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# *Interactive comment on* "Shift in the chemical composition of dissolved organic matter in the Congo River network" *by* Thibault Lambert et al.

**Thibault Lambert et al.**

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Anonymous Referee #2 Received and published: 28 July 2016

General Comments The submitted manuscript characterizes the downstream changes in DOM composition in the Congo River with a seasonal component. The study covers a large spatial scale in an important basin in the context of the global carbon cycle. Additionally, the African continent has been underrepresented in studies of this kind. This paper is an important contribution to the field of aquatic carbon biogeochemistry. The measurements (SUVA, PARAFAC, 13C-DOC) are commonly used in the field and thus can be easily compared to future studies. The authors did commendable work interpreting the data in the discussion. I believe their conclusions about photodegration and production of aliphatic-like DOM are well supported by the cited literature. Addi-



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Discussion paper

tionally, the insights into the role of landscape morphology on DOM composition are sound. The incorporation/comparisons to the chemostat hypothesis and pulse-shunt concept were insightful and are supported by the authors' interpretation of the results. I would recommend the article be accepted with minor revisions. The English could be improved throughout the manuscript. It would benefit from additional proofreading for mistakes and general language flow. Additionally, the authors must address methodological concerns with regards to sample storage/preservation.

REPLY: We thank reviewer #2 for this positive feedback. We aimed to improve the revised manuscript by correcting English mistakes and by reformulating some parts of the discussion to improve the language flow.

Specific Comments L141-L151 Samples for fluorescence and absorbance were filtered and kept in the dark but how long were they exposed to ambient temperatures before refrigeration and then analysis? Given the respiration measured after 24 hour incubations at ambient temperature this is a major concern and must be addressed.

REPLY: In order to limit potential degradation, samples were stored just after filtration at 4°C in a refrigerator placed on the boat until transport toward Belgium. Once received, samples were again stored at 4°C until analysis, the latter being performed during the week after arrival. Potential storage and degradation effects were assessed by analyzing a series of contrasting samples after 3 months (see one example of absorbance spectra Fig.1). The differences in optical proxies (a350, SUVA254 ad SR) were less than 5% (n=22) and no significant differences were observed by comparing excitation-emission matrices, validating therefore both the preservation technique as well as the quality of the data. These details as well as the figure have been added (as supplementary Fig. 2) in the revised manuscript, and should eliminate the doubts raised about sample/data integrity.

Technical Errors L20 Should be second largest basin/discharge as mentioned in the introduction/methods





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REPLY: This sentence has been removed in the revised manuscript in order to reduce the length of the abstract and to avoid repetition with the introduction and methods.

L225 "wwereas"? Should be were

REPLY: This typo was corrected.

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Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2016-240, 2016.



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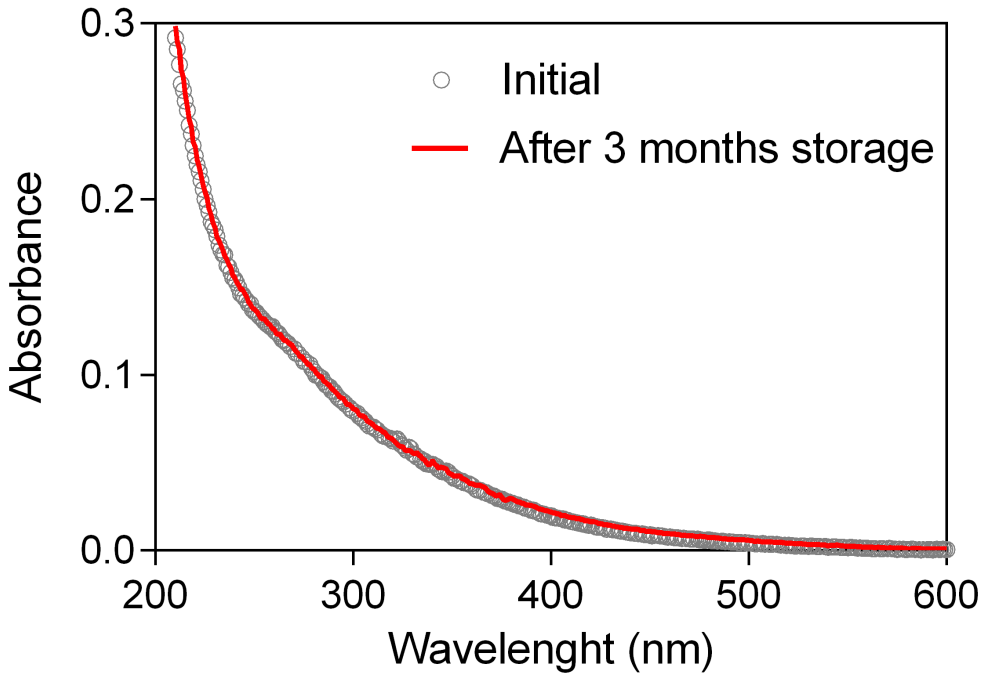


**Fig. 1.** Supplementary Fig. 2



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