

## **Microbially-driven nitrate production in a high Alpine glaciated catchment**

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Nitrogen (N) is a key limiting nutrient for primary productivity, and is particularly important in low-nutrient systems, as is often the case in high alpine environments. This study measured inorganic nitrogen species concentrations and the isotopic composition of nitrate over the 2016 melt-season in a paired catchment system, in the Beartooth Mountains, Montana. The two catchments have similar elevations, atmospheric inputs, bedrock geology, area, and contain lakes, however, one catchment contains a glacier, the other does not. The stream waters in the glaciated catchment showed significantly elevated nitrate concentrations relative to those in the non-glaciated catchment and also relative to the atmospheric input to the catchment as determined by nitrate concentrations in the snowpack.  $\delta^{18}\text{O}$ ,  $\Delta^{17}\text{O}$  and  $\delta^{15}\text{N}$  nitrate values clearly distinguish the stream waters from the atmospheric inputs (snowpack) indicating that there are additional nitrate sources in the catchment. The presentation will discuss the nature of the microbial processes that contribute to the production of additional nitrate in the glaciated catchment.