# Storage and flux dynamics for an active beaver meadow in the North Saint Vrain Creek, Rocky Mountain National Park, CO

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**Abstract.** North American land use practices have extensively reduced retention features (i.e. beaver meadows) with implications for catchment hydrology, morphology, and biogeochemistry. Beaver meadows are low gradient multi-threaded systems formed when beaver dams promote prolonged overbank flooding and floodplain deposition of fine sediment and organic matter. Notably, beaver meadows have been demonstrated to be highly resilient to drought, floods and wildfires. While considerable research has identified local ($10^0$-$10^2$ m) influences of beaver dams on storage and flux dynamics, there is minimal information on system-scale ($10^3$m) effects of serial beaver impoundments. We are quantifying hydrologic and biogeochemical fluxes and dynamics across an active beaver meadow in the North Saint Vrain (NSV) Watershed, Rocky Mountain National Park, CO. Preliminary results suggest that the meadow has a moderating effect on streamflow, is highly biologically productive, and stores substantial amounts of organic matter during storm events. In addition to highlighting the potential benefits of retention features on water quality and quantity, we aim to capitalize on the meadow's mosaic of flow regimes to address relations between local retention, hydrologic connectivity, and system-scale retention. Thus, our research should provide fundamental insights into system-scale retention and bolster the science necessary to better inform beaver reintroduction as a river restoration tool.