

Interactive comment on “The effect of drought on dissolved organic carbon (DOC) release from peatland soil and vegetation sources” by Jonathan P. Ritson et al.

Anonymous Referee #3

Received and published: 31 January 2017

General Comments

The authors address relevant questions regarding DOC leaching/quality from peat and various vegetation following different severities of drought and the potential impact this DOC may have on water quality. Implications from this study suggest that DOC quantities will increase under drought conditions while its treatability in water management will decrease. Authors advocate for catchment management to minimize drought effects on peatlands in light of the results presented here. Experimental design and replication seems adequate to address their research questions. Methods are well structured and fairly easy to follow. Tables and Figures are adequate and useful to the reader. However, authors need to be more conscious of separating their Discussion

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from their Results. Nearly every Results sub-section finished with an observation of why they got such results. These observations are the reason manuscripts have a Discussion section. Report results only in the Results section and discuss why you may have gotten those results and what their implications may be in the Discussion (see specific comments). Also, I don't understand why the authors included a repetition of the control group. I don't think this side-experiment is necessary and doesn't add value to the main experiment except as validation. CO₂ measurements would also be beneficial to validate their reliance on the enzymic-latch hypothesis, without which it is only an assumption. Significant improvements could be made in grammar and phrasing throughout the manuscript. Overall, the methods justify the results and the results seem to justify most of the discussion and implications drawn from this study. The authors do tend to over-interpret the magnitude of their results on future drought effects given this short-term laboratory study, but I still find merit in this study and recommend publication following revisions on the comments listed below.

Specific Comments

Lines 38-41: Vague sentences that aren't useful to a reader as written.

Line 42: "represents a significant flux of carbon from peatlands (Dinsmore et al. 2010)" - Provide a range of flux values rather than another vague sentence. Don't make the reader dig into every one of your citations to find useful information that could have easily been supplied.

Line 76-77: Vague sentence. Provide useful information from this citation that explains which programmes are being promoted to increase Sphagnum dominance.

Line 219-222: Description of Holm-Sidak correction should be moved to Methods section "2.4 Data analysis and statistical methods"

Line 234-236: Not a result. Move to Discussion.

Line 245-249: Not a result. Move to Discussion.

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Line 253-254: Not a result. Move to Discussion.

Line 258-261: Not a result. Move to Discussion.

Line 281-283: Not a result. Move to Discussion.

Line 316-318: Not a result. Move to Discussion.

Line 335-337: Do not introduce a new statistical test in the Results. Move this entire description to the Methods section “2.4 Data analysis and statistical methods”

Technical Corrections

Inconsistent use of “carbon” and “C” throughout the manuscript. Write “carbon (C)” the first time it is used and “C” afterwards.

Line 59: Change “effects” to “affects”

Interactive comment on Biogeosciences Discuss., doi:10.5194/bg-2016-517, 2017.

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