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Paleomagnetic and rock magnetic studies of sediment core (BIW08-B) in Lake Biwa

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We obtained a core sample (BIW08-B) from in the central part of Lake Biwa in 2008,intending to reveal a detailed record of paleoenvironmental and paleomagnetic variations. In this study, using the core of BIW08-B (water depth 53 m, 100 m long), we conducted paleomagnetic and rock magnetic analysis. We take a sight on the layers from 90ka to 150ka, and we expect to find Blake excursion (Smith and Foster,1969; etc) from these layers. Besides, we suppose that the samples of these layers experienced sudden warming which restored by the variations of oxygen isotope ratio (Imbrie et al.,1984). This sudden warming should have given effects on the rock magnetic properties, and we hope to obtain the records of the warming from the sediment samples. Then we attempt to evaluate the climate change and the environmental variation.
We decided to research the portion from 25.48m to 45.10m in depth in the BIW08-B core of 100m long. The sediment core is mainly composed of massive clay (gray or dark gray), including several sand layers, and this core includes several layers of widespread volcanic ashes such as K-Tz, Aso-ABCD, Aso-3B, Aso-2, BT29, and BT34-37. Based on the age estimated by layers of widespread volcanic ashes, the sediment samples cover from 90ka to 150ka.
Analyzed samples were continuously obtained by 7cc plastic cube cases. We performed measurements of initial susceptibility (X) and its anisotropy (AMS), and the assessment for the stability of natural remanent magnetization (NRM) with progressive alternating field demagnetization experiments (PAFD). We chose 23 pilot samples for PAFD.
Values of initial susceptibility showed the spike-like maximum. These maximum correspond to volcanic ash with a bit of exceptions. Primary sedimentary fabrics of AMS were observed ; the shape of AMS ellipsoid is oblate and the minimum axis of AMS directs vertically. But a few samples did not show this feature, which indicates the deformation of the core. PAFD results showed that almost all samples had stable and well-defined single magnetic components which linearly decay toward the origin of the Zijderveld diagram at the PAFD levels above 15mT.