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Hydrology and Earth System Sciences
Discussions

Interactive comment on "DOM quality in a peatland and forest headwater stream: seasonal and event characteristics" *by* Tanja Broder et al.

Anonymous Referee #1

Received and published: 7 October 2016

General comments

This manuscript aims at disentangling stream DOM sources and processes over the course of a year. It utilyzes spectrofluorometric methods that allow for a high throughout of samples. I very much like the approach of the manuscript and the dataset presented is worth a paper in HESS. So I can confirm a excellent scientific significants. Alternatively a publication in Biogeosciences would fit as well as the manuscript elucidate the interactions between hydrology and biogeochemistry.

In general the manuscript is well written, references are appropriate and figures are sufficient (see details below). The objectives could be improved by a clearer focus and formulation of hypotheses or research questions. The major drawback is the only fair scientific and presentation quality that needs to be improved. My major criticism

is the simpified verbal description of the results that lacks quantitative assessments of concentrations/ component levels, seasonality and event behavior. Also, a quantitative statistical analysis on major governing factors such as temperature is needed. Here I see much room of improvement that would make the well written conclusions much more stronger and compelling.

Specific comments and technical corrections

Abstract:

For me, it reads a bit to technical and focussed on the results. I would like to see terms and variables like "C2%" to be reduced in favor of a stronger focus on discussion and implications (expanding the messages now in the last sentence).

Introduction

P2Line5: The first sentence need a reference.

P2Line 7f: This also needs a reference.

Check also for this paper: Ledesma JLJ, Grabs T, Bishop KH, Schiff SL, Kohler SJ (2015) Potential for long-term transfer of dissolved organic carbon from riparian zones to streams in boreal catchments. Global Change Biology, 21, 2963-2979

P2L34: Change citation parenthesis.

P3Line19: Better define what you mean with changes by adding space and time! Do you mean surface water DOM at the catchment outlet or variability within the study site – do you mean seasonal changes, daily fluctuations...: Something like "spatiotemporal dynamic of DOM quality over the course of one year" ...

P3Line23: Two times starting a sentence with "on the other hand"

P3Line31: This last section is not well integrated with the objectives in the section before: I suggest restructuring the objectives a bit starting from P3Line23; there is more

or less everything there: What is the general aim? What are specific questions you want to answer/ Hypotheses to follow? Where do you perform this research (references on previous studies) and why there? What are the methods you want to apply? What are discussion/ conclusion and implications aiming at?

Materials and methods

P4Line1-14: I am not convinced of the study site description in combination with Fig. 1: I suggest to show a soil map or something comparable to better see the position of the bog and the differences between the two sampling locations.

P4Line15: “Discharge sampling” sounds strange – just water sampling?

P4L15ff: Please state the number of different types of samples and the temporal resolution of the discharge measurements.

P4Line27: Unit of absorption?

P4Line29f: Superscript in units!

Results

Fig. 2: What do you mean by “trends during rain events”? I suppose the concentration trends?

P5Line29f: Please put that statement in numbers (e.g. CV or standard deviation of seasonal concentrations and storm event concentrations).

P5Line30f: You mean the highest recorded concentrations during the entire study period? This is not clear from this sentence.

P6Line1: Again – put that into numbers (e.g. mean or median concentrations)

P6Line23ff: I struggle with the interpretation of the components as a “too early” discussion. Maybe a introduction sentence on that?

P7Line19ff: Again, I have problems with this type of interpretation in the result section.

This more belongs to the discussion chapter.

In general I am not convinced of the discussion of seasonal trends: For a seasonality assessment I would expect a more in depth evaluation of seasonal min and max and potential controls: e.g. Is the seasonality in line with water temperature (which is likely close to soil water temperature), air temperature, light intensity... So, better quantify and describe the seasonality!

Discussion

P9Line 6f: This type of statement belongs to the end of discussion/ conclusions!

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