**Ocean Science
Discussions**

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Comment

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

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Thank you for your comments and questions. We have taken into account all your comments regarding some unclear sentences and technical details. You can see them corrected in the revised copy of the manuscript attached here as a supplementary material.

The answers of your questions are as follows, "p. 2119, line19. The ten state variables of the biogeochemical model to be given." It has been done. " Also other simple models could be quoted. I don't see a reason to refer ERSEM model." We refer here the ERSEM model because there is already 1-D model using ERSEM as a

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biogeochemical model. On the base of this model simulations of a station in the Baltic Proper have been done (Vichi et al. 2004). "p.2121, line 15-17. Is it reasonable to fix the Secchi depth? Maybe usage of seasonally variable values is better." The Secchi depth is assumed as a constant in the GOTM formulation. However, there is a feedback from the biogeochemistry to the water column physics - the modified turbidity changing the light absorption in the water. "p.2123 another novelty – model improvement by including the usage of variable piston velocity and nonlinear Osat . better to give explicitly in the text the formula of Weiss." Our opinion is that the formula of Weiss is well known. "p.2126 lines 1-8. Could be specified the range of the depths of the surface and intermediate layers. Line 15 – citation for the original formulas of the statistical indexes." We couldn't specify the range of the depths of the surface and intermediate layers because their range is changed seasonally. The approximate ranges of the halocline and the thermocline at different stages are given on the page 2125. The expressions used for the statistics calculation can be found in Taylor (2001) among other sources. "p. 2130 line 26. Chl a. Actually some info/statistic about the mode performance is given not here but later on p.2132. why?" Biological activity is discussed mainly as a factor controlling oxygen concentrations. "p. 2131, line 12. 'An interesting finding . . ..'. why? Any explanation? " The possible explanation is that, for example in 2003 at BY5, both in-situ data and satellite data do not predict significant summer peaks. "p.2134 how to relax 1-D model when there is scarce or no data. What about the biological component relaxation?" Unfortunately, this procedure is not included in the GOTM_BIO. p.2125-6. even the performed 150 scenarios the conclusion about the effect of the limiting nutrients is not very clear. It is difficult to asses the effect of limiting nutrients when using the 1-D model.

Please also note the Supplement to this comment.

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