

Response to the editor

Thanks for the comments from the editor summarized on 15th Nov 2017. According to the comments, the paper was revised carefully. A number of technical problems were modified, and the manuscript was edited by a native English speaker from U.S.A. The responses to the comments and some main modifications were listed as follows:

Comment 1. The use of stable isotopes does not support the manuscript.

At no point do you explain why there is a large offset between rainfall and the stream/soil water samples (I'm assuming snowmelt recharge?).

The congruence between stream and near-stream values does not supported your response to reviewer 3 and reference to a figure (xx) exists. I suggest that the entire isotope analysis can be removed from the manuscript to more closely pursue the DOC quality story.

Response: Thanks for the comment! It is fact that we have no enough data to explain the large offset between rainfall and stream/soil water samples, as well as the congruence between stream and soil pore water. Therefore we accepted the advice and removed entire isotope analysis.

Comment 2. You have addressed the inter-annual variability and applied

LOADEST. The link you have provided has changed

(<https://engineering.purdue.edu/mapserve/LOADEST/>). Regardless, there is little explanation as to why there is this inter-annual variability. Later in the conclusion you state that there is a stable relationship between DOC and discharge - which is clearly not the case. More detail into the residuals and variability of the Q-DOC relationship is warranted because you lean very heavily on the premise that DOC is transport limited, but the relationship is not particularly stable year-over-year.

Response: The URL was updated by the right one as listed above in the revised paper (Line 225). The description about the variation in DOC load estimated by LOADEST was supplied in the revise paper (Lines 303-314).

The original viewpoint of “a stable relationship” was a wrong expression, and therefore was removed. Meanwhile, the inter-annual variation in the relationship of Q-DOC was also discussed about the controlling factors (Lines 553-574).

Comment 3. The issue of the riparian zone and its importance is not supported by data in this manuscript and should be revised (lines 473-481). There is not sufficient spatially explicit field data to resolve this level of process detail.

Response: Thanks for the comment! The content about the riparian zone

was deleted in the revised paper. The DOC source was discussed only in the section 4.2 (Lines 443-510). The DOC export capacity was discussed only in the section 4.3 (Lines 543-552).

Comment 4. I have some issue regarding the system is not DOC limited based on the uncorrelated DOC vs temperature in the soils. The only way this could be evaluated (and it should be referenced) is with more data for a single depth-location vs temperature as opposed to pooled data.

Response: Thanks for the comment! In the original paper, it was indeed incorrect to say “the system is not DOC limited” because no enough data supporting the idea. However, the really important thing was to highlight “the system is transport limited”. There is no need to discuss why “the system is DOC limited” because it deviated from the main idea. Therefore, the related content was removed in the revised paper. Only the discussion about the large DOC productive potential in the peatland was added in the revised paper. (Lines 543-552)

Comment 5. It is noted that the original manuscript was very similar to the Guo et al. (2015) paper in the Journal of Hydrology. I would warn the lead author against self plagiarism as many of the sentences were virtually the same.

Response: Thanks for the comment! I know the paper is similar to another published paper in some aspects. But there are some major differences between the two papers including the study region, estimation method, statistical method and sampling extents, and so on. Importantly, we make clear the relationship between flowpath-shift and DOC chemical characteristics in this paper, and give a detail statement on the DOC load and inter-annual variation. In short, we try to avoid self-repetition as could as possible.