

## Chronology of Lake Biwa sediments: integration of radiocarbon ages, tephrochronology and environmental magnetism

HAYASHIDA, Akira<sup>1\*</sup> ; KITAGAWA, Hiroyuki<sup>2</sup> ; TAKEMURA, Keiji<sup>3</sup>

<sup>1</sup>Department of Environmental Systems, Doshisha University, <sup>2</sup>Graduate School of Environmental Studies, Nagoya University, <sup>3</sup>Beppu Geothermal Research Laboratory, Kyoto University

The Quaternary sedimentary sequence of Lake Biwa, located in central Japan, provides continuous terrestrial records of past climate changes in East Asia including detailed records of Asian monsoon activity from the Middle Pleistocene to the Holocene. We constructed a common chronological framework for multiple sediment cores from Lake Biwa for the past 50 kyrs. An age-depth model of a 18.42-m long piston-core (BIW07-6), recovered between Takashima and Okinoshima Island in central part, was constructed under the age constraints of thirteen AMS radiocarbon dates of terrestrial macrofossil and six known-ages of widespread tephra layers. Using this age model, we estimated the model ages of ten horizons at which characteristic features were observed in the time series of anhysteretic remanent magnetization (ARM). ARM is a measure of fine ferrimagnetic mineral flux into the sediment, representing a proxy of hydrological changes around Lake Biwa. Therefore the characteristic features of the ARM variation serve as tie-points of core-to-core correlations in Lake Biwa, as well as the horizons of tephra deposits. We thus obtained age-depth curves for other core samples, which were well constrained with the tephra ages, the ARM events and additional radiocarbon dates from each core. The integrated age model has an acceptable accuracy to assess terrestrial environmental changes in millennial scales and can be adapted for paleolimnological studies in other regions.

Keywords: Lake Biwa, age model, last glacial period