

GROUND WATER RELATIONSHIPS WITH PENIOS AND TITARISIOS RIVERS IN THE KARSTIC AQUIFER OF CENTRAL THESSALY PLAIN

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This research concerns the karstic field of the Central Thessaly Plain, in the area from Tyrnavos to Penias, where the rivers of Penios and Titarisios are running through. The main discharge points are the Mati spring to the north and a group of springs at the Penios river to the south. Ground water losses occur, also, into the alluvial fan of Titarisios, recharging the aquifers of eastern Thessaly plain. No significant recharge occur in the Penios fan after his exit from the karst masses.

The study examines the rate of the discharge of the karstic springs, their recharge and the extend of the hydrogeological bassins associated with them. Special attention is given to the infiltration of the Titarisios run off, which covers a great part of the recharge of the karstic aquifer; ground water is, anyhow, with no mutua. dynamic relationships with the surface waters of the river.

The general layout of the karstic aquifer based on the study of springs, corresponds to the development of two main hydrogeological basins.

As a result of the piezometric investigation during different seasons and years, it is proved that the karstic aquifer behaves as an unified system with dynamic dependance between the hydrogeological basins.

The migration of the underground divide is depending on springs discharge rates and the intensive pumping. These pumping rates establish already a regulating operation regime in the discharge rates of the springs.

During specific periods there is a disappearance of the underground divide, having as result the development of only one hydrogeological basin. The relationships of the aquifer system with Titarisios river is always towards the ground water table. On the contrary, beside the ground water discharge at a specific zone of Penios river, the relations with the river are not direct. Even during periods with the ground water level lower than the water level of the river, there are evidencias for no direct recharge of the karstic aquifer (hydraulic gradient, chemical and hydrological data).