

Disentangling local and regional paleoclimate signals from lake internal processes in paleolimnological records

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Lakes act as natural recorders of past climatic changes. However, interpreting the records preserved in the lacustrine archives is often far from straight-forward, and often different proxies can indicate diametrically different climate conditions for the same time interval. A better understanding of lake intrinsic processes as well as site specific catchment processes is therefore often needed when interpreting especially archives from smaller lakes and ponds. Here we summarize the findings from paleolimnological studies of a number of lakes and ponds performed on the subtropical island of Taiwan.

In Taiwan, where lakes are rare because of the steep topography and high erosion and sedimentation rates, two types of lakes dominate: floodplain lakes formed by differential aggradation and mountain lakes mostly formed through landslide damming. Because of the stark differences in elevation, catchment topography, and river input, these lakes can react very differently to the same regional climate forcing. By comparing a number of well-dated records from floodplain and sub-alpine lakes in northern Taiwan, we show how a combination of sediment geochemistry, pollen, organic chemistry and biomarkers can be used to separate regional climate change signals from local catchment processes and anthropogenic influence.