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BOOK OF ABSTRACTS

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MODEL OF FORMATION MAXIMAL RUNOFF ON THE SMALL RIVER IN THE UKRAINIAN PART OF DANUBE BASIN

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In accordance with the provisions and objectives of the EU Floods Directive (2007/60/EU) for the floods of rare probability of occurrence (once in 100, 50 or 200 years) need to perform: preliminary flood risk assessment (Article 4,5); the preparation of maps and flood risk threats (Article 6), and the approval of the flood risk management plans (Article 7).

Figure 1. Ukrainian part of Danube basin

In order to implement the Flood Directive for reduce the risk of flooding and flood mitigation along floodplain areas, a model of forming the maximum runoff of OSENU can be used, which is developed and implemented using the example of the small rivers in the lower part of the Danube, as well as for the rivers of Transcarpathia (Ukrainian part of the Tisza River Basin), Figure1.

The authors proposed the variant of calculation scheme, realizing principal two operators' model of runoff formation. It is obvious that two operators must describe the process of formation of channel runoff: "precipitations – slope influx" and "slope influx – channel runoff". Just such shall be the theoretical and methodical base of problem solving, concerned, for example, with forecasting of hydrographs of channel runoff under atmospheric precipitates. However in practice of hydrological calculations, on solving of a whole series of problems, the great interest is given not to the whole hydrograph of channel runoff, but to its maximum ordinate, moreover, to infrequent exceedance probability. Model that is offered enables to enter «climatic amendments» directly to maximal snow supply and runoff forming precipitations during spring floods, and also to the runoff coefficient.

The model of formation of the maximum river flow, proposed OSENU allows quantifying estimate:

-The influence of factors of the underlying surface (forested, swamps, mountain areas);

-The various types of transformation of slope and streamflow runoff. In particular, the method allows us to estimate the degree of influence of the floodplain on the value of maximum discharge during high floods;

-The model that is offered enables to enter «climatic amendments» directly to maximal snow supply and runoff forming precipitations during spring floods, and also to the runoff coefficient.

For mapping floodplains along the Danube in the Ukrainian part of the basin, it is possible to show the flooding zones during the passage of floods rare repeatability using OSENU techniques to determine the maximum flow of ungauged rivers.

The model has been tested on many years for the rivers of Ukraine and neighboring countries, it has no restrictions in terms of the origin of floods and catchment areas. With a minimum of input data (morphometric characteristics of catchment) model can be used to ungauge basins in order to obtain the maximum value of expenses given exceedance probability and simulation of possible changes in context of climate change for flood risk management.

Keywords: maximal runoff, Ukrainian Danube Region, small river, flood.