

Response to reviews - os-2021-90 - "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., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-90-RC2>, 2021

The comments from the Referee are in black text, while [our responses are in blue text](#).

Anonymous Referee #2

In general, the preprint Inherent optical properties and optical characteristics of dissolved organic and particulate matter in an Arctic fjord (Storfjorden, Svalbard) in early summer by Petit et al. presents a very good picture of the IOPs and the optical complexity within the Storfjorden. Dataset enhances bio-optical picture of Arctic Ocean with state-of-the-art data and methods. The dataset can be used to increase the amount of data to be used for modelling bio-optical complex waters in the Arctic Ocean. The preprint needs improvement, please take into consideration suggestions and comments in the attached PDF.

[We thank Referee #2 for the careful reading and relevant comments and suggestions that helped improving our manuscript. We have handled and responded to all of these, either below or in the attached supplemental pdf with our responses as additional comments to the referees original comments. Overall we have made nearly all of the suggested changes by Referee #2.](#)

Selected specific comments (the responses to additional comments are in the attached annotated pdf):

Do you have any solution how to avoid variability in blanks during cruise to create blanks under the same conditions as samples are taken?

[Such a solution would indeed be very helpful. However it seems very hard to obtain during cruise as much control and stability on eg. air temperature and purity of reference water as is the case in a laboratory. That is why there is no consensus regarding the choice of using the blanks measured during cruise \(close temporal match with cruise data but more variability\) or right before/after cruise in a lab \(not as close temporal match but less variability\).](#)

You describe the ratio of scattering to absorption. Can you please discuss this ratio in more details?

[Thank you for this suggestion. The corresponding paragraph in the section 3.3 was indeed lacking some discussion about the link between scattering to absorption ratio and particle types. We have thus added some discussion in the revised manuscript on how this ratio can help in interpretation of the particulate material composition observed.](#)

You clearly describe spectral slope. Can you please discuss this parameter in more details?

[Thank you for this suggestion. We have added some more discussion and useful references about CDOM spectral slope as an indicator of DOM in section 3.4 of the revised manuscript.](#)