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Biogeosciences Discussions

Interactive comment on "Patterns of dissolved organic carbon (DOC) and nitrogen (DON) fluxes in deciduous and coniferous forests under historic high nitrogen deposition" *by* S. Sleutel et al.

Anonymous Referee #2

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General comments:

This paper reported patterns of DOC and DON fluxes in different strata from three forests in Belgium, of which one was deciduous and the other two were coniferous. One of the two coniferous forests was located on the forest edge and was expected to receive higher N deposition than the other which was in forest interior. Thus the author addressed the effluences of forest types and N deposition on DOC and DON. The topic of this paper is within the scopes of Biogeosciences. The study is well designed and the manuscript is well organized and well written.

However, like mentioned by reviewers # 1, what is the brand new finding in this study?

This topic has been addressed recently in temperate forests. It was found that DON leaching below the rooting zone in this study was 2∼5 kg N/ha.yr, with slightly higher value from CPN (high N deposition) and the authors concluded that these fluxes were overall not much larger than losses observed in unpolluted forests. This contrasts with the some previous reports from N-addition experiments (Magill et al., 2000; Pregitzer et al., 2004; Fang et al., 2009) and forests receiving high N deposition (Brookshire et al., 2007). Could you give the magnitude of DON loss from unpolluted forests in this paper make your explanation a littler more explicit on this issue?

The other concern is that I am not sure if it is really essential to include the Appendix (including Table 7, Table 8 and Figure 4). I personally think it would be sufficient to describe briefly how to estimate hydrologic fluxes in the method section, because the emphasis in DON and DON pattern. Actually, the audience can judge whether the SWAP model used in this study is good or not based on the water balance.

Specific comments:

1) Title and Abstract. Point it out this study was perform in Belgium. 2) Page 7136 line 12 to line 21, please note that Currie et al (1996), McDowell et al., 1998 and Magill et al., 2000 reported the result from the same N addition experiment in Harvard Forests. 3) Page 7136 line 23, "Also Fang et al. (2009) . . ." change to be "Also Fang et al. (2008) found very large DON leaching losses in forests under large ambient N deposition and found that experimental N additions further increased DON losses in the study forests (Fang et al., 2009). Y. T. Fang, P. Gundersen, J. M. Mo, and W. X. Zhu. Input and output of dissolved organic and inorganic nitrogen in subtropical forests of South China under high air pollution. Biogeosciences, 2008, 5: 339–352. 4) Page 7138 line 7, ". . .because it should have. . ." change to ". . .because it was expected to have. . .".

Interactive comment on Biogeosciences Discuss., 6, 7133, 2009.