

Interactive comment on “The impact of four decades of annual nitrogen addition on dissolved organic matter in a boreal forest soil” by M. O. Rappe-George et al.

Anonymous Referee #1

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This paper looks at the long term effect of N addition on DOC (and DON) amount and quality in forest soil. The effects of N seems mainly to be on the quality of DOC. The issue N interaction on C processes and C sequestration is still unresolved and with great uncertainty. Thus studies as this from long term experiments are welcome.

I already reviewed this paper before it was published here in the BGDissussion due to a misunderstanding. Thus this version has dealt with my concerns.

My major point was that the influence of changes in the water cycle from the treatment needed to be discussed. The evapotranspiration (especially interception loss) increase with canopy cover and tree size, and thus evapotranspiration must be higher in the N1

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and N2 compared to the control (stem volume compared to control c. 200% in 1995 and 150% in 2009). The amount of water available for leaching must to some extent affect the DOC concentration so that with increased soil water content the concentration gets diluted. Thus the DOC and other concentrations comparisons between the control and the fertilized should be interpreted with caution, whereas the comparisons between N1 and N2 seem to be unproblematic. The relation to stem volume in Fig. 3 may in part be an effect of higher evapotranspiration.

In the current version the authors have delt with this issue and added precipitation as well as soil water data and a couple of references to support that the water flux had a minor influence on the results.

All my minor comments and edits were also dealt with.

I have not noticed any new issues to debate neigther any new typos to correct. Thus I find it acceptable for publication.

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