

## ***Interactive comment on “A decade of dissolved sulphur compounds measurements in the southwestern Baltic Sea” by Yanan Zhao et al.***

### **Anonymous Referee #2**

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#### General comments:

In the current study, the authors present a 10-year time series of various dissolved and particulate sulphur compounds collected in the Baltic Sea at the very well established long term monitoring station Boknis Eck. The data are presented and discussed in the context of various environmental data and phytoplankton groups, which were derived from marker pigments using the CHEMTAX<sup>®</sup> approach. The marker pigment approach is further explored in using an updated predictive equation to tackle future evolvments of the DMS, which would be beneficiary for modelling approaches. In addition, the time series was explored in the context of typical features observed in the Baltic Sea, anoxia and occasional ventilation events of the deep water based on salt-water advection from the North Sea. In this paper, the authors present a unique and high quality new data

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set, which is valuable for a large community both interested in the sulphur compound cycle but also in the development of coastal environments, which are more and more under the pressure of climate change. Long-term data sets like this are essential to project climate change in coastal regions and beyond. The paper is very well structured and written. It was exciting to read and easy to follow. It gives an excellent overview of the available literature in the field. The authors have very carefully exploited their data and provided the appropriate statistical evaluation to support their results, and extracted the main findings of this study. So overall, the paper is in the range of very good to excellent and below you find a few suggestions, which should be suggest before final acceptance of the manuscript.

### Specific comments

Line 12 and entire document: What is the rationale in using the class name for prymnesiophyceae, while all other groups were kept unspecific? Please harmonies all phytoplankton groups throughout the manuscript to prymnesiophytes.

Line 101 how long after sampling was the filtration done?

Line 116: Please give more details about the CHEMTAX<sup>®</sup> approach, did you use different depths, years etc. Please give input and output ratios for the data set.

Line 283 ff and Line 319ff Discussion about 4.3.1 The Major Baltic Inflow events and 4.3.2 Low oxygen events: The paper would benefit, if the two events would be better introduced at the beginning of each chapter including previous literature about associated findings with these type of events. This would be helpful to understand the rationale behind the expectation of changes also for the sulphur compounds.

Please check the references for consistency

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