**Author response to Associate Editor comments, 19.01.2018**

Dear Editor, dear Jack,

All the suggested corrections to the manuscript have been made as detailed below, with the exception of significant changes to the reference list. Only one reference is added (Canfield, 1993), connected to the simplification of the primary redox reaction equations in Section 4.8. For improving our future work we acknowledge the bias and take on board the advice. At the same time we draw attention to approx. 50 references in the current manuscript which do not fit into the identified categories.

Please find all the required files in the system. Thank you for your consideration of our work.

Regards,

Tom Jilbert

Comments to the Author:

Dear dr. Jilbert, beste Tom:

Thank you for submitting this comprehensive study to Biogeosciences. I have read your revised version and I am happy to inform that your paper is now accepted for publication in Biogeosciences. However, while reading I identified a few items that need correction or attention, I have listed them below.

With best regards, Jack Middelburg, Associate Editor

Point of attention: all through, you selection of references is relatively biased towards those from the Baltic countries and Utrecht University. The scientific world is larger. I leave it up to you though.

*See above.*
p. 6, l. 20 and other places in text: please provide oxygen not only in mg/L but also in molar units.

*Done.*
p. 7, section 3.2 and p. 8, section 3.5. Part of the sections are identical and < 2.5 % RSD does not make sense for isotope data.

*Modified as requested. Precision for isotope data are now given in ‰.*
p. 9, section 3.8: for clarity it is better to use sediment accumulation rates rather than sedimentation rates.

*Modified. We now draw a distinction between linear sedimentation rates (cm yr-1) as described in this section, and their later use in the estimation of accumulation rates of Fe and S in µmol cm-2 yr-1).*
p. 9, line 28: provide 3000 rpm in G-force.

*Provided.*
p. 11, line 1: data were..

*Modified.*
p. 15, line 18: oxygen units in molar as well.

*Done.*
p. 20, section 4.8. I do not see why you present equation 12-14 with flexible Redfield stoichiometry. If you drop the N and P the equations are simpler and the take-home message remains the same. Moreover, equation 14 is not balanced as written. (Many authors make that mistake, no excuse though).

*Points taken. The Reed et al. 2011 formulations for the primary redox reactions are now replaced by the highly simplified forms given in Canfield, NATO ASI Series, 1993.*
p. 28, line 22: sedimentation rate: do you mean deposition or sediment accumulation rate?

*See above. All references to sedimentation rate now state “linear sedimentation rate” as defined in Section 3.8.*