

***Interactive comment on* “Distribution, origin and cycling of carbon in the Tana River (Kenya): a dry season basin-scale survey from headwaters to the delta” by S. Bouillon et al.**

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Reply to Referee#1 :

REF: This paper presents what I am sure is the most complete and interesting data set to date on C pools and cycling for a large river system. That the paper is about the Tana River system, the largest river basin in Kenya, makes this data set all the more valuable in useful. The authors point out that data like this for tropical systems are very rare. This is true. It is also true that data like this are rare for any river systems. The data include concentrations and isotopes on a lot of key constituents and specific compound isotopes as well. The context for the paper is that literature over the past

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5 to 10 years have started to show that river systems are important to both regional and global C balances. So how much and by what pathways C is cycles in rivers has become relevant to the larger issue of global C cycling. While the paper is rich in data, the paper is in fact highly descriptive and does not come to many interesting conclusions. But there are a few. One is that although the concentrations of chlorophyll are low in comparison to POC in this system, the oxygen isotopes suggest that riverine primary production produces a lot of the C in this system.

REPLY: We fully understand the claim that the manuscript remains somewhat descriptive, despite the multitude of data. The main reason we do not go beyond the conclusions mentioned by Ref#1 and Ref#2 (and which will be stressed more explicitly in the revised version) is that this remains a first screening of the biogeochemistry of this river basin. While it allows us to provide some first conclusions and hypotheses, ongoing sampling in this system will be more elaborate (e.g. includes monthly sampling for certain parameters at several stations along the main Tana river as well as detailed sampling campaigns during different seasons incorporation process rate measurements, etc.) and will allow us to place more focus on specific results and hypotheses.

REF: My bottom line is that I think the paper should be published in BGD, with one serious caveat. All of the data should be made accessible. The value of this paper is that it presents very high quality data that others could use in various ways. The current tables are mostly summary values and the data shown in the figures in not provided in digital form. If an appendix of the data were provide I would support publication essentially as is. The paper is well written.

REPLY: Providing all data in electronic format is obviously no problem. We had in fact already provided the majority of data in tabular format (Tables 1, 2, 3 and 4, and electronic annex). For the revised version, we'll provide a more convenient format (txt/xls file) which includes the full dataset.

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