

WATER REGIME OF LARGE LAKES IN MONGOLIA

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There are 3500 lakes in Mongolia, from which 4 lakes are over 1000 km² area. Total lake water resources are calculated about 500 km³, from which 380.7 km³ is belonging to the Lake Hovsgol. (J.Tserensodnom, 2000). Annual amplitude of lake level changes are 25-80 cm depending of the geographical and hydrological condition of the lake basins.

Table 1. Basic characteristics of large lakes in Mongolia

No	Lake name	Altitude, m	Area, m	Max. Depth, m	Volume, km ³	Salinity, mg/l
1	Hovsgol	1645	2760	262	380.7	201
2	Buir	581	615	10.2	3.784	222.3
3	Uvs	759	3350	20	39.6	18672
4	Hirgas	1028	1407	80	66.034	8460
5	Har-Uls	1157	1852	4.5	3.432	107
6	Boon-tsagaan	1312	252	16	2.355	530

Mountain lakes are generally fresh, deep and stable, but lakes in steppe and desert regions are relatively shallow, mostly salty and not stable in time, considerably depending on tributary rivers and climate changes. Thus, in turn, lake level changes in the arid regions becoming good natural indicators of regional climatic changes. While the amount of precipitation over the territory is poor (135-500 mm/year), substantial water resources formed due to rainfalls in the mountain regions and water regime of lakes are characterized by seasonal and long-term variability.

Result shows that, seasonal variation of lake levels, main tributary river discharges and precipitation changes in the basin are similar and most amount of precipitation (about 70 %) is falling from June to August. It indicates that, formation of river water resources largely depends from precipitation amount in the basin, and in turn it considerably affect lake level changes, especially for the closed lakes in the arid regions.

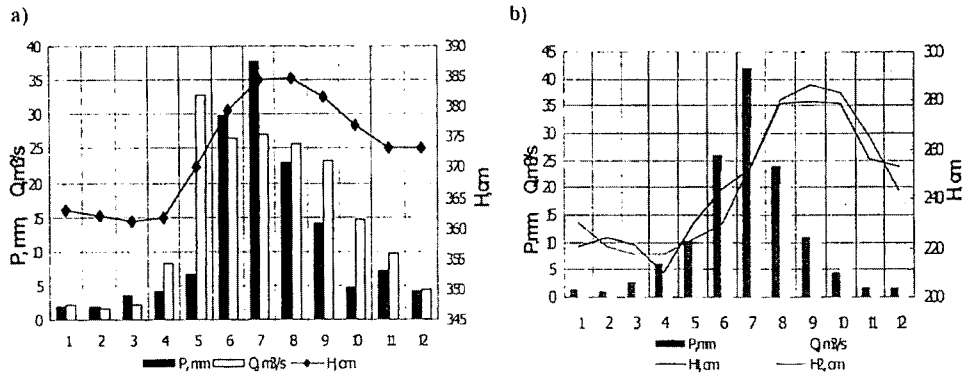


Figure 2. Seasonal changes of lake level (H), river discharges (Q) and precipitation (P)

a) Uvs lake and river Tes; b) Hirgas, Har-Us lake and river Hovd

(Observation data from Institute of Meteorology and Hydrology, Mongolia)

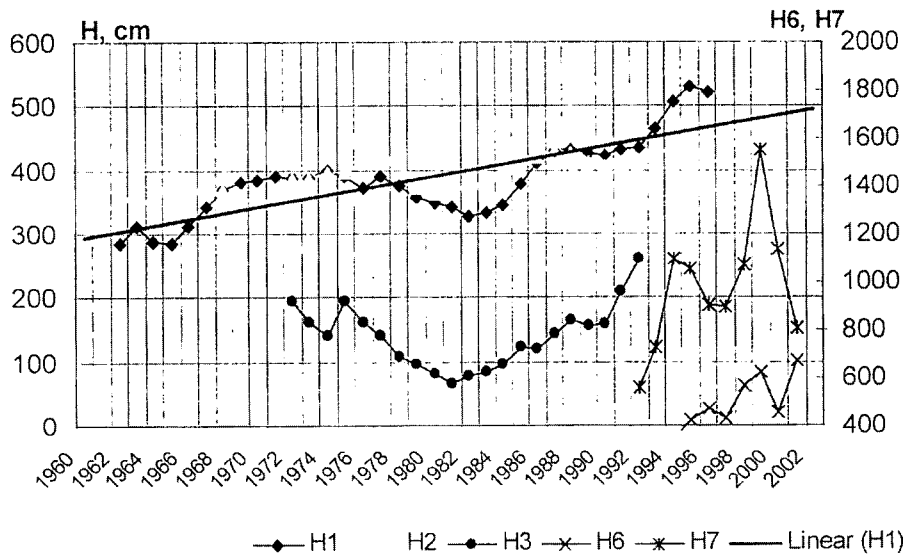


Figure 3. Long-term changes of lake levels and their linear trends

H1-Uvs, H2-Hovsgol, H3-Hirgas, H6-Boon-tsagaan, H7-Orog

(Observation data from Institute of Meteorology and Hydrology, Mongolia)

Long-term analyses of lake levels show that, there are quite similar variations in the Hovsgol and Uvs lakes. Water levels of most lakes were lower from 1980 to 1985, which are caused by climatic change impacts. (N.Batnasan *et al.*, 1991, 1998). Beginning of 1980s in Mongolia

occurred dry years, especially in the Central Asian Internal Drainage Basin and some lakes are dried up completely. However, since 1980s lake levels of Hovsgol, Uvs and Hirgas are starting to increase slightly, which effected by global warming and melting of high mountain glaciers and permafrost.

References:

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