

Ocean Sci. Discuss., referee comment RC1
<https://doi.org/10.5194/os-2021-90-RC1>, 2021
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Comment on os-2021-90

Anonymous Referee #1

Referee comment on "Inherent optical properties of dissolved and particulate matter in an Arctic fjord (Storfjorden, Svalbard) in early summer" by Tristan Petit et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-90-RC1>, 2021

The article, Inherent optical properties and optical characteristics of dissolved organic and particulate matter in an Arctic fjord (Storfjorden, Svalbard) in early summer, by Tristan Petit et al., presents a dataset acquired in summer 2020, consisting of inherent optical properties (IOPs) such as absorption, attenuation, and fluorescence of optically active constituents, both dissolved and particulate. As the authors suggest the IOPs are crucial in developing bio-optical models. The dataset does include state-of-the-art bio-optical data, which could be very useful to the scientific community involved in ocean color studies in the Arctic. However, the manuscript needs to be improved and so authors are requested to consider the following comments and suggestions.

Specific comments

- Any particular reason why water samples were not collected to quantify phytoplankton pigments like chl_a, it being a widely studied optically active constituent?
- The methods section lacks references, please cite appropriate references throughout the section.
- Can oxygen isotope values be used to quantify Dissolved Oxygen? What more can we interpret from the Oxygen isotope values?
- The purpose of using satellite image in the results and discussion section is unclear as there is no validation of data using field observations. I suggest to include figure 5 in section 2.4.
- Investigate the relationship between surface acdom440 and salinity

Further references:

Mascarenhas VJ and Zielinski O (2019) Hydrography-Driven Optical Domains in the Vaigat-

Disko Bay and Godthabsfjord: Effects of Glacial Meltwater Discharge. *Front. Mar. Sci.* 6:335. doi: 10.3389/fmars.2019.00335, figure 4, panels C, G)

Bowers, D., and Brett, H. (2008). The relationship between CDOM and salinity in estuaries: an analytical and graphical solution. *J. Mar. Syst.* 73, 1–7. doi:10.1016/j.jmarsys.2007.07.001,

Linkages between the circulation and distribution of dissolved organic matter in the White Sea, Arctic Ocean. *Cont. Shelf Res.* 119,1–13. doi: 10.1016/j.csr.2016.03.004, Figure 7b

- Add a table with list of acronyms and abbreviations (table 1) in section 2, rename the other tables accordingly.
- Figures need to be revised and rearranged. Detailed comments are added in the attached manuscript.

Further detailed comments are provided in the attached Manuscript in pdf.

Please also note the supplement to this comment:

<https://os.copernicus.org/preprints/os-2021-90/os-2021-90-RC1-supplement.pdf>