

# Characteristics of suspended sediment in Northern Finland: Spatio-temporal variation and effect of land use

Hannu Marttila<sup>1</sup>, Bjørn Kløve<sup>1</sup>

<sup>1</sup> University of Oulu, Water Resources and Environmental Engineering Laboratory, PO Box 4300, 90014 University of Oulu, Finland

Phone: +358 (0)40 539 5546

E-mail: hannu.marttila@oulu.fi

---

## **Introduction:**

Diffuse pollution and erosion caused by peatland drainage and agriculture are key water quality problems in northern Finland, causing transport of particulate organic material to watercourses. In this study, spatio-temporal variation of suspended sediment in boreal conditions is studied using a multi-technical approach.

**Methods:** Spatial and temporal variation suspended sediment characteristics was studied in Kiiminkijoki, Oulujoki, Temmesjoki and Siikajoki rivers, and their tributaries together in 30 locations during 2010-2011 using TIMS-collectors with monthly collection. Sample analysis included: effective and absolute particle size, particulate organic matter, stable isotopes  $\delta^{15}\text{N}$  and  $\delta^{13}\text{C}$ , and wide range of elements.

**Results:** We looked spatio-temporal variation in suspended sediment properties by plotting results against catchment size, stream order, land use, geology, and discharge and weather conditions at collection periods. Further, analysis includes different fingerprinting methods for inorganic and organic fractions in selected catchments using stable isotopes and elements. This paper (oral presentation) presents results this two year study and discuss is expanded to ecological and management issues of particulate organic matter and inorganic sediment in boreal regions.