

Interactive comment on “Three representative UK moorland soils show differences in decadal release of dissolved organic carbon in response to environmental change” by M. I. Stutter et al.

Anonymous Referee #2

Received and published: 5 October 2011

Leaching of DOC from organic soil layers is much debated and high C losses have estimated in UK soils. This paper addresses solubility of DOC as viewed from three sites with monitoring data. The authors evaluate the role of environmental factors in DOC release such as soil temperature change, hydrological character of the catchments, and acid deposition. Long-term monitoring are valuable as they can reveal the responses of ecosystems to extraordinary events (the 2003 drought) and trends in climatic factors or pollutant deposition, but also tipping points for step changes in processes that may not be visible in short-term studies.

I agree with Referee #1 in that the paper is hard to read especially for parts dealing with

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the electrical charge properties of DOC. The text is very tight in the Results section of Geochemical modelling, but also in Discussion of the same topic, thereby raising hard times for readers of more general background. The outcomes of the modelling could perhaps be expressed more verbosely. In contrast the sections from 4.1.2 onwards are textually clear. The authors hope for collation of global soil solution studies and debate on the role of mineral-organic soil complexes in soil C losses. This paper certainly merits to be published in Biogeosciences to provoke such action. Since there are many approaches to study soil solution the authors would be wider heard with a bit more opened details of their tools.

It is rightful to point out, as the authors do, the role of podzols in releasing DOC. Primary production is of similar magnitude in uplands compared to peatlands, and there is much less SOC present in podzols. The more active decomposition and higher turnover rate in oxic conditions is an important process releasing CO₂ but also DOC. I find the paper a good quality one.

Minor details

Page 7825, line 26

Clark et al. 2011 is not listed in References

Page 7832, line 18 ... in deposition of?? base and acid cations. . .

Interactive comment on Biogeosciences Discuss., 8, 7823, 2011.

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