



## **Distribution of black carbon in the northern terrestrial catchment of Siberia.**

Andrej Rodionov (1), Matthias Grabe (1), Heiner Flessa (2), Georg Guggenberger (1)

1) Institut für Bodenkunde und Pflanzenernährung, Martin-Luther-Universität  
Halle-Wittenberg, Weidenplan 14, 06108 Halle, Germany

2) Institut für Bodenkunde und Waldernährung, Universität Göttingen, Büsingenweg 5, 37077  
Göttingen, Germany (rodionov@landw.uni-halle.de / FAX: +049 345-5527116)

In boreal forests, fire is a frequent disturbance and converts soil organic carbon to black carbon. Black carbon storage was characterised in a small catchment by a varying permafrost pattern in order to assess controlling factors of carbon storage in such ecosystems. The catchment comprised landscape units with southern exposed permafrost-free mineral soils, north faced permafrost mineral soils, and permafrost-affected raised bogs in plateau positions showing in part thermokarst erosion. There were indications of forest fires at all landscape units. Black carbon is ubiquitous in the soils of the catchment and contributed to about 0.3 - 3 % of soil organic carbon as identified by the benzenepolycarboxylic acid method. This calculates a black carbon storage up to  $4.000 \text{ g m}^{-2}$ . The relative contribution of black carbon to soil organic carbon as well as the absolute stock of black carbon is highest in the intact bogs with a shallow active layer followed by mineral soils of the northern aspects having also a high permafrost table. A large proportion of black carbon is stored within the permafrost. In contrast, soils with deep active layer or lacking permafrost had only little black carbon. These results suggest that black carbon is an important constituent in the organic carbon storage of the catchment's soils and that forest fire does not necessarily lead to permafrost degradation. However, thawing of permafrost may lead to the mobilisation also of this carbon pool.