

## ***Interactive comment on “Organic carbon in surface sediments of the North Sea and Skagerrak” by Markus Diesing et al.***

### **Anonymous Referee #3**

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General comments: The authors successfully present a combined modelling framework of sedimentation rates and Organic Carbon (OC) densities, used to determine the spatial variability of OC in the North Sea and Skagerrak regions. The methods are outlined clearly and the results are presented in a way that is easy to understand. Although the uncertainties are unfortunately quite high, the work presented in this manuscript represents a valuable contribution to the field that should be published.

Specific comments: Lines 108-109: Give a short definition of “pseudo-observations” in the context of this work. Lines 111-112: Define how many are meant by “Some of the sedimentation rate values...”, does this refer to the four values that are amended later in the same sentence or are these four a subset of the “some”? If it’s a subset, the selection process should be explained. Line 131 (Figure 2): There seem to be

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no OC measurements in the Elbe Paleo valley region (Region 2), if this is the case it should be explicitly mentioned. Line 145: “critically reviewed and removed if they were not deemed accumulative” an explanation on the selection/removal criteria should be added here. Lines 263-264: “It is therefore safe to assume that the sediment slice between 5 and 10 cm will contain between 0 % and 100 % of the OC stock of the upper 5 cm.” It is generally safe to assume that anything contains between 0% and 100% of anything, so this sentence is either unnecessary, or should be reworded in a way that makes more sense. Lines 339-341: “Lack of advective oxidation [...] and relatively high sedimentation rates.” The wording of this sentence is unclear and should be revised. Figures: Very clear and easy to understand, good work.

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