



Influence of glacial meltwater and humidity on evaporation of two Tibetan lakes indicated by delta 18O

J. Gao

Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China (gaojing@itpcas.ac.cn)

delta 18O and model results are adopted to study the affects of glacial meltwater and relative humidity in two lake basins (Lakes Yamdrok-tso and Puma Yum-tso) at two different elevations on the southern Tibetan Plateau. Temporally, the lake water delta 18O of Yamdrok-tso Lake displays a seasonal fluctuation, whereas the lake water delta 18O is stable in Puma Yum-tso Lake in whole year. Spatially, the delta 18O value in Yamdrok-tso Lake is 2%■ higher than that in Puma Yum-tso Lake. delta 18O values in the two lake basins increase by 10%■ from the termini of glaciers to the lake shores, by about 1%■ from the lakeshores to the lake center, by 0.4%■ from the water surface to depth in these lakes. The largest difference, from the terminus of the Qiangyong Glacier to the depth of 35 m, is 14.1%■ and demonstrates the importance of glacial meltwater. Evaporation alters the changes of delta 18O in the two lake basins. Model results show that relative humidity is a major controlling factor of evaporation. delta 18O values of both Yamdrok-tso and Puma Yum-tso Lakes are at their steady condition, but Puma Yum-tso Lake has taken a longer time to approach the current condition, which might be attributed to higher humidity and more glacial meltwater at the lake.