Interactive
comment

Interactive comment on "Annual cycle of sound-scattering mesoplankton in the oxycline and hypoxic zone in the northeastern Black Sea" *by* Alexander G. Ostrovskii et al.

Anonymous Referee #2

Received and published: 15 January 2021

Comments to MS os-2020-106. "Annual cycle of sound-scattering mesoplankton in the oxycline and hypoxic zone in the northeastern Black Sea" by Ostrovskii et al.

This manuscript presents an interesting dataset taken in the hypoxic zone of the Black Sea. The authors have undoubtedly done a good amount of data collection, analyses, and present their results and conclusions in a reasonable way. However, in its current form, the manuscript still requires further revision according to comments from the another reviewer (RC1) with which I fully agree.

Some aspects that I consider authors should improve, clarify and justify in a better way are:

Printer-friendly version

Discussion paper

1) The title is on the annual cycle, but nowhere the annual cycle was actually shown. So, what do authors understand by annual cycle? Authors have taken data from 2013 to 2020 which sounds great, but they have not estimated the annual cycle. I advise authors to perform these calculations in order to affirm the title of their manuscript or simply delete and rewrite it again.

2) The abstract must be completely rewritten since it is not consistent with the classic and logical way of establishing the purpose and motivations of the study, then some background indicating the main results and conclusions.

3) A weak point in the work is the lack of simultaneous sampling of zooplankton. If this was done, authors should show their time series with these samples to validate the acoustic records. If these samples are already in previous papers then authors should emphasize this point throughout the text. This important aspect is not very clear.

4) The Introduction section should be rewritten. The backgrounds, motivation, objectives and hypothesis that were tested are missing. For example, paragraph from line 41 should be earlier in the text.

5) Line 70. Correct to "species".

6) Line 92. Please indicate authors or doi (if applicable) rather than insert manual. The same for lines 98 and 99.

7) Line 120. The authors say ". . . transducer is most sensitive to particles with a diameter of 0.23 mm. . ." then, it is necessary to make a simple comparison between this particle diameter with the respective diameter of the copepod species. This would help to clarify ideas and further support its acoustic validation.

8) Line 133. Please avoid unconventional symbols or nomenclature. Simply indicate 1 m instead of "10ˆ0".

9) Line 143. Do you have observational evidence that the same zooplankton aggregations were sampled? If so, authors should show it as results or if it is an assumption to

mention it as such throughout the MS.

10) Line 155. Please indicate accuracy and detection limit for oxygen sensors. This point is important since in several figures there are very low O2 values, so these values are questionable if the detection limit of the instrument is not known. If this is the case, the values below the detection limit must be deleted.

11) Line 179. Please explain in more detail or reference about the hydrogen sulfide zone.

12) Line 189. The "R ratio" should be explained in more detail. Perhaps one way to start is by inserting an equation and defining the parameters one by one. Furthermore, authors should emphasize the rationale for using this ratio when other methods are available in acoustic measurements.

13) Line 195. Correct "daythe"

14) Fig. 4. Why do the authors define the hypoxia zone based on density values and not on O2 concentration values? Not bad, but for comparative and conventional purposes it is more useful to define this zone with O2 values.

15) Line 206. Delete "compare"

16) Lines 219-227. This paragraph should be in the discussion section.

17) Figure 7 refers to October 2004... other figures to November 2019. Why this difference? Authors must give justified reasons to present their results in this way.

18) Figures 8, 9, 11-14. The O2 concentration values are in power format. Please avoid this form and use conventional format. The transformed scale is justified by emphasizing on curves, but numbers not.

19) Figure 9. Is it about the entire time series or some selected months? Please clarify.

20) Figure 10. It refers to June-July 2014, why? All these discrepancies in presentation

of results into figures without adequate justification and methodological clarification make difficult to understand the main message of the MS.

21) Figure 11. Refers to August 2019. . ..

22) Line 288. Without detailed information on the detection limit of O2 sensors, it is difficult to accept the values indicated here, i.e. 4-9 uM.

23) Lines 318-319. Fluorescence was not measured in this study, if it was, it should be indicated accordingly. If there are support from other sources, they should be indicated.

24) Figure 14. This figure is fine as a corollary to the main message. I like it, although in 3D view it is somewhat difficult to visualize. Perhaps authors could rotate angles a bit more for better visualization or separate information into two 2D panels.

25) Lines 443-444. I do not understand what authors are trying to say in this sentence. Please rewrite.

26) Line 449. Researchgate is a popular and excellent platform to disseminate scientific research; however, to deposit datasets I suggest to use platforms specifically designed for this purpose. Please consider it.

27) Finally, consider to reduce the length of the conclusion paragraph.