TECHNISCHE UNIVERSITÄT DRESDEN

Fakultät Umweltwissenschaften, Fachrichtung Forstwissenschaften

Institut für Bodenkunde und Standortslehre, Professur für Bodenressourcen und Landnutzung

Technische Universität Dresden, 01062 Dresden

Disentangling reasons for increasing concentrations of dissolved organic carbon in surface water – need to understand organic matter dynamics in forest soils

For more than a decade, concentrations of dissolved organic carbon (DOC) have been increasing in surface waters across northern and central Europe and eastern North America. There are several hypotheses explaining this increase as the recovery from acidic deposition in the past, response to climate change or nitrogen (N) deposition. There is some evidence that DOC concentrations might returning toward lower pre-industrial levels as a result of a gradual decline in the sulfate content of atmospheric deposition. However, high levels of N deposition might contribute to increasing stocks of soil organic matter resulting in a larger reservoir of organic matter and contributing to increasing DOC concentrations in surface waters. Thus, there is a strong need to consider changes in the turnover of soil organic matter in forest soils to disentangle potential reasons for increasing DOC concentrations.

The study project will examine the amount and composition of dissolved organic matter in the soil solution of two forest types (Norway spruce forest, European beech forest) in response to experimentally changed input of sulfur and nitrogen. The results will be linked to measurements of soil respiration as an indication of changes in the turnover of soil organic matter. This ongoing field manipulation study is carried out in the vicinity of Načetín research station in Ore Mts (Czech Republic; www.geology.cz/slavonic). The project is part of a collaboration between TU Dresden and the Czech Geological Survey in Prague.

Supervisor: Prof. Karsten Kalbitz, Dr. Filip Oulehle (Czech Geological Survey)

Contact: Prof. Dr. Karsten Kalbitz
karsten.kalbitz@tu-dresden.de
Tel. (+49) 351 463 31379