

Subsurface high-resolution seismic profiling in the north basin of Lake Biwa

Kaori Okumoto[1]; Tsuyoshi Haraguchi[2]; Taihei Nishikawa[3]; Yuichi Yoshinaga[4]; Yuya Kakiuchi[5]; Daisuke Ishimura[5]; Hiroyuki Kitagawa[6]; Keiji Takemura[7]; Akira Hayashida[8]; Miwa Yokokawa[9]

[1] Geosciences, Osaka City Univ.; [2] Geosci., Osaka City Univ.; [3] Dept. Geophysics, Kyoto Univ.
; [4] Biology & Geosciences Sci, Osaka City Univ; [5] Dept. Geophysics, Kyoto Univ.; [6] IHAS; [7] Beppu Geo. Res. Labo., Grad. Sci., Kyoto Univ.; [8] Dept. Environ. Sys. Sci., Doshisha Univ.; [9] Lab. Geoenviron., Fac. Info. Sci., OIT

Lake Biwa is the largest and the oldest lake in Japan and it is a freshwater lake having worlds leading oldness. The seismic profiling in Lake Biwa was sometimes performed but the exchanges of the information between researchers using the conventional method were difficult because Lake Biwa was very large and the information of seismic data was staggering volume. And so we investigated using a 10-KHz acoustic sonar equipment and differential GPS to the end that we obtained several digital data of high-resolution surface layer structure in the bottom of a lake. Those digital data have several advantages. The digital data facilitate the process of analytic work and the exchanges between researchers. For those reasons we expect that the application of the study in various limnetic fields is evolved.

In the north basin of Lake Biwa, we implemented with a 10-KHz acoustic sonar equipment which maximum resolution imagery is 6 cm and which maximum acoustic penetration depth is 20m. We cruised the 18 transverse lines which intervals are about 1.85km. We measured these lines at about latitude one-arc-minute intervals. Though these obtained reflecting surface data differed according to location, on the best point of bottom of the lake, it indicated about 10 geologic layers. And results from some analyses of the 6 core samples, we considered two layers as Kikai-Akahoya tephra (K-Ah; aged ca. 7.25kyrs.B.P.) and Ulreung-Oki tephra (U-Oki; aged ca. 10.19kyrs.B.P.).

These reflecting surface data were shown by three-dimensional imaging. In addition we presented high-precision imaging of surface layer structure in the bottom of the lake.