

Hydro-environmental fluctuations inferred from physical properties of lacustrine sediments in Lake Onuma, Hokkaido

Taeko Itono^{1*}, Kenji Kashiwaya¹, Shinya Ochiai¹, Yanchao Yang¹, Onuma research group¹

¹Kanazawa University

Lacustrine sediments have high-resolution regional environmental information on lake and its surrounding catchments. Therefore they are of great use for reconstructing past hydro-environmental fluctuations, understanding lake-catchment processes, land-use changes and etc.

Here we discuss about hydro-environmental fluctuation during the past 100 years including the instrumental observation period and historical period on the basis of physical properties of Lake Onuma sediments. Lake Onuma, located in Hokkaido, is a dammed one. It is reported that the lake was formed by debris-avalanche deposit in the eruption of Mt. Komagatake in AD 1640.

Several surface sediment core samples were obtained with a gravity core sampler (1-m) in September, 2011. Some long core samples were obtained using a piston core sampler (4-m) in June, 2012. The analytical items discussed here include the following: water content, mineral content, grain density, grain size (whole and mineral) and radioactive concentrations of Cs-137, Pb-210ex and C-14.

Physical properties of sediment are compared with meteorological data for reconstructing hydrological condition. Meteorological data were observed in Mori local meteorological station and Hakodate Marine Observatory near Lake Onuma. Annual rainfall without snow cover period is used for discussion.

The core sample (ON11-2-1) obtained in the deepest point cover the hydro-environmental fluctuation during the past 100 years. It seems that some physical properties of the sediments (the mineral content and grain density) reflect the change in annual rainfall; the fluctuations in physical properties are corresponded to increase in annual rainfall around 1960.

Keywords: lacustrine sediment, lake-catchment system, rainfall intensity