Water Balance Evaluation and Regionalization of Albania Rivers Basin

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In this paper it is attempted to present a general evaluation of the water balance in the Albanian rivers system including regionalization of the catchments area of this system, according to the correspondent types of the water balance.

Albanian territory is one of the most complicated natural areas in the Europe because of its physiographical specific conditions: mountainous region with an average altitude of 785 m above the sea level, particularly littological structure with an important calcare formation, lake system present, typical Mediterranean climate, specific geographical position near the Adriatic and Jonian seas etc.

Water balance evaluation was carried out based on the many years' archived data of the Albanian hydrometeorological Institute. The monitoring network consists of more than 175 hydrometric stations with observed periods of 20-50 years, 125 pluviometer and 35 pluviograph stations with 15-45 years observed period and 9 experimental stations type GGI for the evaporation evaluation of water surface with 10-15 years observed period. These stations are located all over Albanian territory.

All the maps of the water balance components and their principal parameters are compiled to the national topographical maps of 1:750000 scales. Values of these elements were computed based on their vertical gradients of the territory.

The annual precipitation in the Albanian hydrographic network ranges from 750 mm in the coast area to 4444 mm in the mountain with a average of $X_0 = 1540$ mm.

The water potential of Albanian river system is $W_0 = 41{,}249.10^9$ m^3 that corresponds to a discharge of $Q_0 = 1304$ m^3/s and a module of $q_0 = 30.1$ I/s.km^2.

Estimation of run off discharge (Q_i) are carried out in two categories of river basins with different hydrographical and hydraulically Condition: 1) Drini, Mati, Semani and Vjosa rivers systems , etc, where run-off discharge Q_i is computed as a function $Q_i = f(H_i)$, where H_i - is altitude of water level of the river section *i*. 2) Sentary lake, Drini river system, etc where where run-off discharge of the Buna river Q_2 that flows away from the Sentary lake-Q_2, depends upon the lake water level (H_2) and the Drini river discharge into the Buna river Q_4. Buna discharge was calculated by the following equation (Pano,1973,1984,1994,2003)

$$Q2=\{ 0.025.[H2 - Q22/ (0{,}0073.H21.6143)2]1.85 – Q4\} \quad (1)$$

So albanian is one of the countries of a high specific water potential in Europe. The annual run-off level in the Albanian hydrographic network ranges from 250 to 2800 mm with a average all over catchment area $y_0 = 957$ mm. The surface water flow represent 69% of the global water potential ($y_0 = 656$ mm) and underground flow 31%($Y^N_0 = 295$ mm). The real evatranpiration in the Albanian hydrographical network ranges from 300 to 800 mm. Map of the regionalization of the catchment area of the Albanian river system according to the correspondent types of the water balance is also presented.

Keywords: water balance components; regionalisation; global territory humidity; water potential; Catchment; water potential