



Nutrients and organic matter in a glacial river/floodplain system (Val Roseg, Switzerland)

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ABSTRACT: Nutrient and organic matter dynamics were evaluated for a glacial river-floodplain system in the Swiss Alps (Val Roseg). Glacial melt water was the primary source of particulate organic and inorganic matter; hillslope groundwater was richest in DOC and SiO_2 ; and pulses in dissolved nitrogen were identified during spring snowmelt. Calculations of temporal coherency revealed that hydrological processes within the catchment-floodplain complex controlled nutrient and organic matter species along the main channel; however, local hydrological and/or biogeochemical processes played a major controlling role in most floodplain channels. DON and $\text{NO}_3\text{-N}$ were the only variables that were in average significantly correlated across all sampling sites. Comparisons of measured concentrations and concentrations based on a two end member mixing model indicated that the floodplain served as a major sink for particulate phosphorous and suspended matter but was never a source for nutrients or organic matter. Annual area-specific export rates from the Val Roseg catchment were $7.6 \text{ kg ha}^{-1} \text{ yr}^{-1}$ for TOC (47% DOC), 4.3 kg for TP (98% particulate phosphorus), and 4.1 kg for TN (78% $\text{NO}_3\text{-N}$).

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