Ocean Science

Discussions

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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 #3

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The manuscript (MS) presents a modern imaging techniques such as the acoustic of pelagic communities with advantages to be informative about heterogeneity and transcend multiple spatial scales. The article is based on a large data set (2013-2020) obtained from the application of an alternative innovative approach - a moored Aqualog profiler equipped with an ultrasound probe, a conductivity-temperature-depth (CTD) probe, and a fast oxygen sensor with the advantage of frequent year-round measurements of collocated vertical profiles of sound scattering, temperature, salinity, and oxygen concentration in the water column from the near-surface to the bottom layer with a high vertical resolution. This topic is not novel but the previous studies are based on ship-borne echograms. The authors clearly indicate their own original contribution.

The work is interesting, results are sufficient and the paper addresses scientific questions within the scope of OS but needs some revisions. 1) The abstract should be condensed and concentrated around the main aim, results and conclusions. 2) In the introduction the main sound-scattering zones are defined according to Ostrovskii and Zatsepin (2011) but I suggest to bind them with the density sigma theta which is relevant to the mesozooplankton vertical distribution especially for the Black Sea. As a consequence, it needs to be developed and compared in the results and discussion chapters. In the MS the lowest depth mentioned was at $\sigma\ddot{I}t$ = 15.9 kg m-3. However, in other studies (Mutlu 2007a, b,) sigma theta - 16.2 kg.m-3 , identified as oxygen minimum zone (OMZ) (Tugrul et al. 1992), is a layer where Calanus euxinus spend their daytime. How will the authors comment these differences? 3) The authors presented different seasonal variation in mesoplankton dynamics in relation to dissolved oxygen concentrations. Additionally the SL amplitude showed differences in same months but a reasonable explanation is not presented. 4) There are two dominant species well acoustically discriminated in the Black Sea – Calanus euxinus and Parasagitta setosa (Mutlu 2007) but the later was not included in the MS which need an explanation. 5) Line 315 The authors say ".............two layers in the cold intermediate layer (CIL) (temperature less than 9°C),............." but according to the literature the positions of the 8°C isotherms have traditionally been considered the lower and upper boundaries of the CIL (Blatov et al., 1984; Ozsoy and Unluata, 1997). Winter cooling, which is an essential element of the seasonal variability could be used for comparison of unlike SL profiles in the same season (month) in different years. 6) Conclusions should be rewritten - shortened, concentrated and clearer, emphasizing the research contribution. 7) Correction: Pseudocalanus elongatus (WoRMS) is the right species name, not Pseudocalanus elongates 8) Figure 3 It is mentioned that "The horizontal axis represents UTC time." Please, check. 9) References should be checked. For example, Arashkevich et al. 2014 (in the text) Arashkevich et al. 2013 (in the reference list); Arashkevich et al. 199, Besiktepe et al., 1998 are missing in the reference list but are cited in the MS and etc. 10) The language should be precise.

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Interactive comment

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