

## ***Interactive comment on “Environmental parameters of shallow water habitats in the SW Baltic Sea” by Markus Franz et al.***

**Anonymous Referee #2**

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General comments:

Franz and colleagues provide environmental parameters, i.e. dissolved inorganic nutrient concentrations as well as temperature, salinity and dissolved oxygen, for parts of the German coast in the south-western Baltic Sea, over a two-year time frame. The manuscript is well written and structured, as is the provided data. The data is hosted on PANGEA and stored in a convenient to use and easily accessible format. All necessary information is provided as indicated in the manuscript. Overall, the manuscript and data can be a valid contribution to the field and seem of good quality. However, I do have some concerns that would need to be addressed before I can fully recommend the manuscript for publication. Please see these comments in the section below.

Specific comments:

C1

Page 1, L 9-10: Most of local environmental monitoring in the Baltic Sea and elsewhere is not performed by large research vessels, and the potential scarcity of the data is very unlikely linked to the lack of accessibility by those vessels but rather by efforts to make available data public. Coastal data in the Baltic Sea is in fact not that scarce. I recommend to rephrase this sentence.

P2, L2: I don't understand how local short-term and fine scale variability of environmental data can improve the predictions of climate change impacts. Please rephrase or elaborate.

P2, L11: The authors state that shallow areas are generally not affected by oxygen depletion. Especially in the Baltic Sea this is not true. Please see e.g. Conley et al. 2011 Environmental Science & Technology 45 (16), 6777-6783. Hypoxia in shallow coastal areas is rather common phenomenon, which is not only fueled by upwelling but rather by local sediment and physical conditions as well as respiratory processes due to excess organic content. This should be mentioned and addressed.

P2, L12 and following: When only referring to changing environmental conditions induced by upwelling events, this may be true. However, benthic and demersal species are also facing the opposite effects induced by climate related impacts, which the authors miss to report here, i.e. higher temperature and lower salinities. As climate related impacts and the usefulness of this study to understand them better are mentioned several times in the manuscript it would be important address this here as well and not only refer to upwelling.

P2, L18: Here and elsewhere (e.g. P1 L11, P15 L4) in the manuscript the authors make it sound like the study covers the south-western coast of the Baltic Sea. However, in fact the study is quite local and only covers a fraction of the German coast. I believe the authors should mention this more clearly besides in the specific material and methods part to avoid misleading information and generalization.

P4 L5 and L23: How did the person taking the water sample reach the sites where

C2

loggers were deployed at 2.5 m depth wearing a chest wader? Or did she/he take the samples located away from the loggers? The sampling procedure is unclear for those cases. Please clarify.

P5, L14: As a reader I would like to know more about the irregular cleaning intervals (approximate time frames, degree of fouling and its potential impact in the measurements). As biofouling during peak summer season can have an impact on loggers within days this would be important information.

P6 , L21: How were the threshold values for the tests defined and based on what information criteria?

P11 and in general: The manuscript is presenting shallow coastal areas as dynamic and variable systems that can undergo rapid and large changes, which is true and important. However, what is clearly missing in the presentation of the data, and one the biggest issues in the current version, is the highlighting of the temporal variation within each site. There are only vague site-specific trends shown in figures 5 and 6. To fully appreciate the magnitude of short-term and site-specific variability, the sites would need to be plotted over time so that the reader gets an impression on what is happening at which scales. Interesting would for example be to see if there are differences in variability over seasons and in between years. How do diurnal, seasonal and annual differences in variation scale?

P12, L9: Instead of making the reader guess a trend over the box-plots, I would encourage the authors to provide a regression slope to highlight trends across stations. Also, is this a true geographical gradient following the salinity gradient of the Baltic Sea or is this rather because of the location of sites 10, 11 and 13, reflecting a local gradient towards the inner Lübeck Bight?

L11. Although this is a descriptive manuscript, some of the highlighted results would need to be put into perspective and be explained. What was this large change in salinity attributed to? How long did it last? Was it a specific upwelling event? Did this

C3

coincide with a change in temperature and the other measured parameters? How do the authors explain such dramatic changes?

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C4