

Associate Editor's comments

→ Thanks for the valuable comments from the associate editor and reviewer #2. In this stage, we carefully revised our manuscript following the below comments.

L44-45. Spencer et al. (2007) did not use formalin in their study. Wurl et al. (2009) did use formalin as a sample preservative but they did not measure FDOM. Instead, they measured CDOM absorption coefficients but did not report if formalin had any artifacts on their measurements. Please fully digest the references before considering citing them.

→ removed as suggested

Reviewer #2's comments

Line 21. I would perhaps explicitly state also that ", room temperature storage is not recommended."

→ We added more explanations as follows:

"In contrast, clear changes were observed in samples stored at room temperature after five days."

Line 34. There are earlier papers that use FDOM to trace water masses, and I would suggest the authors explore that, to do justice of earlier work. To my knowledge at least this paper did it in the Arctic: <https://www.nature.com/articles/srep33978> (could be added here).

→ added as suggested

"Gonçalves-Araujo, R., Granskog, M. A., Bracher, A., Azetsu-Scott, K., Dodd, P. A., and Stedmon, C. A.: Using fluorescent dissolved organic matter to trace and distinguish the origin of Arctic surface waters, Scientific Reports, 6, 33978, <https://doi.org/10.1038/srep33978>, 2016."

Line 37-48. This now reads like only GFF filters are used. However, different types of membrane filters are also widely used. I think the authors should acknowledge this, since they also use a membrane filter in their study.

→ We have added more explanation as follows:

"In some studies, different types of membrane filters, such as cellulose acetate, polyethersulfone, and polycarbonate, have also been used for FDOM measurement (Amaral et al., 2023; Chen et al., 2022; Vines and Terry, 2020)."

Table 1 - just a suggestion, easier to compare the different filtrations if you always have the different peaks side by side, e.g. first have C peak unfiltered, C peak 0.7 filt., C peak 0.2 filt., etc. So sort columns by peak, not by unfiltered/filtration.

→ Table 1 was revised as suggested.

Line 142-145 Perhaps note that samples were stored in the dark too in every case?

➔ In the Methods (line 70) and Results (line 145) sections, detailed information on sample storage is provided as follows:

“Unfiltered and filtered (0.7 or 0.2 μm) water samples ($\sim 40\text{ mL}$ each) were stored in the dark (i.e., in pre-combusted amber vials) to prevent photodegradation, and kept at three different temperatures (-20°C , 4°C , or 25°C).”

“The concentrations of C and M peaks for unfiltered and filtered samples (0.7 and 0.2 μm) from the open- and coastal-ocean stored in the refrigerator (4°C) and freezer (-20°C) under dark conditions, showed no clear differences between the initial and after 21 days measurements ($8\% \pm 3\%$, $p > 0.05$) (Fig. 4).”

Line 159-160, with the addition of text, the sentence does not read properly, please check and rephrase.

➔ This sentence has been rephrased as follows:

“The accuracy of FDOM measurements can be largely affected by the filtration process.”

Line 164 and 169 - the volumes given are for a certain size of filter that is used here, so you need to give this volume rather by volume per filter area to indicate a more universal measure of the volume required.

➔ The volume per filter area information is also provided in the revised version.

“This result suggests that GF/F should be washed with 20 mL of distilled water ($\sim 1.16\text{ mL cm}^{-2}$) or 5 mL of 0.1 M HCl ($\sim 0.29\text{ mL cm}^{-2}$) before the sample filtration for FDOM measurements.”