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Comment

***Interactive comment on* “Denitrification in sediments as a major nitrogen sink in the Baltic Sea: an extrapolation using sediment characteristics” by B. Deutsch et al.**

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This manuscript provides a meaningful extrapolation of site-based sedimentary denitrification results to obtain a basin-wide denitrification budget. The authors use proper field and laboratory techniques to obtain their results and provide valid justifications for their method of extrapolating site data to a regional level.

The authors would strengthen the article by further justifying their rationale for each of the five methods used to extrapolate data across the Baltic Sea region. As it stands, the lack of such discussion leaves the impression that the models were chosen without an intentional purpose in mind.

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I remain somewhat confused as to why the authors chose to model the oxicleine from 100m to 80m. Why was the latter depth chosen? Was it based on actual model results or observations from sub-basins? This discussion can/should be expanded at the bottom of page 12.

Two general editorial suggestions: 1) the formatting for new paragraphs is inconsistent and should be indicated by a distinct line break; 2) many sentences that start with a leading clause are missing a required comma before the main sentence (e.g., p.3 lines 10-11 “For the Bothian Sea and Bothian Bay, Stockton...” and p. 2, l 32: “Estimated on a global scale, denitrification rates...”). Similarly, many in-sentence parenthetical references require the use of either commas or parentheses to distinguish them from the main text (e.g. on p.2, ll22-23: “. . .between these parameters, as well as the reason why the one or the other parameter is dominating, is ...”). Many cases of missing commas leading to confused sentences were identified throughout the paper.

On page 10 (line 10), I think that the term “indicates” overstates the certainty of the conclusion drawn and suggest replacing it with “suggests”.

On page 12 (lines 6 and 7), I do not understand the parenthetical phrase between the dashes. Do you mean that N-fixation is important in areas other than the central Baltic Sea?

Other specific editorial comments/questions, include: p.1, l. 28: delete “,too” from end of Abstract p. 2, l 2: I am not familiar with the prefix “Mio” used in “Mio tons” p.2, l 8: make a subscript the “r” in Nr p.2, l. 12: delete “the study of” before “Voss et al. (2005)” p.4, l.11: I am unfamiliar with the use of the letter Ø in this context p.5, l. 6: to what does the “p15” refer? p.6, l.2 and 12: spell out “5” as “five” p.7., ll 20-23: place into parentheses the station names used to define each set of stations (e.g., “.with muddy sediments (Kreidesegler and NS14), denitrification rates. . .”) p.9 ll 22-23 and 28: replace” very often” with “frequently” or “commonly”. p. 11, l.8: replace “nowadays” with “now” p.11, ll21-23: not a complete sentence p.13, l 3: change “. . .demonstrate that

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anoxic sediments. . .” to “. . .demonstrate that increasing the areal coverage of anoxic sediments. . .” p.13, l. 5: change “remarkable” to “remarkably” p. 13, l. 13” insert “of” into “the question OF whether. . .” p. 13, l. 23: change sentence to read “. . .in Baltic sediments are high, implying. . .”

Table 3: format to better separate/differentiate between different approached (i.e., rows).

Table 5: Gulf of Finland mis-spelled.

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