Nitrogen Mineralization Rates Vary along a Hydrologic Connectivity Gradient

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Freshwater wetlands serve as control points for biogeochemical processing from local to watershed scales and often reduce downstream nitrogen (N) export. Mineralization is a crucial process in wetland N cycling as it impacts the bioavailability of inorganic N compounds through the conversion of organic constituents to reactive forms. Inundation regimes in wetland systems alter N mineralization by regulating soil organic matter (SOM) availability through changes in redox conditions and substrate decomposition. However, with increasing anthropogenic pressures and climate change impacts, it is unclear how these changes will alter N mineralization processes. To address this uncertainty, we are quantifying seasonal N mineralization rates across three wetlands that range from groundwater to surface water dominated wetlands (i.e., hillslope, riparian, and floodplain wetlands). In each wetland, we measured *in situ* N-mineralization (net nitrification, ammonification, and total N mineralization) along the upland to wetland transition using ion-exchange resin cores. We measured the inundation regime using continuous measurements of wetland water level. To evaluate potential drivers of N mineralization rates across landscape positions, we measured SOM quantity and soil moisture at measurement site. Initial results indicate that within wetlands, N mineralization rates are highest in the transitional zone between the wetland and upland position. Across wetlands, initial results suggest higher N mineralization rates in the floodplain and riparian wetlands when compared to the hillslope wetland. Our results link landscape position, inundation regime, and N mineralization rates, highlighting the role anthropogenic pressures and climate change will have on N biogeochemistry in freshwater wetlands.