

Land cover change and some implications for water, carbon, and nutrient flux

Land cover change is common across Colorado and the US and can have substantial impacts on watershed hydrologic and biogeochemical dynamics. Here I will discuss research investigating the impacts of wildfires and loss of river-floodplain connectivity on these dynamics. We evaluate loss of river-floodplain connectivity in the context of beaver removal and subsequent river channel incision. Our results indicate that lateral hydrologic connectivity across the floodplain of low-gradient river segments has the capacity to attenuate hydrologic and fluvial nutrient and dissolved organic carbon flux and can set river segment sink-source dynamics. Additionally, land-cover and geomorphic changes to uplands, riparian areas, and channel networks in post-fire landscapes can strongly alter watershed export patterns and in-channel retention capacities. Investigations of watershed hydrology and biogeochemistry in landscapes with altered land cover and fluvial dynamics provide the opportunity to evaluate connections between landform and function. These investigations also have importance to assessing cumulative effects and help guide potential restoration strategies.