

Biogeosciences Discuss., author comment AC1
<https://doi.org/10.5194/bg-2021-272-AC1>, 2021
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Reply on RC1

Karis J. McFarlane et al.

Author comment on "Age and chemistry of dissolved organic carbon reveal enhanced leaching of ancient labile carbon at the permafrost thaw zone" by Karis J. McFarlane et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-272-AC1>, 2021

Authors' reply:

-Thank you for your review and suggestions for improvements to the manuscript. We will add the references suggested for headwater catchments and appreciate these being brought to our attention. As pointed out in the reviewer comments, this is a small study and while we will add these additional studies to our references, introduction, and discussion, we do not plan to extensively expand on the discussion in our revision.

-The specific comments include 2 clear suggestions, which we agree with and will change in the revision.

-For the final comment regarding Line 225, we see your point and agree that for the surface and shallow pore waters the correlation analysis isn't appropriate – as we state in line 226 the relationship is really that both CH₄ concentration and DOC $\Delta^{14}\text{C}$ values decrease from July to September. In the revision, we will remove the correlation results and focus instead on the seasonal increase in CH₄ concentration from July to September for the surface and shallow porewaters, providing quantitative increases for each since it is difficult to see the change in the surface waters in Figure 4 (this is because of the large range in CH₄ concentrations of the pore waters). This point was a relatively minor one, leading into the more interesting patterns in the deep porewater in the following paragraph, and this change will improve that flow in the revised manuscript as well.