

Interactive comment on “The relative importance of selected factors controlling the oxygen dynamics in the water column of the Baltic Sea” by S. Miladinova and A. Stips

Anonymous Referee #1

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I agree with the authors that what is an important result is a subjective matter; the point is taken that Hans Burchard was surprised that only physical factors related to air-sea exchange appear to determine the surface oxygen concentration. The only thing that I can say is that personally, I would have found it much more surprising, if the surface oxygen would be governed by the air-sea exchange on time scales shorter than the equilibration time scale (e.g., 10 days), or if the surface DIC concentration (which has a much longer equilibration time) would be determined by air-sea exchange on the seasonal time scale.

I do maintain, however, that there should be a much more profound analysis of the

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oxygen dynamics at the bottom of the Baltic Sea. In my opinion, the bottom dynamics is not only more interesting than the surface oxygen dynamics, but also more important, given that the main motivation for this study (as stated in the Introduction) is the problem of oxygen depletion in the deep Baltic. In the latest version of the manuscript, the authors suggest that the seasonal oxygen variation at the bottom of the Baltic is caused by seasonal pulses of North Sea inflow. This appears as a plausible idea to me, but the evidence that is provided for this hypothesis is very limited. The only clear peak in salinity seen in Figure 6C is in 2003; the observed salinity maxima in earlier years may just as well be considered as random noise. Therefore, I strongly urge the authors to provide observed salinity time series from the bottom at the stations BY0 and BY1 at the entrance of the Baltic Sea where the signature of pulses of North Sea water will probably be much clearer. I think that a separate section about this, as the authors suggest themselves, would be a very good idea.

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