

Paleoenvironment in Lake Olgoy, Mongolia based on the analyses of sediment from the paleoshoreline

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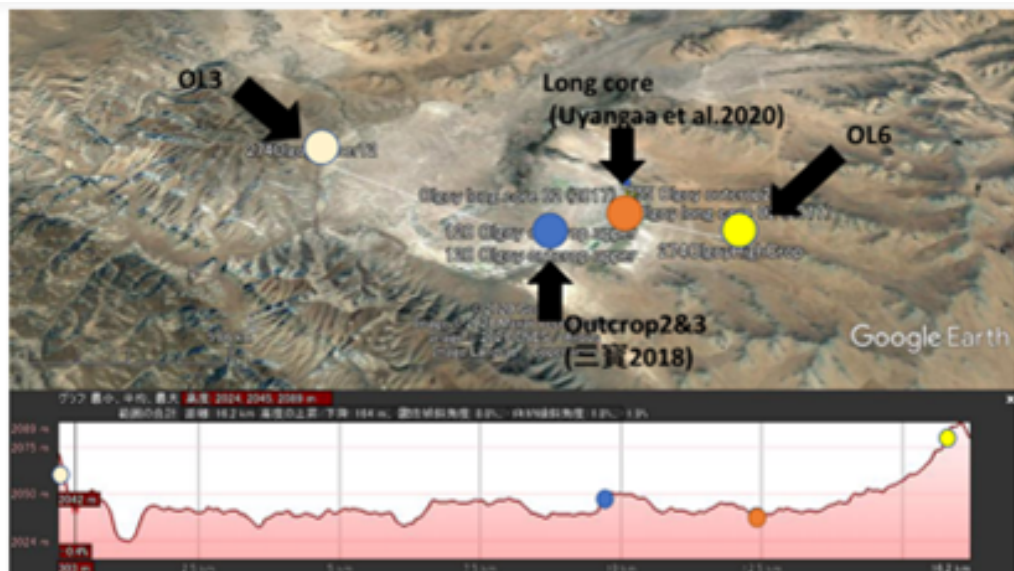
In recent years, environmental change due to global warming become a social threat. One of the serious problems is drought. In arid southern part of Mongolia, lakes are shrinking nowadays. We conducted a study in Lake Olgoy in Mongolia to reconstruct the fluctuation in lake levels and paleoenvironments by analyses of paleolake deposit collected from the outcrops.

10.5 m core was collected from Lake Olgoy in 2017, and analysed to investigate environmental fluctuations. Age dating of this long core has produced two different age axes: One is by OSL dating and the other is radiocarbon dating (Igarashi 2019). Both results form linear relationships but the results by radiocarbon dating is older than OSL dating. However, since both graphs show linear relationships, the age estimate by OSL has a potential to correlate long core and outcrop sediment. Heavy inflows in the past have been implicated in previous study of Lake Olgoy (Matsumura et al. 2018). However, the scale and time of the water influx events are unknown.

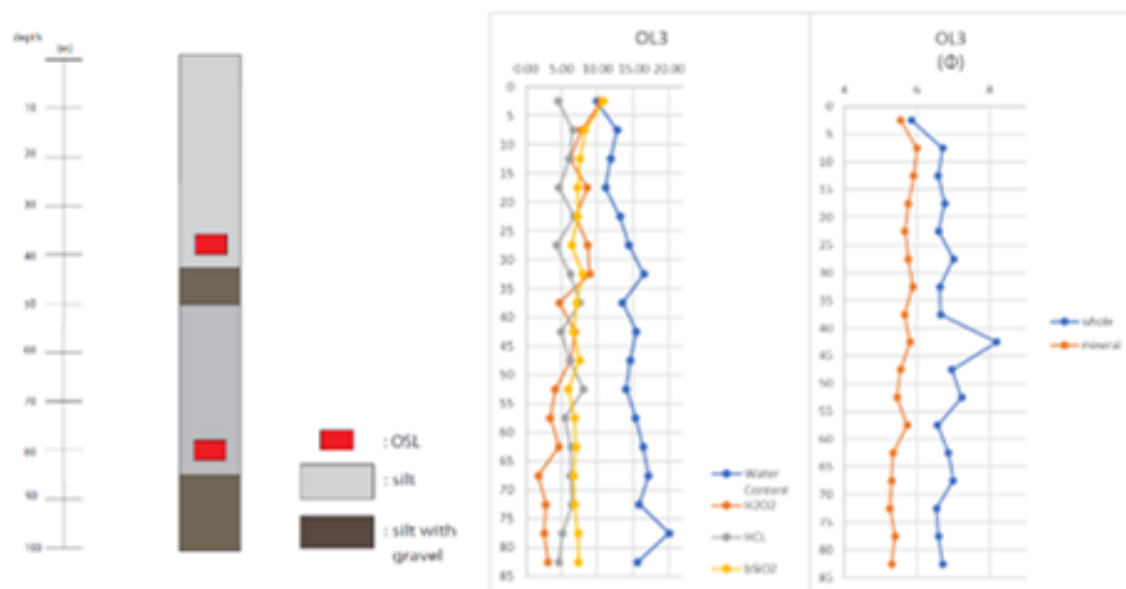
To address lake level changes by the change of water influx, we analyzed samples (OL3&L6) from the paleoshoreline of Lake Olgoy and compared them to the results from the Long core (Uyangaa et al. 2020). Both OL3 and OL6 samples are located higher than the present lake level. Sediment samples were obtained by trenching. OL6 is located the highest within the paleoshoreline trenches and is considered to reflect the period of maximum lake level.

