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Discussions

Interactive comment on "The Ballast Effect in the Indian Ocean" *by* Tim Rixen et al.

Anonymous Referee #1

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Sediment trap studies have shown that POC export in the deep ocean is strongly linked to mineral fluxes and mineral flux composition. However, the causes for this relationship are still under debate. In this manuscript Rixen et al., present an analysis of the relationship between export production at the base of the euphotic zone (or rather estimates thereof) and deep-sea mineral and POC fluxes based on sediment trap experiments in the Arabian Sea, Bay of Bengal and Indian Ocean. While I am sure that the approach presented here might have some merit, I believe that the manuscript should not be accepted for publication in its current state given its poor organisation and lack of robustness in the model data comparison: - The introduction is verbose and contains too much information that is not particularly relevant to the study while some of the relevant information is given in section 2 (Study Area). - The aims of the study and scientific approach (model descriptions) are given in the section Results and Discussion (as one example: page 7 line 26 to page 8 line 13) instead of in the intro-

duction and materials and methods. - Further, there is no convincing explanation or proper background information for the choice models used to analyze the data and no robust statistics is presented supporting the choice of model (example: in Fig. 10 why was Michaelis-Menten chose? How appropriate is this model, where are the statistics?). - Finally, some of the more recent and relevant literature has not been included. (examples: Lutz, M. J.et al. (2007), Seasonal rhythms of net primary production and particulate organic carbon flux to depth describe the efficiency of the biological pump in the global ocean, J. Geophys. Res., 112, C10011, doi:10.1029/2006JC003706; Hensonet al. (2015). "Variability in efficiency of particulate organic carbon export: A model study." Global Biogeochemical Cycles 29.1: 33-45).

Additional comments are given in the annotated manuscript.

Please also note the supplement to this comment:
https://www.biogeosciences-discuss.net/bg-2017-317/bg-2017-317-RC1-supplement.pdf

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