Characteristics of SiO_2, Al_2O_3, Fe_2O_3, Pb and As contents of sediment in Lake Tazawa, Akita Prefecture, Japan

Takuya Ishiguro[1], Daizo Ishiyama[1] and Koichiro Sera[2]

[1]Graduate School of International Resource Sciences, Akita University
1-1 Gakuen-Machi, Tegata, Akita 010-8502, Japan

[2]Cyclotron Research Center, Iwate Medical University
348-58 Tomegamori, Takizawa, Iwate 020-0603, Japan

Abstract

Lake Tazawa that was formed as a caldera lake by volcanic activity around 1.7 Ma is deepest lake in Japan. In 1940, acidic river of Tama River was introduced to Lake Tazawa. As a result of acidification of lake water, all living things including *Oncorhynchus Kawamurae* "Kunimasu" in the lake were died. The purpose of this study is to clarify characteristics of SiO_2, Al_2O_3, Fe_2O_3, Pb and As contents of the sediment sample (TZW15-3, 2.8m in length).

The sediment sample mainly consists of siltstone with intercalation of layers of very fine and fine sandstone, diatomite and tephra. In lower part of sediment sample from 280~190cm, lamination is distinct. On the other hand, the sample from 190~10cm, massive siltstone is dominant. Sediment from 10cm to top shows brown to reddish color, when the sediments were dried in air. Sediment samples in this part consist of unconsolidated silt with lack of diatomite.

SiO_2 content of sediments is high in layers of diatomite. Al_2O_3 and Fe_2O_3 contents of the sediments are high in layers of very fine and fine sandstones. Pb and As contents do not show distinct change from 280cm to 10cm. Sediment samples from 10cm to top show clearly higher Al_2O_3, Fe_2O_3, Pb and As contents. These facts suggests introduction of acidic river water from Tama River. The point at a depth of approximately 10cm from Top in the sediment sample corresponds to the time of the introduction of acidic river water in 1940.