

Interactive comment on “Global Ocean Particulate Organic Carbon Flux Merged with Satellite Parameters” by C. B. Mouw et al.

J. Dunne (Referee)

john.dunne@noaa.gov

Received and published: 17 June 2016

The manuscript "Global Ocean Particulate Organic Carbon Flux Merged with Satellite Parameters" by Mouw et al combines an effort to update the global database of sinking organic carbon fluxes from Honjo, Dunne, and Henson, with an expanded comprehensiveness in including multiple particle depths and data types but also uniquely combines these data with supporting satellite estimates of physical and biological parameters. The manuscript is well written. I only have two concerns:

1) In looking at the data coverage from EqPac, it appears that the dataset includes only the Buesseler et al ²³⁴Th estimates from in-situ pumps for the upper water column. This is unfortunate for two reasons, first because it seems to ignore the large sediment trap-²³⁴Th dataset of:

Murray, J W., J Young, J Newton, J P Dunne, T Chapin, and B Paul, 1996: Export flux of particulate organic carbon from the central equatorial Pacific determined using a combined drifting trap- ^{234}Th approach. Deep-Sea Research, Part II, 43(4-6), DOI:10.1016/0967-0645(96)00036-7.

and second because those pump-based fluxes were later shown to underestimate carbon fluxes by a factor of two (Quay, Paul. "Was a carbon balance measured in the equatorial Pacific during JGOFS?" Deep Sea Research Part II: Topical Studies in Oceanography 44.9 (1997): 1765-1781.) probably due to either the filtered particles not sinking and/or direct absorption of ^{234}Th onto the filters.

Similarly, the database does not seem to include the FLUPAC and Zonal Flux data of:

Dunne, J P., J W Murray, M Rodier, and D Hansell, May 2000: Export flux in the western and central equatorial Pacific: zonal and temporal variability. Deep-Sea Research, Part I, 47(5), DOI:10.1016/S0967-0637(99)00089-8.

Both datasets were used in the Dunne et al., 2005 synthesis. I would encourage the authors to double-check that other particle flux datasets synthesized in the Dunne et al 2005 study are not missing from the present one.

2) If possible, it would be helpful to add the ^{234}Th fluxes associated with the POC fluxes that used the ^{234}Th method. One could then use the ^{234}Th fluxes to recalculate POC fluxes for the extensive pump-based estimates to be consistent with C: ^{234}Th ratios from other sources (e.g. sediment traps in the equatorial Pacific tend to have C: ^{234}Th around 3 $\mu\text{mol/dpm}$). However, I do not know if this is a particularly reasonable request and would not want the authors to delay publication if the data are not readily available.

Beyond that, I suggest that the authors change the first sentence in the abstract and introduction from "Particulate organic carbon (POC) flux estimated from POC concentration observations..." to "Field estimates of particulate organic carbon flux..." to remove the phrase "from POC concentration observations" as the sediment traps do not

[Printer-friendly version](#)[Discussion paper](#)

measure concentrations, per se.

Interactive comment on Earth Syst. Sci. Data Discuss., doi:10.5194/essd-2016-22, 2016.

ESSDD

Interactive
comment

Printer-friendly version

Discussion paper

