

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 #3

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This study presented a phenomenon of POM formation in filtered DOM filtrates. Dynamic exchanges between DOM and POM are well-known and can be caused by an array of physical, chemical, and biological factors, including sunlight, pH, cations, phytoplankton, hydrodynamics, etc. It's also related to concentration, composition, and size of DOM and POM. It's an interesting but complicated topic. However, it's unclear in this study what're the detailed organic matter composition and operation conditions of filtration. According to the description in "Methods" section, it seemed that the filtration procedures have been partly done onboard. Photo-flocculation can occur but the sunlight doses onboard and in the lab are supposed to be different. Moreover, why did the authors use distilled water instead of ultrapure MQ-H₂O during the experiments?

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Distilled water itself may contain some amount of organic matter. In addition, the authors need to take into account of adsorption and subsequent desorption of retained colloidal DOM. Also, using a second filter to estimate filtration blank is problematic.

Below are some specific comments: Throughout the manuscript: 1) add a space between number and unit; 2) change GFF filters to GF/F; 3) subscript numbering of filtration times; 4) pay attention to the punctuation and grammars.

Line 19 change "Organic particulate matter (POM)" to "Particulate organic matter"

Lines 86-88 This sentence is obscure and need to be re-phrased.

Lines 101-102 This is speculative. Or please provide reference.

Lines 109-112 Algal cultures are prone to form aggregates within a period of time. Please take this into account.

Lines 114 and 122 Correct the degree symbol

Line 137 "reproducibility o deep...", do you mean "reproducibility of deep..."

Line 157 0.45 mm or 0.45 μm ?

Lines 157-158 What are the grades and brands of these chemicals

Line 162 Superscript "-1" in the unit

Line 311 Change "4.1.3" to "4.1.2" and also the following subsection numbers

Figure 3 "precombusted" or "pre-combusted"? Please be consistent through the manuscript

Figure 7 missing unit for the filter pore size

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