



## **Geostructural context of a hydrothermal system by geophysical methods: Case of Hammam Righa, Algeria**

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The presence of thermal water depends on the stratigraphic and structural conditions of the site. Indeed, hydrodynamism is directly related to the geostructural elements. In northern Algeria, thermal springs are increasing from west to east. They are mainly situated along the Tellian Atlas which has a complex geology.

In this study, we are interested in the thermal site of Hammam Righa, located about 100 km west of Algiers, southwest of the neogene Basin of Mitidja (northern Algeria). This region, very rugged and subject to a developed tectonic rupture, has been discovered and exploited since roman times. The existing drilling on the site cross a superior cover of travertines and marly clay layers of Miocene and Cretaceous. Thermal waters emerge in a more or less impermeable outcrop of limestone marls of the Upper Cretaceous with elevated temperatures (44-68 °C).

In order to define the structure and the nature of the top of the aquifer and to determine the faults system inducing the emergence of thermal waters, a hydrogeophysical survey by electrical prospection was undertaken in this region. The electrical soundings (VES, AB = 1000m) realized according to 10 profiles of direction E-W cover an area of 2.5 Km<sup>2</sup>. Interpretation of these VES resulted in geo-electric sections and iso-resistivity maps, to finally map the top of the Upper Cretaceous.

The preliminary results of this study allowed to clarify the lithological nature of the top of the Upper Cretaceous and to demonstrate that there is a variation of depth according to the system of faults highlighted.