

Sedimentary stratigraphy of multiple-site piston-core sediments for the last 50,000 years from Lake Biwa, Japan

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Lake Biwa is the largest freshwater lake in Japan, measuring 22.6 km side by 68 km long and having a maximum depth of 104 m. The lake has a long history from the early Pliocene based on the geological survey and paleogeographical study of lake sediments around Lake Biwa. We carried out coring operation at the six sites expected different sedimentation rates from August 25 to August 27 in 2007. The present study was created to penetrate the uppermost sediment with piston corer to study sedimentary records and lake level history since the last glacial time. We described sedimentary structure, coring-related disturbance and color and classified sedimentary facies of four cores. We found volcanic ashes at 6 horizons (K-Ah, U-Oki, DSs, DHg, AT, SI), that were visually observed or microscopically found from clay sediment.

Lithology and chronology of four core samples are described below.

The main lithology of BIW07-1 core is massive dark bluish gray clay. Sedimentation rate is high, and about over 10ka record including U-Oki volcanic ash layer.

The upper part of BIW07-3 core sample is almost composed clay. In contrast, lithology below U-Oki volcanic ash layer (about 3.30m) clay with 3-20mm coaly sand layer. This fluctuation means lake-level variation and sedimentary environment. Four volcanic ash layers (U-Oki, DSs, AT, SI) are intercalated.

The BIW07-5 are mainly composed of massive greenish grey to gray clay with black seams, patches, black organic matter and vivianite crystals. Compared with BIW07-3, coaly sand decreased because BIW07-5 core is drilled off the shore.

Both of BIW07-3 and BIW07-5 cores have low sedimentation rates.

By comparing with both cores, we discover successive sedimentary change due to the depth, and spatial and temporary distribution of sedimentary supply change.

The lithology of BIW07-6 Core is gray silty clay, partly including dark gray seam, coaly grains, fragments and lamination. Particularly, lamination is observed below 1250m.

Volcanic ash layers (AT, SI) are observed. We can get the long (over 50ka) and successive record.

Precise age-depth curve at several sites suggest that sedimentation rate varied, and the biogenic productivity information and sedimentary environment change are indicated.

In presentation, we report detailed lithology and chronology, and show the temporal distribution of the abundance sand size content in BIW07-3. We pay the attention to the variation of physical value in sediments including the abundance of sand by using multi-core, and promote the detailed analysis of the paleoenvironment and paleoclimatological change.