

## ***Interactive comment on “Thermokarst amplifies fluvial inorganic carbon cycling and export across watershed scales on the Peel Plateau, Canada” by Scott Zolkos et al.***

### **Anonymous Referee #2**

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Review on MS# BG-2020-111 “Thermokarst amplifies fluvial inorganic carbon cycling and export across watershed scales on the Peel Plateau, Canada” by Scott Zolkos et al.

Zolkos et al. present a detailed and high quality characterisation of running water chemistry in a sub-catchment of the Peel River. This work was to determine the effect of retrogressive thaw slump (RTS) on DIC sources and export. The research design, incorporating three transects at different spatial scales, is an interesting sampling approach. The dataset, including a large number of key variables, is also of very high quality. The research question is highly relevant to our understanding of the permafrost

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climate-feedback.

While the design of the study is of high quality, I find that the discussion of the results needs some improvement.

I think the influence of thermokarst on fluvial inorganic carbon cycling and export is reflected in two aspects. One is the change in runoff, and the other is the change in DIC concentrations and sources. The authors have discussed the latter more clearly, but the former needs to be done further. In addition, the authors used the change in concentration and isotope of DIC to indicate the sulfuric acid carbonate weathering, but the sulfuric isotopic evidence may be the more direct one. Could they add this to further strength their conclusions?

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