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Interactive comment on “Seasonal dynamics of carbon and nutrients from two contrasting tropical floodplain systems in the Zambezi River Basin” by A. Zuidegeest et al.

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Seasonal dynamics of carbon and nutrients from two contrasting tropical floodplain systems in the Zambezi river basin Authors: Zuidegeest et al. This is an interesting study which compares the role of floodplains on biogeochemistry in two segments of the Zambezi river. The paper is well-structured, and presents results that could add much to our understanding of how floodplains and their soils and vegetation function in river biogeochemistry, how dams and reservoirs can impact this functioning. The way the authors have summarized their main results in Figure 7 is excellent.

However, there are a few problems for me as a modeler to fully understand the discus-

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sion. The first problem is in the sampling procedure. It is not clear to me how exactly was sampled: only one sample per season, or is the result presented an average of more than one sample? Also, years for different years are presented in one single Figure, e.g. Figure 3 18O data. Perhaps the authors could add a remark to justify this. If discharge is variable, the river loads will also vary, and perhaps the authors could add information on the variability of the discharge in Figure 2. And what is the range shown in Figure 3? Is this the standard deviation calculated from all observations along the floodplain? Please provide this information.

The second problem is in the terms used. In some cases it is wet/dry season (e.g. Table 1) and in other cases it is peak and base flow (title of Table 1). I suggest to use terms consistently (dry/wet season) as for example base flow may be confusing to people with a hydrology or other background.

The third problem is that it is not explained how river loads were calculated. Is this simple discharge times concentration? Is this justified, i.e. is the sample from the middle of the well-mixed channel representative of all water in the river? Also here perhaps a brief justification could be added, or at least a remark that this is a cause of uncertainty.

Finally, it is not clear what the term net export represents, and how this compares with the load. This is confusing because both terms are used within the same paragraph in section 5.2. The authors need to explain how net export (Table 1) was calculated. Can net export be deduced from Figure 5 from the difference between distance 0 and the endpoint?

Minor issues Please check the references. I saw one missing reference (Melack et al., 2009). The paper by Mayorga et al. (2005) is on the Amazon, so how can it have data for the Zambezi river. Instead of Yasin et al. (2010) please use the original publication where the observed river yield was taken from (probably Hall et al. 1977). I see some unclarity in section 4.3: line 12 “became enriched” and line 13 “lower”. Compared to

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what, or is it enriched with increasing distance, or in time?

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