

# **VERSAUERUNG UND MOBILISIERUNGSPOTENTIAL VON SULFAT IN GESCHICHTETEN BÖDEN DES NORDWESTLICHEN TEUTOBURGER WALDES**

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## **SUMMARY**

The northwestern part of the Teutoburger Wald, the so called Riesenbecker Osning, is built up by the Osning sandstone, a rock with low buffering capacities. The major type of ecosystems are pine forests characterized by high deposition loads of S and N. Soils are in general sandy. For the majority of the investigated soil profiles we were able to prove or presume the existence of lithological discontinuities within the solum. The stratification of parent material is caused by the occurrence of an upper cover bed (main mixing partner is eolian sand) superimposing debris of sandstone.

For the characterization of sulfur dynamics we used total sulfur, the weakly and unspecific bound sulfate fraction derived by water batch, and the anorganic adsorbed sulfate fraction derived by 0.5 M NH<sub>4</sub>F solution batch.

Our results prove, that to a large extent in the subsoil, especially the illuvial podsol horizons, anorganic adsorbed sulfate is accumulated. This pool was formed by an increased sulfur deposition starting in the early 20th century. In addition, we found for the upper solum much lower partitions of anorganic adsorbed sulfur compared to the subsoils. We assume the reason for this is the decrease of S deposition since the early 1980s and the consequent depletion of sulfate from the upper solum because of a lack S supply. Observed high sulfate concentrations in the Osning springwaters as well as the assumed depletion of sulfate support the idea of an exhaustion of the retention capacity and the reduction of the sulfur pool.