

## **WEATHERING OF MINERALS AS A SOURCE OF METALS IN PEAT BOGS**

Differentiation between lithogenic and anthropogenic sources of heavy metals is essential to take full advantage of peat bogs as archives of atmospheric deposition.

Recent studies have shown that lead is immobile in ombrotrophic peat bogs. The Pb deposition record reflects atmospheric Pb contamination since Antiquity because of the massive input of ore leads compared to natural sources of this element (mainly soil dust). However, to discuss the use of natural Pb as a proxy of environmental changes such as climate or volcanic activities, great care is needed to distinguish between atmospheric and non-atmospheric inputs in pre-anthropogenic peat with Pb concentrations well below 1µg/g.

To assess the sources of metals, a six meter deep ombrogenic peat bog profile lying on granite in the southern Black Forest, Germany, was investigated for chemical composition. Dating by <sup>14</sup>C AMS of the bottom indicates an age of 6624-6367B.C.

Results show that weathering of minerals in the underlying granite and sediments could be an important source of Zn and Cu which migrate upward into the peat by diffusion, whereas Pb, Rb, Zr, Ti concentrations are not influenced by the chemistry of the underlying sediments. Moreover, weathering of a mineral layer intercalated in the peat profile and well above the underlying sediment layer, did not influence Pb, Zr, Ti, and Rb concentrations in the surrounding peat. In contrast, Ca and Sr concentrations are higher around this mineral layer due perhaps to diffusion away from the reaction front both upward and downward, and by the subsequent adsorption of these two elements in peat.

Finally in the top of the profile, lead concentrations are higher, probably due to atmospheric deposition from anthropic activities since Roman Period.