

Anthropogenic traces in lake sediments

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Lake sediments are ideal continuous archives of climate and environmental change over thousands of years located within the human habitat. Hence, they are ideal to investigate human – climate – environment interaction in great detail. Traditionally, lake sediment records have been mainly applied for natural climate change reconstructions. Human impact on sedimentation regimes may superimpose the signals of natural variability and thus has mainly been considered as complication for palaeoclimatic reconstruction. More recently, the value of lake sediments in particular as valuable archives of human evolution and societal developments since prehistorical times has been recognized. Exploiting lake sediments in this respect can provide insights how early societies changed the environment and how they responded to climate change. However, it still a major challenge to distinguish between human impact and climate signals on sedimentation regimes because both may affect the environment in similar ways. For example, erosion processes in the catchment can be triggered by both, climate-driven and human-induced vegetation change. The classical approach to identify human impacts in lake catchment in historical and prehistorical times is the reconstruction of past vegetation and mapping of indicator plants for different types of land-use. More recently, new proxies for human impact including ancient DNA are developed that may foster human impact studies. Another challenge for unambiguous assignment of sediment changes to anthropogenic impact are differences in precision and accuracy of archaeological and sediment record dating as well as different temporal resolution of both. In this respect, annually laminated (varved) lake sediment records play a crucial role because they provide temporal resolution at human time perspectives. In this presentation, examples for different ways of human impact on lake systems and how these can be traced and interpreted will be presented. A particular focus will be on lakes in the southern Baltic lowlands where human interferences with the environment commenced during the Neolithic. Since that time anthropogenic activities exhibit a general trend of increasing impacts until modern industrialization which, however, underwent significant fluctuations.

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