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Re: bg-2015-346

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To the Editors,

Thank you for the opportunity to revise my manuscript and sorry for the delay in returning it. Though my revisions are minor, the timing was poor. It is amusing how everything suddenly becomes 'due' at once. Below please find my responses to the two excellent reviews.

Referee 1 liked the manuscript and made suggestions for improving the flow and the content. The major suggestions were to add detail in the methods and to merge two potential mechanisms into sub-components of the same overall theme (ballast protection). We have incorporated both these suggestions into the revised manuscript. This resulted in a small restructuring of the abstract, introduction, methods and discussion, but did not result in lengthening the manuscript more than ~200 words.

While making these corrections, I came across a recent paper that was published during the time the present manuscript was being written. I somehow missed it prior to this week. In the 'discovered' manuscript (Marsay et al 2015), a strong correlation between temperature and sinking flux attenuation is found for the North Atlantic. Since this is an exciting correlation, I added it to the text in the form of three new sentences in the introduction and a new brief paragraph in the discussion.

The remaining comments were all editorial in nature and each was addressed accordingly. The only comment I did not address was the one asking about statistics. Since the overall data presented do not have a simple metric for comparison, and since the entire discussion is purposefully framed to be heuristic, I did not feel that a section detailing the lack of statistics would be useful. The idea of adding statistical evaluations to the individual data sets might make sense if they were being used to draw quantitative fluxes and responses, but again – this particular manuscript was written to provoke discussion and not to be the quantitative answer to the questions posed.

Referee 2 wrote a very brief and positive review. They ask for clarity about which mechanisms for controlling flux attenuation were directly evaluated versus evaluated using inference and literature data. We tried to address this in the abstract, the introduction and throughout the discussion by placing brief statements of clarification throughout.

Only one change was made to the figures; the addition of numbers over the first plot in Figure 1, as suggested by referee 1, as a quick guide for readers as to where each station was located.

I hope that these improvements will help you decide to accept the revised manuscript and sorry again for the delay in getting this to you.

Sincerely,



Richard G. Keil  
Professor of Chemical Oceanography