Hydrol. Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/hess-2018-253-RC2, 2018

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Seasonal shifts in export of DOC and nutrients from burned and unburned peatland-rich catchments, Northwest Territories, Canada" *by* Katheryn Burd et al.

Anonymous Referee #2

Received and published: 20 June 2018

General comment: In this study, researchers from Canada qualitatively characterized DOC, and compared yields of DOC and nutrients from two boreal peatland catchments from early spring to autumn. The two peatland catchments differed in terms of flow and disturbance regimes (wildfire). Major findings of this study are that 1) the two catchments showed strong similar DOC and nutrient exports. 2) more than half of the exported DOC and phosphorus occurred during spring, with the rising limb of the freshet linked to higher phosphorus concentrations and DOC of higher molecular weight. 3) the burned catchment had significantly increased total phosphorus and DOC yield. The main conclusion of the study was that predicted changes in runoff may be more important for the DOC character and export from boreal peatlands than wild fires. This is an

interesting and important study, and the manuscript is in very good shape. I strongly recommend this manuscript to be published with minor revisions.

Questions: 1-Page 4, lines 10, 11 and 12- "The SC outlet at the Liard Highway (61°24 W, 121°26 N) has a 134 km2 10 catchment that has not been affected by any major fires in the last 60 years. The NW outlet at the Mackenzie Highway (61°08 W, 120°17 N) has a 321 km2 catchment that was >90% burned in 2013 (Northwest Territories Fire Scar Map, 2013)." Is it possible that difference in catchment size affected the export of DOC and nutrients from peatlands? Typically, large forested catchments drain deeper soil layers, resulting in lower exports of DOC and TDN. Therefore, could catchment size influence the DOC and nutrient yields from peatland catchments?

2-This comment is also related to catchment size: is it possible that differences in catchment size influenced the DOC yields (due to microbial respiration during different water transit times)?

Technical corrections/suggestions: 1-Optional idea: Page 8, line 5- "($R2 = 0.71$, $p < 0.005$)." and so forth. -You may add sample size.

2-Page 8, line 5- Replace estimated by estimates.

3-Page 18, line 1- Replace 4.3 by 4.1.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2018-253, 2018.