



PALAEOHYDROLOGY OF THE KHOPER RIVER (SOUTHRN RUSSIA) IN THE LATE GLACIAL

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The Khoper River near town Povorino (basin area is 19100 km²) have well-developed valley 40 m deep and 4-14 km wide. The valley bottom is represented by wide floodplain with the height 5-6 m above low water level, and low terrace remnants with the height 9 -11 m. The average width of the recent channel is 70 m, bankful depth is 4 m, and meander length is 800 m. Mean maximum discharge is 990 m³/s, mean annual discharge is 67.8 m³/s, runoff depth is 112 mm, rainfall depth is 450 mm.

The paleochannel with the width 1200 m, bankful depth 9 m, and meanders length 2500 was defined within the low terrace and on floodplain. The radiocarbon, pollen and paleopedological analysis showed, that the paleochannel was formed 11-12 thousand years ago in the conditions of periglacial dry steppe with the permafrost.

The method of palaeogeographical analogue was developed for paleodischarge reconstruction. The recent hydrological analogues for the paleo-Khoper were defined on the basis of landscape and vegetation type. The hydrological parameters of tundra rivers of Bol'shezemelskaya Tundra and Yamal peninsula were used with additional information from the rivers of dry steppe of the northern Kazakhstan. On the basis of paleochannel geometry and hydrological parameters of the rivers-analogues the main hydrological characteristics were calculated.

Calculations show, that 11-12 thousand years ago mean maximum discharge of paleo-Khoper was about 7500 m³/s, mean annual discharge was 570 m³/s, runoff depth was 940 mm and rainfall depth was 1050 mm. The main cause of paleochannel formation with the discharge 8 times more than recent one, when rainfall increase was only two-fold, is periglacial conditions with huge permafrost and very sparse vegetation.