

INVESTIGATION OF THE EVAPOTRANSPIRATION IN STRUMA RIVER BASIN

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Abstract

In the land phase of the hydrological cycle the evapotranspiration is one of the most important processes. The water resources planning, management for water supply and irrigation of agricultural areas required adequate information for the temporal and special variations of the evapotranspiration.

The aim of the presented paper is to estimate and describe the evapotranspiration regime of Struma River - the biggest river in southwestern part of Bulgaria. In the presented paper a comparison between different methods for calculation of potential evapotranspiration (PET) such as Thornthwaite, Penman, Priestly&Taylor and Egleman is realized. The mean monthly actual evapotranspiration is assessed according Turc's empirical formulae. The long-term variability of evapotranspiration is analyzed. The analysis of the evaporation regime is conducted based on the data from stations of the National Meteorological Network in the two river valleys as following: Kjustendil, Blagoevgrad, Sandanski and Petrich.

The work has been realized in two steps:

The mean monthly data for the Sandanski station for the 1998-2001 period were used for comparison of different methods for calculation of PET. Because pan evaporation is measured only during the April-October period, the comparison of the results was conducted for the period April-October 1998-2001.

The data for the whole period of existence of the stations up to 2002 were used. The characteristics of the evaporation conditions for the reference period 1961-1990 were generally evaluated, while being compared with those for the 1991-2002 period.

The following conclusions can be made. The completed study does not claim to exhaust the subject. However, some conclusions can be drawn concerning the regime of the potential and actual evapotranspiration in the Struma river basins.

The potential evapotranspiration has a well-expressed annual course, whereas its seasonal distribution in the river basins depends on the geographic characteristics of the separate sections of the river.

There are no big contrasts in the values of the actual evapotranspiration. There is not significant clustering of the stations along the Struma River basin

A tendency for an ET decrease during the 1961-2002 period is observed in the Struma River basin.