

Interactive comment on “Composition and cycling of dissolved organic matter from tropical peatlands of coastal Sarawak, Borneo, revealed by fluorescence spectroscopy and PARAFAC analysis” by Yongli Zhou et al.

Anonymous Referee #2

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In this manuscript, Zhou et al. use fluorescence spectroscopy to track the fate of peat-derived DOC through an estuary. They use a mixing model based on the fluorescence spectra to quantitatively estimate peat-derived DOM in the estuary, and show that a major fraction is peat-derived in all samples. Overall, the manuscript is well-written and most conclusions are well-supported. However, I have 2 major concerns that should be addressed before publication:

1. A major portion of the findings (high photolability of tDOM; large tDOM contribution to the shelf DOM pool) echo findings in the companion paper (Martin et al. 2018).

C1

I suggest reframing the introduction and adding a paragraph briefly summarizing the findings of the companion manuscript and describing how the present study will build on this work. In particular, what you can learn from EEMs that hasn't been revealed with bulk DOC and CDOM analysis.

2. The calculation of tDOM appears to be oversimplified.

-Why is the sample with the highest value of normalized C1 Fmax used for the river endmember? Since there appears to be a lot of variation at 0 salinity, wouldn't an average be more appropriate? Is it possible to do a formal sensitivity analysis based on different choices of endmember?

-Equation 3 does not include a marine endmember, which implies that (1) C1 Fmax varies linearly with tDOC, and (2) C1 would be 0 in a hypothetical pure marine DOM sample. Both assumptions should be stated and justified. It is also assumed that C1 has the same reactivity as bulk tDOM despite representing a small, compositionally distinct fraction.

-The identification of endmembers in Table S1 doesn't match the description in the text. There are marine end-members identified (not used in Eq 3), and some of the river endmembers are presented as an average of multiple stations instead of the station with the highest C1 Fmax as indicated in the text.

-Calculation of the %tDOC should be included in the methods section and more information provided.

Other minor comments:

Methods: Photodegradation experiments should be in separate subsection

Page 9, lines 13-24: paragraph mostly repeats info found elsewhere in the paper

Line 22: moreover is not the correct word here

Page 10, lines 5-6: this sentence is contradictory

C2

Fig 4: legend indicates colors indicate regions in panel z.. figure appears to only go to panel y

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-508>, 2018.