

Molecular changes in soil organic matter with depth

Soils store more organic carbon than vegetation and atmosphere combined. Thus, soils are a relevant carbon pool and an important part of the carbon cycle.

Soil organic matter is a complex mixture of organic compounds, including plant material and products of microbial metabolism. Water-soluble organic matter is available to microorganisms while mineral associated organic matter persists in soils for longer times.

We want to use high-resolution mass spectrometry to study changes in the composition of organic matter with depth. For that we will analyze changes in the composition between A Horizon and C Horizon, both in water extracts and the silt and clay fractions.

The master project provides the opportunity to learn about soil organic carbon composition and to enhance or develop skills in high-resolution mass spectrometry. The master project consists of an experimental part, the data analysis and interpretation of results.



Picture of a high-resolution mass spectrometer (Bruker ScimaX 7T).

The BioGeoOmics group offers a supportive environment to pursue this research project and provides access to the high-resolution mass spectrometry (LDI-FT-ICR-MS und ESI-FT-ICR-MS).

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Starting point: Optimally between September and December 2026

More about the BioGeoOmics group:

