

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

**C. B. Mouw et al.**

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Referee: The authors present a compilation of POC flux observations, from various sources, and various corresponding satellite-derived data, including primary production and % microplankton. The dataset is a valuable contribution as it collates ~30 individual datasets and time series. I recommend publication after a few minor revisions.

Reply: We would like to thank Reviewer 2 for helpful insights that improved the paper.

Referee: General comments: There is a lack of description of the satellite data. It's not clear why they've been included here alongside the POC data. Some sentences to describe why you've included this data, thoughts on what you or other investigators might explore with those data, etc. would be welcome.

C1

Reply: We have added a discussion of the utility of pairing POC flux vs. depth estimates with satellite derived environmental variables in the introduction.

Referee: Specific comments: The mixed layer depth is a monthly climatology but the satellite data are from 8-day SeaWiFS record – is that correct? Please make it clear that data are on different timescales in section 2.1 and at lines 107-108 and 110.

Reply: Yes, this is correct. We have altered the text throughout this section to make it clearer to the reader.

Referee: Lines 111-112: The reference to cup samples doesn't apply to all the data, e.g. Thorium derived fluxes. Please make this clear.

Reply: We have changed this sentence to only refer to sediment traps.

Referee: Line 160: Please report the 5x5 pixels in kilometres too, as the spatial scale of the satellite observations won't be obvious to all readers.

Reply: We have changed section 2.1 to include the total area for retrieved pixels surrounding each location for each satellite data product. Since the number of retrieved pixels is different for each product, we have changed the text at Line 160 to be more generic.

Referee: Lines 172-174: If you fit a Martin curve to this data, what 'b' do you get? A global scale estimate of b will be of interest to many readers.

Reply: The purpose of this manuscript is to provide a description of the collected global dataset; data analysis and interpretation is beyond our intended scope.

Referee: Table 2: I suspect there might be some duplication in some of these datasets. Were duplicates searched for and removed?

Reply: We revised the dataset to exclude identical measurements. This resulted in the removal of 329 duplicate POC flux estimates. Thank you for the suggestion.

C2

Referee: Figure 1: I can't distinguish the 3 shades of blue referred to in the caption. A scale for the size of the circles is needed.

Reply: The concentric circles in Figure 3 are now represented by different colors rather than shades of blue. A legend was added to clarify the size of the circles.

Referee: Figure 2: I wasn't sure what 'the darker bars' referred to in this figure.

Reply: We have altered the text in the caption to be clearer. The darker bars are where POC flux and satellite measurements coincide in the same month.

Referee: Figure 3: A scale for the size of the circles is needed.â€”

Reply: A legend was added to define circle size.

Referee: Figure 4: Specify in the caption what the bars and crosses signify.â€”

Reply: We have added a sentence describing the figure symbols.

Referee: Figure 5: In the caption, the references to subplots D and E have got mixed up.

Reply: Thank you for pointing this out. We have fixed the subplot references.

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