

Magnetic properties and sedimentary environment of Lake Nan Long Wang sediments from northeast China

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A sediment core taken from Lake Nan Long Wang, northeast China, was investigated by rock magnetic and geochemical analyses. The lake has small drainage basin without inflowing river, and the sediments were not disturbed by events like floods. The limnological setting allows us to reconstruct the continuous changes in sedimentary environment and climatic influences around the lake from the sediments. Therefore, this study discusses the sedimentary environment in Lake Nan Long Wang based on the magnetic properties and sedimentological features of the sediments.

At first, we measured magnetic susceptibility, natural remanent magnetization(NRM), anhysteretic remanent magnetization(ARM), saturation isothermal remanent magnetization(SIRM) and water content of the sediment core, and HIRM and S-0.3T were calculated from SIRM. Secondary, isothermal remanent magnetization acquisition curves and low-temperature magnetic measurement were measured in selected parts of the core. Then, total carbon content and main chemical composition by X-ray fluorescence analysis were measured.

Magnetic properties, such as magnetic susceptibility, NRM, ARM, SIRM, HIRM show high intensities in two sections, from 40 cm to 50 cm, and around 76 cm deep. The upper section indicates increase of clastic deposits and it may be caused by the human activity around the lake according to pollen analysis of Yin(1999). The high value in the lower section reflects the increase of the clastic particles flowing into the lake. Magnetic intensity decreased in the section below 100 cm is suggested to be decomposition of magnetite in anoxic environment. The section contained many plant fragments and high carbon contents were detected. These evidence support the anoxic lake bottom with good preservation of organic materials.