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Faecal Steroids and n-Alkanes in Lake Sediments

**Abstract**

Lake sediments are used as archives for climate and environmental reconstructions. This study investigated if biomarker analyses in lake sediments can be used to reconstruct anthropogenic landscape modifications during Holocene. In contrast to the mineral matrix of sediments and e.g. pollen, plant macro remains and charcoal particles, biomarkers can be more easily translocated within soil profiles before erosion and deposition. Furthermore, a translocation can also occur in lake sediments. Therefore, we tested if biomarker concentrations and patterns correlated with pollen patterns and further paleo environmental proxies in sediments of two maar lakes in the Eifel region. Five core sections of Lake Holzmaar and two core sections of Lake Ulmener Maar were sampled. The analysed core sections contain ca. 10 000 years and a number of data existed from previous analyses (ELSA project). As example for biomarkers for the reconstruction of vegetation changes, n-alkanes were analysed. Steroids incl. bile acids were used as proxies for the deposition of faeces of animals (animal husbandry). Patterns of n-alkanes correlated with pollen data. Parts of the core that show characteristics of dense forest in the catchment area had relatively low amounts of faecal steroids and the steroid patterns indicated the presence of several different animals. In parts of the core that show characteristics for grassland and agricultural fields, faecal steroids showed the presence of animal husbandry. The correlation of biomarker concentrations with pollen data and other data showed that it possible to detect changes in vegetation and land use with biomarker analyses within the catchment area of the two maar lakes.