Based on OSL ages of OL3 and the Long core, OL3 sediment is correlated to around 280 cm depth in the Long core. Similar data fluctuations were also found in the analytical results of OL3 and the 280 cm depth of the Long Core. Since this similarity confirms the OL3 sediment is lake sediment, the lake level at that time was reconstructed as high as the altitude of the locality.

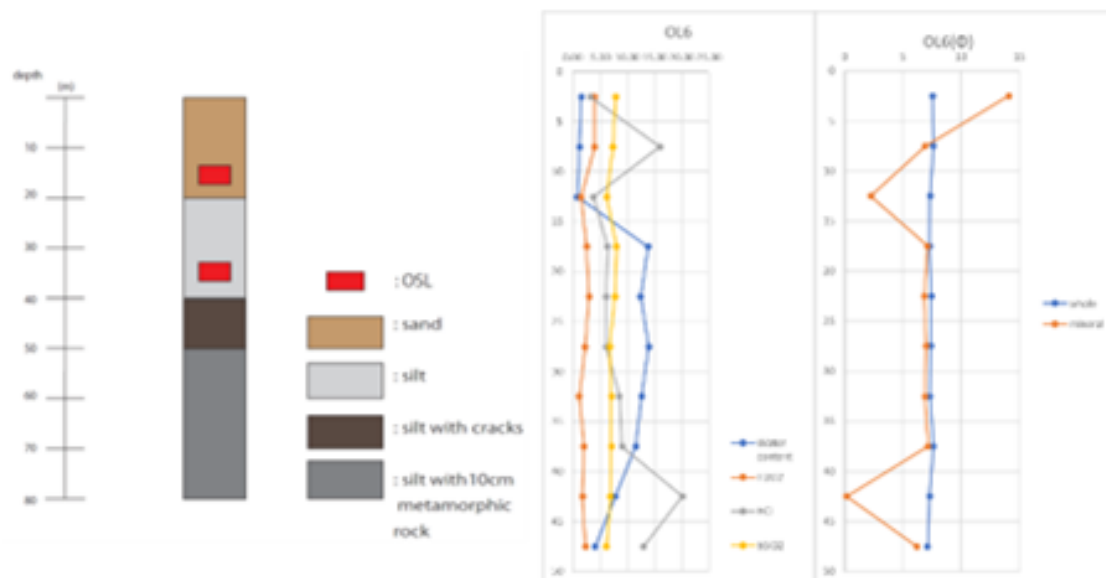
As for the OSL age of OL6, we found that it can be correlated to 450 cm depth of the Long Core. When similar fluctuation in sediment analytical results is searched, OL6 is correlated with the 850 cm depth section of the Long Core, different from the estimate by the OSL age. The 850 cm depth of the Long Core was dated as about 45,000 years ago. This is the period when the Long Core analysis suggests that the thawing of the permafrost caused a large amount of water to flow into the area. Therefore, we assume correlation to the 850 cm depth would be more plausible, and this period is considered to be the time when the huge amount of water flowed into Olgoy Lake and reached the maximum lake level.



図① Olgoi 湖の断面図とサンプリング場所



図② OL3 の柱状図と分析結果



図③ OL6 の柱状図と分析結果

