

Interactive comment on “Role of zooplankton in determining the efficiency of the biological carbon pump” by Emma L. Cavan et al.

Anonymous Referee #2

Received and published: 15 October 2016

The data presented in this manuscript are interesting and have quite some implication on our understanding of the biological pump and the carbon flux in the ocean. The distinction between fast and slow sinking particles in the ocean water column is a very good approach. However, it remains unclear what the conversion factors of fast sinking particles to carbon actually were. The authors state on p.7, line 147 that they used Alldredge's as well as that from Cavan et al. The types of particles described in these two papers are very different however. While Alldredge studied slow sinking large marine snow, Cavan et al deals essentially with fast sinking particles. Thus, how do these two conversion factors compare when applied to your fast sinking particles. A sensitivity analyses would be appropriate here to test how the choice of the conversion factor to carbon influences the results (and conclusions). One aspect which should be included at least in the Discussion (although data should be available) is the nature of

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phytoplankton at the different sites. I expect that a diatom based primary production results in a fundamentally different transfer efficiency than one based on smaller phytoplankton cells and potentially also in a different proportion of fast and slow sinking particles.

The figures are informative, do support the results well and are of good quality.

Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2016-251, 2016.

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