

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

Anonymous Referee #1

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General comments The manuscript is well structured and written. The collection and preparation of data has also been done in a mostly satisfying way. However, the study suffers from a couple of major issues: A) In my opinion, the novelty of the study applies, at the most, to the southern Baltic. At least regarding the northern parts of the Baltic (Sweden, Finland, Estonia), corresponding data from shallow, coastal environments can be found in a large number of reports and publications. Albeit those data are often considered trivial and have thus not been highlighted and summarized as systematically as in the manuscript. In any case, the authors should know that these kind of data do exist, use them for comparison and refer to the sources accordingly. Instead of a case study, there would rather be need for a systematic review of data from shallow, coastal areas of the Baltic. B) Although the manuscript is supposed to be of descriptive

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nature, a proper synthesis of the findings is lacking. This would be especially important in a study without a specific theoretical framework or hypothesis. C) One of the main points of the study is to highlight the fact that shallow, coastal environments are highly dynamic. However, this is hardly surprising. At least I would not expect anything else than high diurnal and seasonal variation in most environmental variables from shallow, brackish waters located between the 54th and 55th latitudes. While the authors highlight the dynamism of the surveyed environmental type, they don't summarize its (diurnal and seasonal) dynamics in any kind of way. A spatial comparison of the dynamics and potential phenological differences among the stations would be a major improvement in the manuscript. This would be possible with the existing data. D) In order to highlight the dynamic nature of the studied environments, they should be compared with something. First, the authors should refer to corresponding data from other shallow environments (see point A). More importantly, the set-up of the study should have included deeper waters further off the shore. Preferably, the study set-up should have incorporated coastal gradients (inshore-offshore) by each station. Although it is understandable that this kind of an approach would have required completely different resources, highlighting the dynamism of the studied environment without actually comparing it with anything is, in my opinion, a major issue.

Specific comments Page 2, rows 12-15: Benthic communities will face not only low or high extremes but high variation in environmental conditions. In shallow areas, both sorts of extremes are very common.

Page 2, rows 16-18: At least for the northern Baltic, there is already plenty of reports and scientific publications where this type of data can be found. However, those data may be considered too trivial to be summarized in their own right. In other words, the systematic summary presented in this manuscript can be considered useful (but not without references to and comparisons with data from other shallow, coastal areas of the Baltic).

Page 2, rows 23-25: As the purpose of the study is to show that shallow, nearshore

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habitats are particularly dynamic compared with deeper, off-shore habitats, depth gradients should absolutely be included in the sampling set-up (see also general comments).

Page 4, rows 4-9: Wading to the sampling stations can have had large effects on many of the measured variables because of sediment resuspension. The authors should be able to show that such effects did not take place. In my opinion, wading should absolutely be avoided, preferring other ways of approaching the stations.

Page 4, row 16: In nearshore environments such as those sampled, high amounts of organic carbon and even copper may be present. Such compounds can influence results from the cadmium reduction method. In practice, high levels of carbon and copper can lead to underestimates of total nitrogen. It would be good if the authors could show that carbon and copper levels were low enough not to influence the analysis.

Page 5, rows 14-15: The cleaning intervals seem unnecessarily long. During the productive season, considerable fouling can happen in a matter of a few weeks. The authors should explain in greater detail how they made sure sensor drift (caused by fouling) did not affect the recorded data.

Page 6, rows 25-26: See comment for rows 14-15 on page 5.

Page 15, rows 3-4: It can be very much expected that shallow waters located between the 54th and 55th latitudes are very dynamic, on both diurnal and seasonal scales. By contrast, it would be interesting to know more about spatial variation in phenology on both scales. This kind of information disappears when all temporal variation is lumped into boxplots. When temporal variation is summarized like this, there's a high likelihood that the results from the different stations look uniform merely by chance. Besides, statistical inference seems not to have been used to assess whether the stations differed from or were similar with each other in terms of temporal variation. See also general comments.

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