

## ***Interactive comment on “Composition and Vertical Flux of Particulate Organic Matter to the Oxygen Minimum Zone of the Central Baltic Sea: Impact of a sporadic North Sea inflow” by Carolina Cisternas-Novoa***

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In this study the authors use a wide range of analyses to investigate the vertical structure of suspended and sinking particulate matter composition in two stratified basins of the Baltic Sea following the MBI of 2014-2015. The dataset is large and interesting, but I concur with the first reviewer's assessment that the study lacks a clear focal message. For this reason I would encourage the authors to streamline the text when making their revisions.

C1

My principal scientific comment about the paper would be that the authors have not acknowledged the possibility that vertical profiles of dissolved and particulate constituents in the Gotland Basin may be influenced by displacement effects. Following the MBI of 2014-2015, the sub-halocline water column of the GB experienced significant turbulent mixing between 'old' and 'new' water masses. A lot of the changes in water chemistry that occurred during 2015 were caused by displacement of old, stagnant water by water masses associated with the MBI (see e.g. Myllykangas et al., ESD 8, 2017). For example, the low concentrations of  $\text{Si(OH)}_4$  and  $\text{PO}_4$  in the deepest samples of the GB (Fig. 2A) are very likely due to enhanced contribution of oxic, low-nutrient water at this depth, and not due to scavenging of these constituents onto  $\text{MnOx}$  particles as suggested by the authors for phosphate (Line 464 and in the Conclusions). Displacement may have also influenced the vertical structure of suspended and sinking particulate matter, so this angle should be included when interpreting the results.

In addition I would urge the authors to check their text thoroughly for typographic, spelling and grammatical errors. I have highlighted a few in my minor comments but there are likely several more.

Kind regards,

Tom Jilbert

Minor comments

Line 61: spelling: "allochthonous"

Line 95: spelling and grammar: the correct spelling is "Fårö"; Use "In the LD" rather than "At the LD"

Line 110: rephrase (difficult to understand)

Line 156: grammar: Use "consisted of" rather than "consisted in"

Line 166: what is the meaning of "caped"?

C2

Line 181: grammar: Use “in duplicate” rather than “in duplicated”  
Line 220: rephrase (difficult to understand)  
Line 321: spelling “below”  
Line 354: what is the meaning of “and similar to the water column”?  
Line 356: word missing: “MnOx like were. . .”  
Line 357: Remove colon (:) before “TEP”  
Line 358: Define ESD  
Line 362: Avoid starting a sentence with an acronym  
Line 375: add space before bracket. Also “Redfield’s” should be “Redfield ratio”  
Line 390: DI should be introduced and defined in the Methods section  
Line 432: grammar: “may be enhanced”  
Line 437: typographic errors  
Line 444: typographic errors  
Line 451: “compounds” plural  
Line 453: spelling: “phosphorus”  
Line 464: Rephrase and check grammar, tenses, etc.  
Line 468-470: these statements belong in Results rather than Discussion  
Line 489-90: typographic errors  
Line 519: Mn<sup>2+</sup> is not an electron acceptor  
Line 526: PN and CSP are not compounds. Rephrase.  
Line 597: Niskin bottle, not CTD

C3

Table 2: should the units be “cells/mL”?

Fig. 4: are these all the sampling depths for MnOX-like particles? If samples from other depths were studied but yielded zero particles, these should also be included in the plot

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C4