Organic carbon and microbial dynamics across glacierized watersheds in the Canadian Rockies

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Mountain glacial systems are undergoing rapid climate change leading to increased water fluxes from these catchments, with concomitant export of sediment and organic carbon. Glacial organic carbon represents an aged, but potentially bioavailable carbon pool that is compositionally distinct from other catchment sources. Despite this, the composition of riverine organic carbon from glacial headwaters to downstream reaches, and its role in structuring microbial communities has yet to be characterized in the Canadian Rockies. Over three summers (2019-2021) samples were collected monthly from glacially-fed rivers in Banff and Jasper National Parks. Preliminary results show temporal trends in microbial community composition and dissolved organic matter (DOM) absorbance spectra and age, tied to seasonally-evolving water sources. Carbon isotopes and DOM fluorescence will also be incorporated into this study to provide an integrated understanding of the age, source, lability, and biological processing of organic carbon exported from Rocky Mountain glaciers.