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The added value of biomarker analysis in palaeo-ecology

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Palaeosols are important soil archives in landscape evolution studies. Especially in cultural landscapes, palaeosols allow studies of soil development under natural conditions analyses. Pollen analysis of palaeosols , in combination with 14C and OSL dating , provide relevant geo-ecological information for the reconstruction of soil and landscape evolution.

A complication of the interpretation of soil pollen spectra is the separation between pollen producing species, present on the site and on distance. Pollen diagrams show regional environmental change, but do not allow for a reliable determination of the local onsite vegetation during geomorphological stable periods with soil formation and soil organic carbon sequestration. The application of biomarker analysis allows this separation. Biomarkers in the form of plant-specific concentrations ratios of C20-C36 n-alkenes and n-alcohols, extracted from the same soil samples as used for pollen extractions, are associated with onsite produced soil organic matter and our preliminary results show they provide reliable information about the vegetation present during the development of the initial podzols in polycyclic driftsand

Biomarker analysis improves the interpretation of paleoecological records to landscape evolution and as such is of significant added value in palaeopedological research where determination of onsite vegetation is of great importance.