



*Topic for master thesis (in cooperation with Sachsenforst)*

## **S compounds and S stocks in forest soils in Saxony**

Sulfate (S) 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. Consequently, the S nutritional status in forest ecosystems is increasingly relying on internal S cycling (i.e. from mineralization) and S supply from mineral sources.

In the proposed master thesis, S compounds and stocks in several depth intervals 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) archived samples from the sites will be analyzed for S fractions. Further, data from previous sampling campaigns will be available. Additionally, fresh soil samples will be taken, analyzed, and results compared to archived data. The main objective is to determine changes in S bonding forms and fractions due to changed S-supply processes at the different sites.

### Literature:

- Berger TW, Türtcher S, Berger P, Lindebner L (2016) A slight recovery of soils from Acid Rain over the last three decades is not reflected in the macro nutrition of beech (*Fagus sylvatica*) at 97 forest stands of the Vienna Woods. *Environ Pollut* 216: 624–635. doi: 10.1016/j.envpol.2016.06.024
- Erkenberg A, Prietzel J, Rehfues KE (1996) Schwefelausstattung ausgewählter europäischer Waldböden in Abhängigkeit vom atmogenen S-Eintrag. *Z Pflanz Bodenkunde* 159: 101-109. doi: 10.1002/jpln.1996.3581590115
- Scherer HW (2009) Sulfur in soils. *J Plant Nutr Soil Sci* 172:326–335. doi: 10.1002/jpln.200900037
- Wellbrock N, Bolte A, Flessa H (Eds) (2016) Dynamik und räumliche Muster forstlicher Standorte in Deutschland: Ergebnisse der Bodenzustandserhebung im Wald 2006 bis 2008. Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries
- Wunderlich, S.; G. Raben; H. Andreae; K.H. Feger (2006) Schwefel-Vorräte und Sulfat-Remobilisierungspotenzial in Böden der Level-II-Standorte Sachsens. - *AFZ/Der Wald* 60, 762-765.

Bertreuer: Dr. Dorit Julich, Prof. Karl-Heinz Feger

Kontakt: Dr. Dorit Julich, [dorit.julich@tu-dresden.de](mailto:dorit.julich@tu-dresden.de), Tel.: 0351-463 31390

### **Postadresse (Briefe)**

Postfach 1117, 01735 Tharandt

### **Postadresse (Pakete u.ä.)**

Piennner Straße 19, 01737 Tharandt

### **Besucheradresse**

Sekretariat: Piennner Straße 19, 2. Etage, Zi. 2.29

### **Internet**

<http://boku.forst.tu-dresden.de/>

