

J02: Cold climate riparian areas

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Session Description

Riparian areas can act as important hotspots of biogeochemical cycling where high rates of chemical and biological reactivity alter both the amount and form of carbon, nitrogen, and phosphorus reaching adjacent fluvial ecosystems. For example, high moisture levels and organic carbon availability that characterize riparian soils can fuel microbial nitrogen transformation and greenhouse gas emissions (as N₂O) where nitrogen loading from cropland is present. Riparian areas may also act as islands of intact permanent vegetation in highly altered landscapes supporting unique microclimatic conditions. Through influence on stream geomorphology, groundwater hydrology and local microclimate, riparian vegetation influences in-stream biogeochemical cycling, rates of bank erosion and the temperature regime of stream habitats. In agricultural landscapes the importance of riparian functions to stream ecosystem condition is often amplified, but vegetation and historically accumulated nutrients in these landscape features may also act as a source of dissolved nutrients to snowmelt runoff. The goal of the session is to draw together an interdisciplinary group of presenters to share recent findings on ecological functioning of riparian areas in both natural and agricultural cold climate settings. In particular, contributions will be welcomed that focus on measurements and modelling of the riparian zone water balance, aqueous nutrient cycling, GHG fluxes, influence on channel geomorphology, and near or in-stream microclimate.

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