ARAGUAIA 99

INTERNATIONAL SYMPOSIUM ON GEOMORPHOLOGY AND PALEOHYDROLOGY OF LARGE RIVERS

GLOCOPH-IAG

BOLETIM GOIANO de Geografia

special issue
vol. 19(1): 1999

FEDERAL UNIVERSITY OF GOIÁS
INSTITUTE OF SOCIAL & ENVIRONMENTAL STUDIES - IESA

Editora UFG

Yamskikh A., Yamskikh G. and Yamskikh A. A.
B. Goiano de Geog. v. 19 (1): 110-111 (1999)

HYDROLOGICAL RIVER REGIME AND SEDIMENTATION ON THE LARGE SIBERIAN RIVERS DURING THE LAST 100 000 YEARS

[1]Yamskikh A., [2]Yamskikh G. and [1]Yamskikh A. A.

[1]Krasnoyarsk State University, Russia.
[2]Krasnoyarsk Pedagogical University, Russia

The larger Siberian rivers (Yenisei, Ob and Lena rivers) are the rivers of Northern Eurasia. The river Yenisei (together with river Selenga) is 5940 km long, the river Lena is 4400 km long and the river Ob is 5570 km long. Their discharges are 19800, 16100 and 12400 cubic m/sec correspondingly.

Rivers cross various landscape zones: semidezert, steppe, forest-steppe, taiga and tundra. Recent hydrological river regime is inherited from the Pleistocene of the river valley evolution.

A large fluctuations of the seasonal river runoff is typical for these rivers. For example, discharge of the Yenisei river during the spring flood is 130 000 cubic metres/sec, whereas during winter it is only 2500 cubic metres/sec. Snow is the main source of the river runoff (50-70%). However, in the south source is mixed (snow - 35-40%, rain - 37-50% and groundwater - 15-23%).

Differentiated neotectonical movements of the river basins caused morphologcial features of the valleys. Sequence of broad (accumulative areas) and narrow (erosion areas) parts of the river valleys is typical for these rivers. Present-day ice river dams form sequence of lacustrine (dammed basin)-river systems. During Pleistocene such dams were formed by the glaciers as well. Sizes of the Pleistocene lacustrine-river systems were enormeus.

During the last interglacial (oxygene isotope stage (OIS 5) climate was similar to the modern. Normal channel alluvium and relatively thin overbank sediments were accumulated in the river valleys. Forests from Betula, Pinus and Picea were growing in the river valleys.

Large river level fluctuations occurred during the first late Pleistocene glaciation (OIS 4). Relatively thick overbank sediments were accumulated during this period of time. Cold periglacial steppes were growing on the surrounding slopes (Artemisia with scarse Larix and Pinus). Liminescencedates are as following 87,8-88,2 and 64,3-72,4 ka (Frechen and A.F.Yamskikh 1999).

Warmings were followed by coolings during Karga interstadial (OIS 3). Alluvial accumulation on the higher geomorphological surfaces followed by interruptions in sedimentation when chernozem soils were formed.

Luminescence dates are 28,7; 31,0 and 23,8 ka (Frechen and A.F.Yamskikh 1999). Forest spore-pollen spectra were changed by periglacial forest-steppe complexes.

The last glaciation (OIS 2) was the coldest. Amplitudes of the river level fluctuations and dammed basins were maximal. Accumulation of the overbank sediments occurred simultaneously on the different height terrace surfaces (up to 50-80 m). Periglacial steppes and forest-steppes prevailed. Luminescence dates are in the range 18.0-24.0 ka.

Holocene warmimg of the climate caused periodical (in the 2000 year rhythms) decreasing of the amplitudes of river level fluctuations. Maximal river level raisings were up to 20-25 m. Soil formation occurred during the interruptions of sedimentation (A.A.Yamskikh 1998).

Climatological fluctuations during the last 100 000 caused formation of the polycyclic terrace complexes. The height ranges are from 8-15 to 60-80 metres (the river Ob), from 8-10 to 65-80 metres (the river Yenisei) and from 6-8 to 60-70 metres (the river Lena).