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Interactive comment on "The temporal variability of oxygen inventory in the NE Black Sea slope water" *by* Alexander G. Ostrovskii et al.

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This is a clear study presenting an interesting observational material and providing interpretations of findings. Results are convincing, however the presentation needs some improvements. I hope that below comments can help authors provide improved revision.

1. English grammar needs substantial improvement by native English speaking oceanographer. 2. Explain more clearly concepts and literature review (see further some specific comments). 3. I do not find a clear prove that "the new CIL emerged by horizontal advection above the pycnocline only at the end of the observational survey". This is mentioned in the abstract and in p. 5, 6 where authors mention Fig. 9. They

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should explain how they deduce this from the figure. 4. When talking about time scales authors could make spectral analysis to quantify the relevant periods: “the hypoxia boundary depth fluctuated on two time scales: ∼17 h due to the inertial oscillations and approximately 5 days due to the current meanders and eddies. 5. Stanev et al., 1995 is cited but not added in the reference list. 6. When you say “In general, factors that provide the resistance of the Black Sea ecosystem to anthropogenic and climatic effects are weaker than those in other marginal seas adjacent to the European continent” cite the origin of this statement or provide evidence. 7. The statement “In the wintertime, intensive cooling and vertical convective mixing are known to occur in the Black Sea, which enables the top layer to achieve its maximum thickness and minimum temperature (refer to Piotukh et al., 2011 and corresponding references).“ is too general. It is not Piotukh et all. (2011), who first came to this conclusion. Authors should cite relevant papers. Perhaps stress that Piotukh et all. (2011) came to this conclusion for areas subject to the present research. When describing the formation of CIL take in discussion Stanev, E. V., M. J. Bowman, E. L. Peneva, and J. V. Staneva (2003b) Control of Black Sea intermediate water mass formation by dynamics and topography: comparisons of numerical simulations, survey and satellite data. J. Mar. Res., 61, 59-99. 8. Rephrase “However, the ARGO buoys profiled the water column at five-day intervals. Therefore, their data could not be used to evaluate typical time scales of short-time fluctuations in the oxygen inventory.”. Some Argo floats in the Black Sea are programmed to measure with finer sampling rate. Re-programming can be done during the operations. 9. The phrase “In the center of the western cyclonic gyre, the depth of the top mixed layer was limited by 40 m also in an anomalously cold winter (Gregg, Yakushev, 2005).” has to be specified in the context of present paper. Is what happens in the western gyre relevant to the eastern part, the latter being the subject of this study. If yes, prove it. 10. p. 8, l. 5, In the paper of Gregg and Yakushev there is no a word “hypoxia”. They talk about SOL. To my knowledge suboxia is more used when describing shelf processes. Please check with hydrochemisists. 11. Authors could consider studying the relevance of following papers Stanev, E. V., S. Grayek,

H.Claustre, C. Schmechtig, and A. Poteau (2017) Water intrusions and particle signatures in the Black Sea: a Biogeochemical-Argo float investigation. Ocean Dynamics, 67, 1119–1136, doi: 10.1007/s10236-017-1077-9 and Stanev, E. V., Poulain, P.-M., Grayek, S., Johnson, K. S., Claustre, H., & Murray, J. W. (2018). Understanding the dynamics of the oxic-anoxic interface in the Black Sea. Geophysical Research Letters, 45. https://doi.org/10.1002/2017GL076206 to their study.

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