

Interactive comment on “Retrogressive thaw slumps temper dissolved organic carbon delivery to streams of the Peel Plateau, NWT, Canada” by Cara A. Bulger et al.

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The manuscript provided by Bulger et al. investigates the role of retrogressive thaw slumps in moderating dissolved organic carbon delivery to stream ecosystems in north-western Canada. Comparing the similarities and differences in biogeochemical parameters upstream of such slumps, within slumps and downstream of slumps the authors convincingly conclude that adsorption processes between fine-grained mineral surfaces and DOC occur. The study shows that DOC gets removed from solution on short timescales and along short pathways, which is an important finding if we think about potential organic carbon mineralization into greenhouse gases and the poten-

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tial destination of permafrost organic matter after thaw and mechanical mobilization. A minor shortcoming of study is that it touches inorganic hydrochemistry (e.g. major cations) but it does not use these data in the statistics for hypothesis testing - or I have missed this. In a next step I can see the potential in analyzing organo-mineral complexes and mineral surfaces upstream and downstream for validation of the different results in Canada, Alaska and Siberia.

The authors present original data and provide a very thorough and detailed description of the methods. In general, this topic and the presented data are of interest for researchers studying thermokarst, rapid permafrost degradation and arctic biogeochemistry. The language is generally very good and the figures and tables usefully complement the text.

I suggest the manuscript to be accepted after minor revisions.

General comments:

Title:

I suggest to change the title into:

“Retrogressive thaw slumps moderate dissolved organic carbon delivery to streams of the Peel Plateau, NWT, Canada”

This would highlight the process-driven character of biochemical interaction between DOC and ...

The Introduction has 4 manuscript pages is therefore very long. Please cut (I have made some suggestions in the annotated manuscript attached) and align the internal structure according to the following points:

1. global relevance of the topic
2. specific relevance to the research field
3. previous work in this direction

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4. knowledge gap(s)
5. overall aim how to fill the knowledge gap
6. objectives (specific and measurable)

Specific comments:

For specific comments see the annotated and attached pdf-file.

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Please also note the supplement to this comment:

<https://www.biogeosciences-discuss.net/bg-2017-217/bg-2017-217-RC2-supplement.pdf>

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2017-217>, 2017.