

Interactive comment on “Distinctive effects of allochthonous and autochthonous organic matter on CDOM spectra in a tropical lake” by Luciana Pena Mello Brandão et al.

Anonymous Referee #2

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Overall comments: This article presents a robust experimental study involving DOM dynamics with two varying sources. Yet, I still fail to see why this specific system (tropical lakes) should deserve a special attention from the readers of Biogeosciences. The authors should have more definite emphasis on the importance of these systems, especially its DOM dynamics, at larger scale or in the context of land use change. Brief mention of land use change or precipitation regime change does not present enough merit for immediate publication. Can you scale up the change seen in this experiment to the entire lake or other lakes? As presented, the manuscript could be describing a bench top experiment. A minor/major revision on improving scalability or contextualization is recommended.

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54-59: How does TSS or turbidity differ in tropical lakes? Greater terrestrial productivity and its subsequent leaching to the aquatic system should increase the turbidity of the water and potentially offset the impact of the higher light availability. Let's make sure greater light availability means "in water" rather than just on surface.

60: Reverse the order of the sentence so that tropical environments are mentioned first. → Maybe "...ways" to "... pathways".

100 and method 2.2: Leachate from leaves are known to produce lots of labile DOM that have protein-like optical properties. Maybe add a sentence to show that the week long incubation should remove most labile DOM from the leaves and detritus.

206: Temperature of the mesocosms should be in the method section (or at a different place in the results section).

215: Missing a ")" somewhere.

259: Rather than starting with how this study confirms previous findings, start with something that is unique to this study.

267: Redfield ratio was not based on freshwater phytoplankton. Could you cite a freshwater reference?

270: Photodegradation of terrestrial DOM can also increase the amount of labile DOM. Look at works by Rose Cory. If sunlight is indeed stronger in the tropics, photo-stimulated respiration or release of labile substances from photodegradation would also be an explanation for what's happening here.

339: Implications – Most of the findings in this study is not unique but supports previous findings. Thus, there should be a greater emphasis on why this study matters in the context of this ecosystem. Aside from the land use change in surrounding forest, why should readers care about tropical lakes in the first place? Are they a great contributor to atmospheric CO₂, source for fishery product in the region, source for drinking water in areas with growing population, or transient storage for terrestrial DOM to the oceans?

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It only would take a few sentences in the introduction, discussion, and implications to make sure that the readers are fully aware of the importance of tropical lakes.

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