



Intra- and interannual variability of total organic carbon concentration and flux in two contrasting boreal landscape elements during 1993 to 2001.

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Large spatial and temporal variations in stream TOC concentration and export occurred during an eleven year observation period (1993-2003) in a boreal headwater catchment. TOC flux and concentration patterns from mire- and forest-dominated sub-catchments differ. Temporal variations in stream TOC concentrations in both landscape types are primarily driven by variations in flow with the mire dominated stream generally diluting during increased runoff while TOC increases with runoff from the forested landscape. Temperature related intra-annual patterns from the forested sub-catchment emerge only after dividing the data by season into dry and wet years. Interannual variations are almost solely driven by variations during the snow free period with TOC contributions doubling from the forested landscape during wet years. Wet years favour the relative export of TOC from areas dominated by forest, an observation that probably also holds true on a larger scale when similar landscape types are compared. Expected changes in rainfall and temperature patterns will affect the character of TOC exported downstream from mixed forested or mire landscapes.