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## Analysis and modeling of river runoff in Belarus

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The analysis of water runoff of the main rivers in Belarus for the period of instrumental observations till 2015 inclusive was carried out. It was shown that the number of runoff observation stations is sufficient for the territory of Belarus. The average long-term values of river runoff in Belarus were calculated as well as the map of the average annual river runoff in Belarus for the 60-year period from 1956 to 2015 was created.

The series of annual water runoff of the main rivers in Belarus were studied for the presence and number of high-water and low-water series of different lengths. The values of the series lengths and their shares of the total number were compared with the corresponding values for the random series. Using the criterion of the average series length and the criterion assessing the probability of occurrence of separate long series, it was shown that the hypothesis of randomness of the sample members should be rejected for the Berezina, Western Dvina and Pripyat rivers, and for the series of the Dnieper and Neman rivers the hypothesis of the independence of the sample elements cannot be rejected.

Regression equations for the annual runoff of the main rivers in Belarus were calculated taking into account the trend of runoff series to the formation of low-water and high-water series and using the most stable 11-year cycle of solar activity. The developed models for the river runoff forecasting were tested for the period 2011-2015. The model verification showed a satisfactory result and satisfied the requirements of practical runoff calculations in the Republic of Belarus.