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THE INFLUENCE OF HUMIDIFICATION LEVELS ON RIVER RUNOFF IN DIFFERENT REGIONS OF BELARUS AND CHINA

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The report contains a study of the impact of the degree of moisture on the runoff off rivers in various regions of Belarus and the arid area of the Tarim Province (China). The objects of the study are three hydrological regions of Belarus with different levels of moisture: humid (Zapadnodvinsky), moderately humid (Nemansky), and dry (Zapadnobugsky), as well as the desert basin of the Tarim River. Widespread climate warming leads to a widespread increase in average annual, air temperatures. Against the backdrop of a general decrease in precipitation (except for the Zapadnobugsky Region), there is a decrease in the average annual water discharge of rivers. A noticeable annual increase in precipitation in the Zapadnodvinsky Region leads to a slight rise in the average annual water discharge of the Regions main river. There is trend towards a decrease in average annual water discharge with a reduction in precipitation and an increase in average air temperature. Trends in air temperature changes from 1980 to 1922, the average annual precipitation from 1960 to 2014, and correlation coefficients the relationship between average annual discharge and average annual air temperature and precipitation over the period from 1960 to 2014 have been obtained. The closest relationship exists between the average annual water discharge of the studied rivers and precipitation in the catchment area. The Tarim River basin is a typical inland river basin of an arid region, where the formation of water resources has regional characterisics. Minimal precipitation and high evaporation determine the arid conditions of the basin. The inflow of water is provided by the melting of snow and glaciers bordering the basin. Amid overall variability in global and regional climate changes, there is a trend of decreasing average monthly precipitation from 1990 to the minimum of 1945–1950. Lacking inflow in the middle and lower reaches, the Tarim River is prone to summer floods against the backdrop of minimal flow and a deficit of surface water. The flow regime is subject to sharp fluctuations. With decreasing humidity and increasing aridity of river basins, the variability of flow increasing, there is a trend toward a decrease in its average annual values, and the likelihood of extreme hydrological events increases.

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