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N. Kukurić, Z. Stevanović, N. Krešić

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KARST SPRING REGIME MONITORING AND ANALYSIS - A CASE STUDY OF TUPIZNICA KARST SPRING IN EASTERN SERBIA

Nebojša Atanacković[1], Sava Magazinović[1], Veselin Dragišić[1], Vladimir Živanović[1], Sunčica Ninković[1], Aleksandra Bajić[2]

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Abstract: A groundwater monitoring program is a basis for water balance calculations, the definition of groundwater qualitative and quantitative parameters, delineations of factors influencing the changes of these parameters, and generally for the definition of the karst hydrogeological system. Analysis of the outflow regime and the changes of groundwater quality are presented for the case of the Tupižnica spring which drains a karst aquifer, formed in the Cretaceous limestone of Tupižnica Mountain.

The study area is located in Eastern Serbia at the central part of the Tupiznicko-Knjazevacka syncline, which is a part of the Karpathos-Balkan geological province. The spring is formed at the contact of karstified Early Cretaceous limestone with low permeable Cenomanian marlstone. The spring is one of the main water supply sources for Zaječar city. As a result of this, daily measurements of precipitation, spring discharge, and some groundwater physical and chemical parameters are being carried out. Analysis of this data through the hydrological cycle was done. The average capacity of the spring for the monitoring period was 250 l/s, with a pronounced ratio of minimal to maximal discharge rate of 1:130. The relations of analyzed parameters were evaluated and used as a tool for characterization of the karst aquifer system. This paper also demonstrates the use of statistical tools in examining the interrelationship between analyzed physical and chemical parameters.

Key Words: Karst spring, Regime monitoring, Hydrochemistry, Time series analysis, Eastern Serbia