TECHNISCHE UNIVERSITÄT DRESDEN

Fakultät Umweltwissenschaften – Institut für Bodenkunde und Standortslehre

Professur für Standortslehre und Pflanzenernährung

Topic for master thesis (in cooperation with Sachsenforst)

Translocation of sulfur (S) with seepage water in forest soils in Saxony

Sulfate deposition with acid rain was a serious problem for forest ecosystems in North and Central Europe during the 1970-90s causing severe impacts on forest ecosystems. In the following decades, it was assumed that S availability in European forests is sufficient and, thus, not a problem. Nevertheless, recent reports of clearly decreased S stocks in forest soils and of reduced S foliar contents point to the potential of arising S deficiencies in European forests that in the past were subject to elevated rates of S deposition. Until the early/mid 1990s, terrestrial systems retained sulfate, but shifted towards net release since the late 1990s, possibly due to mobilization of legacy S pools of former deposited atmospheric S. The national forest soil inventory in Germany (BZE) indicated a considerable decrease of S stocks in the forest floor (O-layer) and of sulfate in soil solution between the first inventory in the early 1990s and the second inventory in 2006/08.

In the proposed master thesis, S concentration in seepage water of forest soils will be investigated. The study sites are located in Saxony/Germany and are part of the EU-ICP Forests Level-II-Program. In cooperation with the Forests Administration (Sachsenforst) long-term data of seepage water chemistry from the sites will be analyzed. The main objective is to determine changes in S transport through the soils depending on site properties and deposition history.

Literature:

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