Riverine Carbon Cycling as a Function of Seasonality (Poster)

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Montana has one of the most dynamic climate regimes in all of the United States, with seasonal changes spanning a large range of temperatures. In Montana, we depend on water originating from snow and glacial melt. These freshwater ecosystems are considered to be some of the most vulnerable to climate change on Earth. Glacially fed ecosystems are unique habitats for a vast array of life and geochemical processes, including carbon cycling. In order to study carbon cycling in environments vulnerable to change, an interdisciplinary approach including biogeochemical analyses of river DOM production and external allochthonous inputs is necessary to evaluate the impacts of climate change. The overarching hypothesis for this work is: Seasonal changes in Montana rivers will cause shifts in carbon cycling as ecosystems respond to changes in temperature. Unlike our initial hypothesis that the amount of sunlight and temperature would play a bigger role in what was happening, the time of the year was much more significant. In Big Sky OC levels in June for the sunny and canopy covered reaches were similar, 1.24 and 1.23 mg C/L, respectively; whereas at the end of July OC in the sunny reach was 0.42 mg C/Land the canopy cover reach was 0.955 mg C/L. The same trend is seen for the urban location in Bozeman. Cell abundance in the reaches followed similar trends, which were not solely based on temperature.