

Interactive comment on “The effect of a reciprocal peat transplant between two contrasting Central European sites on C cycling” by M. Novak et al.

Anonymous Referee #2

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General comments:

The manuscript by Novak et al. reports results from a well-designed experiment which are valuable for peatland researchers. The elevated CH₄ release in the high sulfur deposition area is interesting. The work is well within the scope of Biogeosciences. The authors combine several methods that enhance our understanding of C cycling and CO₂ and CH₄ release in peat bogs. However, the manuscript would benefit from a more thorough discussion, easy to obtain data on the nutrient status and Sphagnum species as well as a tighter conclusion chapter. Generally, the ratio between self-cites (a lot) and references from other groups (too few) is not adequate. I recommend the publication of the manuscript following a thorough revision.

Specific comments:

C3002

Page 10011, line 14: What Sphagnum species? There are a couple of publications stressing that Sphagnum growth rates differ between species. This might help to explain the growth differences at your sites. Following an extended period of exposition to nutrients, Sphagnum species distribution might change.

Page 10015, line 5: Why did you choose such a short incubation time? Looking at Fig. A1-A4, there is no saturation or very low production rate. I would have continued measuring CO₂ and CH₄ release.

Page 10009, lines 21-23: The abstract does not close with a message summarizing your research and tying together the results of your investigations. It would be good to find a tighter “take home message”.

Chapter 4.1: The recent peat accumulation rates that you report are very high. In addition to comparing these rates between field sites, you should consider discussing them looking at other available studies.

Chapter 4.3: Do you understand the system well enough to speculate on this? I suggest going into more depth discussing this question. As DOC concentration in some bogs is high, I wonder whether DOC from pore water might be an important source of labile substrate, leading to the proposed “decoupling”. Maybe pore water DOC is the main control of CO₂ and CH₄ emissions? Please discuss employing some additional publications on the issue.

Conclusions: I agree that the nutrient issue might be critical for the explanation of higher productivity and CH₄ release. Your argument on a relationship of production and CH₄ is worth discussing. Are there any field measurements of CH₄ or CO₂ release at your sites? Please add a few references on this critical issue. Is there no data on nutrients in peat or pore water at the sites? If not, it should be easy to get. It would tremendously strengthen your argument. To me, this issue is a key to your reasoning. I suggest turning it into a separate subchapter, shortening the conclusions section.

C3003

Technical comments:

Page 10022, line 2: diagenesis, not diagenessis

Interactive comment on Biogeosciences Discuss., 6, 10007, 2009.

C3004