

Biogeosciences Discuss., referee comment RC1
<https://doi.org/10.5194/bg-2021-31-RC1>, 2021
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Comment on bg-2021-31

Anonymous Referee #1

Referee comment on "Retracing hypoxia in Eckernförde Bight (Baltic Sea)" by Heiner Dietze and Ulrike Löptien, Biogeosciences Discuss.,
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This manuscript describes the use of computer simulations to understand and predict dissolved oxygen dynamics within a coastal setting. The geographical focus is a coastal inlet close to Kiel which suffers from hypoxic events. The manuscript takes advantage of long standing time-series observations in the area. Both authors are based in Kiel and their strong affinity for Eckernförde Bight and the surrounding region is evidenced throughout the manuscript. Overall, I found the manuscript to be very well-written with regards to English language and well-structured.

I have a few comments after reading the manuscript.

1. The key findings of the manuscript are that O₂ dynamics in Eckernförde Bight are determined by the inflow of water from the adjacent Kiel Bight and mixing processes within Eckernförde Bight. Was this unknown prior to this study? Physical processes drive most of the observed oxygen variability in coastal systems, so were these findings unexpected? This does not diminish the importance of this work, but the broader context is missing from the manuscript (see also #3 below).

2. There are 3 Tables and 23 Figures! I think some editorial evaluation is needed about whether to place some in a Supplement or prioritize the Figures for publication. Inclusion of all the figures causes the manuscript to read more like a technical report rather than a publication. This is not a bad thing, but it did make me wonder why the authors chose Biogeosciences journal

3. Does this work have any wider ramifications for other coastal sites? The Discussion/Conclusion focus exclusively on Eckernförde Bight with no mention of using the simulations to improve predictions at other locations. Again, I think if the authors publish in a journal with wide readership then a broader context is needed.

4. Please can the authors improve their communication about whether or not the simulations sufficiently predicted the oxygen dynamics. I realize this is shown in Figure 7 and 8, and discussed in the text on Lines 177 and 358, but its unclear to me whether the correlation coefficient obtained for the simulations is deemed to be successful or needing further work.