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OSL dating of paleoshorelines at Lagkor Tso Lake, western Tibet

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Numerous saline lakes occur along the Bangong-Nujiang suture zone in central Tibet. Evolution of these lakes since the Last Glacial Maximum has been remarkable. These lakes were originally freshwater and developed as once large ice sheets melted. As climate has changed, over the past 20ka, evaporation has exceeded fresh water runoff and many of these lakes have dried up considerably. Lake terraces were formed when the water level remained reasonably stable during different stages of the lake regression event. Owing to the limited moisture on the plateau, the lake level is particularly sensitive to the precipitation-to-evaporation ratio, the relative elevations and ages of the resultant terraces can act as a proxy for climate change in the region.

Significant lake regression is recognized by flights of paleoshorelines at the Lagkor Tso Lake, western Tibet, near the Bangong-Nujiang Suture Zone. Lower shorelines were examined and at least 25 prominent lake terraces can be identified. Samples for OSL dating were collected at 10 terraces aiming to construct a reliable chronology for the lake regression event. Highest terrace recognized in this study is 195m above the present lake level. Thick beds of barium sulphate were found variously in several terraces. Appearance of these salt deposits suggests intense warm, dry conditions have prevailed for several periods. Paleoenvironment will be inferred through lake terrace sedimentology analysis, briefly the lacustrine facies and fluvial facies.

Results of optical dating ages of the paleoshoreline deposits of Lagkor Tso Lake are reported. Single-aliquot regenerative-dose (SAR) protocol was employed on coarse quartz grains. The lake regression event which was dated back to 4.3ka may be divided into two phases: steady phase in 4.3 - 3.1ka BP, and quick phase in 3.1 - 2.9ka BP. Lake level has dropped steadily by $\sim$30m in at least 9 steps for the fist 1000 year.

Rapid level drop of further 30m (in 6 steps) was noted in the next few hundred years (3.1 ± 0.3 to 2.9 ± 0.2 ka BP). Coincided OSL age error ranges suggest the two ages are essentially contemporary, implying the remarkable rapidity of the regression event and the abruptness of the climate change. This quick regression phase seems to be related to the on set of Neoglaciation in China, which is marked by the Rongbude ice advance (C^{14} 2.9 ± 1.5 ky BP).