

Anonymous Referee #1

We are thankful to the reviewer #1 for the valuable comments and suggestions, which will help us to improve the manuscript. We are convinced that following his/her as well as the suggestion of reviewer #2 to add a "Material and Method" section will improve the organization of the revised ms and in turn show the robustness of our data analysis. Please find below our response to the comments.

Comment: Introduction -This could be shortened to the essentials, in particular the last part on nutrient is too general and not relevant in the context of this study. How is DOC relevant in the context of this manuscript. I suggest removing this paragraph.

Answer: ok will be done in revised version

Comment: Study area - This is again too general. What is relevant here is how the monsoons affect circulation and nutrient supply in the areas of study (i.e as described in the following text).

Answer: will be done in revised version

Comment: It would be helpful if this information was provided in table 1.

Answer: This comment refers to our sentence: "Organic carbon fluxes were measured over a period of seven and more years at two sites in the Arabian Sea (WAST and EAST) and two locations in the Bay of Bengal (NBBT-N and SBBT). At these sites the interannual variability of the annual mean organic carbon fluxes were $< \pm 15\%$." Tables will be included

Comment: Results and Discussion - How does cloud cover affect fluxes? I don't understand this argument. Are you saying that PP from satellite is underestimated?

Answer: Yes, it is a possibility explaining that satellite-derived PP does not correspond to the measured organic carbon fluxes.

Comment: Beyond the fact that there is no information on trapping efficiency, the JAM site is close to the continental shelf. How does lateral advection affect fluxes?

Answer: This was discussed in the Rixen et al. 2006. Based on biogeochemical indicators (C/N ratio, $\delta^{13}\text{C}_{\text{org}}$) it was concluded that there is no indication of an extraordinary, high contribution of organic matter input from sediments and from land. However, this aspect will be included into the discussion.

Comment: This should be in the methods and better explained (including rationale). Why Michaelis-Menten? Where are the statistics?

Answer: This appears to be a misunderstanding. First of all we used the data from Arabian Sea and plotted the fraction of the export production which did not reach the traps versus the export production (Fig 10a- red circles). This fraction was considered as the fraction, which was decomposed in the water column between the euphotic zone and the trap depth. This data reveal a link, which could be described by the Michaelis-Menten equation considering S_{max} and K_n of 99.73 and 1.64, respectively (see equation Fig 10.a).

Accordingly the Michaelis Menten equation resulted from the Arabian Sea data. The following discussion based on the fact that the data from the Bay of Bengal and Indian Ocean could not be explained by the Michaelis Menten equation. In comparison to the trapped material from the Arabian Sea those from the Bay of Bengal and the Java Sea revealed a relatively high lithogenic matter content. This was the base for the further discussion on the lith-ballast effect.

Comment: This again should be in the methods section and also more specific, How are equations 2,4,5,9,10 combined? What do the authors mean by experiments (model-data comparison?) where are the statistics indicating which model/parameter is more appropriate? Why was the value 1.9 chosen for the density of solids?

Answer: Ok, it will be moved to the M&M section and as suggest also by the other referees uncertainties will be considered and error bars will be added to data presented in the respective figures. 1.9 was chosen because it was the mean (1.86 see Table 2).

Comment: The authors did not correlate POC and lithogenic flux (as in previous studies) , but POC and lithogenic content (in %). That might explain the lack of correlation.

Answer: Using fluxes reduces the scatter but does result in statistically significant correlation. This aspect will be added to the discussion.

Comment - Finally, some of the more recent and relevant literature has not been included.

Answer: findings presented by Lutz et al. will be included into the discussion.