

Preliminary results of 10.5 m core record from lake Olgoy, Valley of the Lake in Mongolia

*Uyangaa Udaanjargal¹, Noriko Hasebe¹, Davaadorj Davaasuren, Yudai Igarashi¹, Keisuke Fukushi¹, Hitoshi Hasegawa², Baasansuren Gankhurel¹, Nagayoshi Katsuta, Shuuhaaz Ganbat, Ichinnorov Niiden

1. Kanazawa University, 2. Kochi University

Mongolia is located in center of the Central Asia and it provides an important key archive for the research of climate characteristics inside continents. Lake sediments are an excellent archive to study long-term fluctuations of environmental conditions. Lake is the subject to a variety of extrinsic and intrinsic forcing variables that regulate the history of the lake, such as climate, watershed bedrock geology and geomorphology, tectonic and volcanic activity, vegetation, aquatic biota, and human activities (Gierlowski-Kordesch, 2004). Numerous studies have been conducted in a different part of Mongolia to reconstruct the past climate and environmental changes (Klinge and Sauer, 2019).

The Olgoy is one of the permafrost lakes located in the southern edge of the Khangai mountains in the valley of the lakes where their environment is characterized by an extreme climate, and less number of existing studies are found. The study with 10.5 m long sediment core retrieved from Olgoy lake is expected to assess the regional paleo environment. The sedimentary features are investigated along the core and include whole and mineral grain size, water, organic matter, carbonate and amorphous silica contents, and variation in elemental concentrations scanned by the ITRAX. Sedimentary ages were estimated by OSL, IRSL and Carbon-14 datings.

The short core analyses which revealed that the temperature is a dominant climate factor of sediment characteristics in Olgoy lake, as high temperature corresponds to coarse grain size, and low carbonate and amorphous silica concentrations. The upper part of Ology long core is characterized by the relatively stable elemental intensities, a decreasing trend in carbonate with coarsening whole-grain size, and suggests temperature drop based on the short core interpretation. Fluctuations of Zr and Rb (2 m and 7.5 m) indicates the allogenic aeolian inputs (Yu et al., 2017). The fluctuation of the high values of the Al/Si and Rb/Sr could be an index of the intense weathering process. Periods with S influx and water content increases could be explained in relation to permafrost melting.

Keywords: lake, sediment characteristics, age dating