Associate Editor's comments

Line 31-32: Siegel et al. (2002) studied CDM (colored dissolved and detrital organic materials) not FDOM (FDOM is only part of CDOM). In addition, it is the absorption of UV by CDOM not FDOM that affects photosynthesis and the growth of marine microorganisms. Do not mess up FDOM with CDOM. These references are not appropriate for the statements that you made for FDOM.

➔ As pointed out by reviewer 2, this paragraph has been revised to more closely realtaed to FDOM.

Line 42: "formalin". I do not think Spencer et al. (2007) used formalin. Please check. If you find it in their paper, please let me know on what page it appears.

➔ Thank you for pointing this out. We acknowledge this citation was incorrect and have removed it from revised manuscript.

Line 46-47: "various sampling and storage methods". The preceding two statements appear to indicate that there is a generally accepted protocol for FDOM sampling and sample treatment. Reword the preceding statements.

➔ We have revised this statement to clarify that there is currently no standardized protocol with careful evaluation, and that various approaches are used depending on the research context.

Line 47: "for different DOM compositions". You were focused on FDOM earlier now suddenly switched to DOM. Be consistent.

➔ The original phrase "for different DOM compositions" was intended to refer to various environmental contexts. To clarify this point, we have revised the wording to "marine environment" in the revised manuscript.

Line 86: Coble (1996) and Coble et al. (1998) did not report PARAFAC modeling.

➔ This sentence has been revised as follow:

"Based on reference EEMs (Coble 1996; Coble et al., 1998; Coble, 2007), the terrestrial humic-like peak (C peak, Ex/Em = 375/457 nm), the marine humic-like peak (M peak, Ex/Em = 315/391 nm), and the protein-like peak (T peak, Ex/Em = 270/313 nm) were identified by the PARAFAC model.

Section 3.2: Add a comparison between the 0.2 um and 0.7 um filtration?

➔ A comparison between the 0.7 μm and 0.2 μm pore sizes has been added as follows:

"In both open-ocean and coastal-ocean samples, no significant difference in FDOM concentrations was observed between the 0.7 μm and 0.2 μm filtration."

Section 3.3: Add comparisons among different depths and different filter pore sizes? Figures show that different depths and pore sizes gave different results.

➔ For filter pore sizes, more explanations as described above has been added in Section 3.2. A comparison between the different depths has been added as follows:

"The concentrations of the C and T peaks in the open ocean showed no clear differences across

depths, whereas the concentration of the M peak was relatively lower at 2300 m compared to the other depths.”