



Peatland use and transport of particulate organic matter in boreal headwater catchments

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Peatland use can cause increased transport of particulate organic matter (POM) causing deteriorated water quality and especially siltation of stream beds. Even though topic has gained major attention among stakeholders it has received only minor efforts to solve the main sources and properties of transported particles. The development of effective management practices and evaluation of purification efficiency demands understanding of the sources of particulate matter in peat dominated catchments with various land uses and hydrological conditions. The objectives of this study were: (1) to determinate physical properties of POM in headwater brooks affected by different peatland uses, and; (2) to identify the sources of transported material by using sediment fingerprinting methods. For this purpose, two headwater catchments under peat extraction and peatland forestry land uses with 8 sampling points were monitored for 2 years using time integrated suspended sediment samplers. Data was completed by gap samples from 50 other headwater locations with different upstream land uses: pristine, peatland forestry and peat extraction. For the sources analysis, disturbed topsoil, stream bed sediment, banks of ditches and brooks, algae and various vegetation types were identified as the potential sediment sources. Stable isotopes ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) and C/N ratio were analyzed to discriminate between the possible sources. Results are further scaled against different land uses, landscape elements and seasonal hydrological conditions in headwaters. This paper presents the preliminary results from a two year study aiming to show various patterns in transport of POM in boreal headwater catchments. Due to strong land-water relationship in headwaters, further information on the properties of particles is needed to assess the downstream impacts of land use.