Environmental Magnetic Analyses of Lake Sediment Core LYHL-B from Li-Yu Lake of Hwa-Lien, Eastern Taiwan

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Abstract

Environmental magnetic proxies are applied to analyze a lacustrine sediment core, named as LYHL-B, taken from the Li-Yu Lake of Hwa-Lien County. The total recovered length is about 6.9 meters. It will provide the information for the last 6 thousand years or so based on the C-14 dating results. Magnetic proxies suggested that the paleo-environmental change at the locality studied could be divided into three time periods: before ~2.3 ka, 2.3 ka to ~1 ka and after 1 ka. The first period has the relative high magnetic susceptibility (χ) with several high peaks, low remanent magnetization especially the ARM, low S-ratio implied high oxidation phenomenon and very coarse grained magnetic minerals indicated by ARM/χ. The second period shows almost opposite trends: the lowest χ, highest ARM but median SIRM and NRM, lowest HIRM with high S-ratio and very fine grained magnetic minerals. The most present period has the characteristics between the previous two periods. Li-Yu Lake was proposed to be part of a river originally, but was damped later to form as a lake by several previous studies. If it is true, the occurred time is proposed to be at ~2.3 ka based on the magnetic results. The sediments deposited during the first period might represent the river deposits based on the grain size distribution. After the lake was form, there were very fine grained but less abundant magnetic minerals have been transported into the lake. In addition, the fluctuation signals of the magnetic parameters enable us to investigate the paleo-climate changes in the area studied.