

Hydro-Geomorphologic Evolution during the Holocene in Lake Khuvsgul Catchment, Mongolia

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Paleoenvironmental changes during the Holocene in Northern Mongolia have been reconstructed by preliminary study from lacustrine sedimentation in the Lake Khuvsgul catchment. Lacustrine sedimentation indicates the environmental evolution of the hydrologic regime and geomorphologic landform in the lake catchment system in associated with global climatic changes. For the distinctive changes in the several environmental events due to climatic changes in the Holocene, the physical properties for the BO03 core reflect the features of runoff generation, in particular the activity of much more powerful outflow of glacier water and its associated sedimentation evidence. The relationship between modified dating and fluctuation of mineral grain sizes shows that environmental events of high sedimentation resulted from intensive discharges that are consistent with the mid-Holocene climatic optimum (6.0 Kyr BP) and late Holocene thermal optimum (3.2 Kyr BP to present) during warm periods. The rich coarse minerals imply that extreme surface overland flow dominates in the Lake Khuvsgul catchment. In the lake catchment, the surface flow include not only overland flow due to melting water, but also baseflow associated with high level fluctuation of ground water due to thick permafrost around the Khuvsgul region. The low fraction of HCl soluble materials implies a increase in the lake level in the Holocene compared with that in the Pleistocene. In the future, sediments obtained from paleo-river terraces in the River Ikh Dalbai and River Baga Dalbai should be analyzed for determining geofomation evolution in this paleo-lacustrine drainage basin and for considering the environmental changes and local geology-geomorphological evolutions on Borsog Bay.