

Interactive comment on “High soil solution carbon and nitrogen concentrations in a drained Atlantic bog are reduced to natural levels by 10 yr of rewetting” by S. Frank et al.

Anonymous Referee #1

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General Comments The manuscript addresses the how the water table control the soil water biogeochemistry of a peat bog complex in Germany. The authors have compared 4 sites of the “Ahlen-Falkenberger Moor” peat bog complex; an intensive grassland site, an extensive grassland site, a rewetted peat extraction site and a near natural site. They found that drainage of the peat increased the soil water concentrations of carbon (DOC) and nitrogen (DON, ammonium, nitrogen) and that the carbon quality of DOM shifted toward more aromatic and lower C/N ratios, indicative of a more degraded DOM, compared to the near natural site. They suggest that the increasing concentrations are explained by severe peat degradation following water table draw down and oxygenation of the soils. They also found that after 10 years of rewetting a site, sphag-

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num spp. recolonized the peat and the biogeochemistry shifted back towards that of the near natural site. I must say I found the results somewhat predictable, what are the substantial new concepts/results? I'm not so sure this is substantial contribution to scientific progress, to me it seems like this has already been shown before. If this really is a new substantial contribution to scientific progress, the authors need to clarify how in the updated manuscript. One concern I have is the lack of a baseline. They are comparing treatment effects, which is usually done by comparing before and after treatment. But they don't have a "before", they use one site as their baseline based on the assumption that all sites were the same before treatment, but do they have some evidence that the sites were the same before drainage? I also wonder about the effect of the plant community. The near natural site is dominated by Sphagnum species while the IG and EG sites are grasslands. How does this change in plant community affect the water balance, the plant exudates, etc. isn't there a risk of confounding when interpreting the results? Now the results are mainly discussed from an abiotic perspective, but what about the interactions with the biota?

Specific comments

Title: "und" should be "and"

I personally would prefer a reorganization of the manuscript so results and discussion were separated; I believe it would be easier to follow that way.

I found the language mostly good, however, I found some sentences that I had to read over and over again to try and understand what they meant. I believe that the language improved later on the manuscript, I had more problems with this in the beginning. I suggest that the authors do a proper read-through or seek the help of a native English speaker to improve on the language and to clarify what they mean. The use of commas could also be improved, which will facilitate the reading.

I'm not a fan of using acronym's for sites, it makes sense to the people who work at the sites and are used to them, but as a reader you constantly need to go back to the

definitions and remind yourself what they stood for. I suggest spelling them out. In the last section (3.6) you help the reader by saying “drained (IG, EG) and wet sited (RW, NN)”, I missed that help in the earlier sections. It would make it easier to read.

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