Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2020-291-RC2, 2020

Biogeosciences Discussions

Interactive comment on "Rapid abiotic transformation of marine dissolved organic material to particulate organic material in surface and deep waters" *by* Paola Valdes Villaverde et al.

Anonymous Referee #2

Received and published: 20 September 2020

The paper by Villaverde et al. presents the results from testing the method for measuring particulate organic matter (POM) in seawater samples, focusing on artifacts associated with filtration. They discuss the implications of these measurements, emphasizing their relevance for conversion of dissolved organic matter to particulate by coagulation processes.

The paper presents interesting new ideas that are worth publication, but the presentation needs to be improved. There is a lot of repetition of some of the ideas that can make reading this numbing.

Issues:

Use of the expression "membrane enclosed particles (MEPs)" is a rather peculiar way to refer to non-TEP, non-gel particles, given that it is mixture of fecal pellets, diatom frustules, dead algae, dead animals, dust, . . ., as well as bacteria and algal cells.

Logan (Logan 1993 L&O 38: 372; Logan et al. 1994. L&O 39: 390) has made similar observations on the collection by glass fiber filters of organisms that are smaller than the ostensible pore sizes. He used classical filtration theory in his analysis. Similar processes should be occurring with the filtration of colloidal organic matter. That is, the actual mechanism for collection may not be the production of larger particles passing through the filters but be related to direct filtration processes on the colloid removal.

It would be nice to see what fraction of the "dissolved" gels is removed by each pass through the filters. This would involve providing filtered volumes and DOM concentrations.

Need to have clear separation between Methods, Results, and Interpretation (also known as Discussion) sections. For example, - - L172-174 and L185-190 belong in the Methods section. - - L231-236, L238-239, L248-258 all include comparisons of results with previous literature and belong in the Discussion section.

The Interpretation/Discussion section needs to be condensed. Given the relatively few experimental findings and small amount of data interpretation, having 7 $\frac{1}{2}$ pages for the discussion of a 15 page manuscript is a lot.

Stylistic suggestions: 1. Use clear demarcation of new paragraphs. For example, indent the beginning of each paragraph or have a blank line between paragraphs. 2. Use different symbol shapes (+, x, o. . .) for different data sets rather than the same symbols and different colors. The colors are hard to differentiate, particularly for copies made on black and white printers. 3. Break the really long sentences into more than one. Reading technical papers is difficult enough without having to tease apart complicated sentence structures to understand the arguments. 4. Make the notation consistent throughout the manuscript. For example, L13 has POM2/POMi. Should this

not be POM2/POM1? In L115-6, POM1, POC1 and PON1 should be italicized and the 1s should be subscripted. Place a space between the number and the unit when giving data (e.g. L13, 14, 26. . .).

Please also note the supplement to this comment:
https://bg.copernicus.org/preprints/bg-2020-291/bg-2020-291-RC2-supplement.zip

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-291, 2020.