

Cartography of coastal aquifers in the Essaouira region by application of the geoelectric method (Essaouira, Morocco)

Zakaria Ouzerbane^{1,*}, Tahar Aïfa², Mostafia Boughalem³, Abdellah El Hmairi¹, Ali Essahlaoui¹, Abdelhadi El Ouali¹, Abdessamad Najine⁴, Fadwa Redouani⁴, Amina Wafik⁵

¹Water Science and Environmental Engineering team, Department of Geology, Faculty of Science, Moulay Ismail University, BP 11201, Zitoune, Meknes, Morocco; ²Univ. Rennes, Géosciences-Rennes, CNRS UMR 6118, Bat.15, Campus de Beaulieu, 35042 Rennes cedex, France ; ³Ctr Univ Ain Temouchent, Laboratory of Applied Hydrology and environment/DGRSDT, BP 284- 46000 Ain Temouchent, Algeria ; ⁴Department of Earth Sciences, Faculty of Science and Technology, Sultan Moulay Slimane University, BP 523 Mghila, 23000 Beni Mellal, Morocco; ⁵Department of Geology, Faculty of Sciences Semlalia Cadi Ayyad University, BP. 2390, 40000 Marrakech, Morocco

*E-mail: ouzerbanegeophy@gmail.com

The region of Essaouira is a space that is given a heavy responsibility in the socio-economic development of Morocco. This development implies a significant increase in water needs in the coming years for both drinking water supply and for irrigation and industry. This sector, like the other regions of Morocco, has experienced a significant decrease in water intake in quantity and quality. This situation has led to the reduction of agricultural productivity and the degradation of several ecosystems. However, this basin has an aquifer system consisting of a set of uneven aquifers that can offer a natural regulating capacity that makes them valuable to ensure a safe and steady supply. The reserve also makes it possible to meet seasonal needs through temporary overexploitation to the extent that replenishment is possible.

The so-called synclinal study area of Essaouira is part of the coastal zone of the basin with an area of approximately 1418 km². It is limited to the North by Jebb Hadid, to the South by Tidzi River, to the East by the reliefs of South Chiadma, reliefs of North Haha and by the Tidzi slide, and to the West by the Atlantic Ocean.

Geo-electrical prospecting by vertical electrical soundings is a geophysical method that, applied in hydrogeology, will provide information on the geometry of possible reservoirs, their lithological nature and the spatial evolution of these characteristics. The interpretation of the results of this study, in correlation with the mechanical drilling, made it possible to stand out from the quantitative and qualitative maps, the different variations of apparent resistivity of the geological layers constituting the aquifer and aquiclude. The analysis of these maps shows that the area around the Qsob River is of interest from a hydrogeological point of view.

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