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Biogeosciences Discussions

Interactive comment on "The relevance of particulate organic carbon (POC) for carboncomposition in the pore water of drained and rewetted fens of the"Donauried" (South-Germany)" *by* S. Fiedler et al.

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Review of the BGD 5, 2049-2073, 2008 The relevance of particulate organic carbon for carbon composition by S. Fiedler et al.

I strongly recommend the acceptance and publication of the manuscript in Biogeosciences. The manuscript addresses a neglected issue of peatland biogeochemistry and combines different methods to explore the significance of carbon components in degraded and rewetted calcareous fens.

That said, the manuscript contains some weaknesses that should be addressed for the Biogeosciences publication:

Title:

I recommend changing the title to Pore water carbon fractions in drained and rewetted fens in S Germany. The reasons are: The relevance of POC is only touched in your contribution. What you are mainly reporting are fractions, which is good enough. You also give an outlook on the relevance, but not more than that. The fact that you are talking about a fen in S Germany is sufficient for the title. The reader will learn about the Donaumoos in the text.

Introduction:

The introduction is swift and gets to the point quickly, maybe too quickly. I suggest adding a sentence or two on why the size limit of DOC particles has been set to 0.45 micro m. This is an issue you come back to in the discussion.

Materials & Methods:

The materials and methods section is fine. Please add a sentence on the locations on delta13C sampling.

Results:

I have a couple of suggestions on how to improve the results section: First, I would delete the sentence on POC concentrations and distance to water table (p. 2057, l. 15-16). I see no evidence for such a trend. Why is there no graph on the temporal course of the concentrations of C the control (deeply drained fen site)?

Chapter 3.2.2. needs to be improved: The expressions a rough calculation and in tendency are, especially in the absence of numbers, inappropriate. It would be interesting to learn where you found bacteria and where archaea. Suddenly, filamentous fungi are mentioned. I have the feeling that all that you know is that the surface POM is colonized

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by different microbes. So if this is so, say so.

Discussion:

I suggest starting the discussion with POC occurs; and consider deleting the take home message part, which is quite colloquial. I am surprised that you expect POC depletion relative to DOC. While it is certainly true that POC particles are sedimented, could it not be that DOC is preferentially respired? So please strengthen your argument with appropriate references.

In case the upper size limit for POC is abandoned, POC will depend on water temperature and flow velocity. Is this really such a good idea? Please discuss or delete this suggestion. I also think that your suggestion that POC may function as an important shuttle for C goes too far. You do not have any data supporting this. So please find a more careful expression.

I wonder whether you exploited the possibilities of your delta13C data. Are you able to say something on delta13C at all three sites?

Why must CH4 be considered for the understanding of C turnover? The amount of CH4 is small. Probably you intend to prove the existence about anoxic conditions. Is that true? If yes, please be more precise.

Conclusion:

In the conclusion, your statement on labile POC strikes me. How do you know? Why should POC be labile?

Also, you say that it was not possible to derive a mechanistic model. Was that a goal of your research? So I think it would be best to delete that sentence.

Specific comments:

P 2053, L 24: Typha, not Thypha

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P 2058, L 20: Delete Relatively

P 2058, L 24: Compared to, not than in

P 2063, L 25: Has hardly been, not was hardly, exhibits not exhibited

Figure 1: Caption: Dates of measurements: do you mean number of measurements?, Figure: Can you insert the graphs into a grid with depth as y- axis and site as x- axis? That would make the figure easier to read.

Stephan Glatzel

Interactive comment on Biogeosciences Discuss., 5, 2049, 2008.