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BASES OF WATER MANAGEMENT**

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BOOK OF ABSTRACTS

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MINIMAL RUNOFF OF SMALL RIVERS WITHIN SUB-BASIN LOWER DANUBE AND BLACK SEA RIVERS BASIN DISTRICT

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According to implementation of the EU Water Framework Directive the in 2016 approved Hydrographic zoning of Ukraine's territory, and the study area is divided into two areas, namely: the sub-basin of the lower Danube and the Black Sea rivers basin district. On the other hand, according to hydrological zoning, the small rivers under study flow on the territory of the insufficient moisture zone, that is, the territory within which the evaporation in conjunction with the infiltration in the average over a long period over amount of precipitation.

The main source of river feeding during the low flow period is, first of all, underground drainage, as well as precipitation that enters the channel network through its infiltration into groundwater. In winter, the regime of river runoff is determined mainly by seasonal groundwater with varying degrees of drainage of the territory, but in warm years, which began to prevail in recent decades, its share is also the thaw-rain water of winter thaw.

Investigation of the factor conditionality of the minimal runoff of the rivers of the Ukraine's insufficient moisture zone showed that the main factors for both winter and summer low flow are the geographical position of the catchments and indirect indicators of the degree of erosion of the rivers - the average height of the catchments, its area and forest area.

A distinctive feature of small rivers in the territory insufficient moisture zone the episodic or annual stop of the runoff and, as a result, it's drying (in the summer) or freezing (in winter). These rivers in the sub-basin of the lower Danube include Kogylnik, Cahul, Sarata and Chaga, and in the Black Sea rivers basin district - Great Kuyalnik, Tiligul, Chicheklya, and others. Investigations of long-term time series of winter and summer-autumn low runoff for the rivers of the studied territory indicate that there is a slight tendency to increase the runoff for the winter low runoff; for the time series of minimal runoff in warm period a clearly pronounced positive trend is observed. A significant increase in the minimum runoff is observed after the 1980s, confirming the findings of the leading Ukrainian hydrologists, regarding the impact of climate change on the water regime of the rivers during this period.

Nevertheless, the construction of the residual mass curves showed the presence of a complete cycle of water content, and hence the possibility of applying statistical methods for determining the calculated characteristics of the minimum runoff of rivers. Thus, for the rivers of the studied area, the norms of the minimum 30-day runoff (winter or summer) are defined as the average annual value of the average monthly values of the minimum runoff, as well as the duration of the periods of freezing and drying of the rivers according to the regional dependencies of the minimum 30-day (average) water flow.

The purpose of further investigation is to identify the estimated dependencies between the minimum runoff of the rivers of the studied area and climatic factors (precipitation and temperature) in order to simulate changes in the minimum runoff in the future using multimodel data of global climate modelling.

Keywords: minimal runoff, low winter flow, low summer flow, small rivers, Ukrainian Danube region.