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Biogeosciences Discussions

Interactive comment on "Particle export fluxes to the oxygen minimum zone of the Eastern Tropical North Atlantic" *by* Anja Engel et al.

Anonymous Referee #1

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Review of bg-2016-508 Particle export fluxes to the oxygen minimum zone of the Eastern Tropical North Atlantic Anja Engel, Hannes Wagner, Frédéric A. C. Le Moigne, Samual T. Wilson

The authors present a study of vertical fluxes collected with surface tethered drifting sediment trap from the Eastern Tropical North Atlantic. They collected settling material from 7 depths; 60 m, 100 m, 150 m, 200 m, 300 m, 400 m, 500 m, and 600 m. Depth between 300 and 500 m were sampling within the oxygen minimum zone. The main findings in the study was that transfer efficiencies in an oxygen minimum zone were higher than expected when only considering temperature dependency for the microbial degradation of organic matter and that the composition of the organic matter within the settling aggregates had a large impact on the transfer efficiencies. The latter finding was evident through observations of higher attenuation of amino acids compared

to polysaccharide-rich TEP. The manuscript is well written and the date clearly presented. I only have some minor issues regarding the vertical flux of TEP (see specific comments). I recommend the manuscript for publication in Biogeosciences with minor revision.

Specific comments:

Line 57: Please insert a comma after ".. (Volk and Hoffert, 1985)".

Line 210: Were the filters for the elemental analyzer wrapped in tin foil or packed in aluminium cups?

Line 364: The Gum Xanthan flux is per square meter, please correct to m-2 d-1 for both Martin et al. (2011) and Ebersbach et al. (2014).

Line 388-389: It could also be due to slower sinking velocities. It is not possible to say from b alone which process is driving the values. However, you can say that more degradation occurred within a depth region, either due to faster degradation or slower settling.

Line 417-419: Looking at figure 3c, I do not see this trend? For deployment #2 there is an increase above the OMZ, then a slight decrease between 200 and 300 m whereafter it is stable and then show a decrease between 500 and 600 m. For deployment #1 it seems like there is no significant changes in TEP flux between 150 and 600 m. So I do not see that there is a clear different between TEP fluxes within the OMZ compared to below.

Line 464-466: This was only observed for deployment #2, not for deployment #1. Deployment #1 showed decreasing ratios already within the OMZ, 400 to 500 m.

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