

ΥΔΡΟΓΕΩΛΟΓΙΑ - HYDROGEOLOGY
ΤΕΧΝΙΚΗ ΓΕΩΛΟΓΙΑ - ENGINEERING GEOLOGY

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HYDROGEOLOGICAL INTERPRETATION OF SALT-WATER ENCRÖACHMENT IN CARSTIC AQUIFERS OF NE ARGOLIS / GREECE

C. Cantas

Ministry of Agriculture, Land Reclamation Service (Y.E.B.),
21, Zaimi Str. 26110 Patras, Greece

In the Amygdalitsa, Midea – and Prosymna areas (NE mountainous Argolis), Lias – Dogger limestones of the Trapezona – series predominate. In the valleys, a number of boreholes have been drilled in limestones of different ages with depths more or less below sea level. To the west and South, in the Argolis plain, as well as to the SE and E (Pyrgiotika – Ligourio and Ligourio – Dimaina – basins), another group of boreholes have been drilled in limestones, plioleistocene sediments and ophiolitic rocks. In all cases, water is pumped almost without interruption during the dry season.

Chemical analyses show a severe increase of Cl^- in the waters of Lias – Dogger limestones from the Amygdalitsa – Prosymna valleys. On the other hand, water from boreholes in other limestones or in plioleistocene sediments and ophiolites has a good quality irrespective of depth. This suggests that salt water encroachment is not derived by sea – water intrusion from the Gulf of Argolis through the Argolis – plain's sedimentary basin, or from SE (Pyrgiotika – Ligourio): triassic tuffites and flysch in this area prevent salt-water encroachment. This is unlikely to happen through the Ligourio – Dimaina front, from the Saronic Gulf: here, flysch, ophiolites and siliceous schists serve as barriers. Thus, the only way for salt-water intrusion is the NE and ENE sector of the limestone area, which is in direct contact with the Saronic Gulf, at a distance of 27,5 Km. This intrusion is due to:

- a) The presence of a series of faults in the Trapezona – limestone, with prevailing NE-SW direction.
- b) The epigenetic movements in the western and downward movements in the eastern part of the area. Thus water is discharged towards the Saronic Gulf, whereas a reverse movement is possible too.