

Hydro-Climatological, Geological, Hydrogeological and Geochemical Study of the Coastal Aquifer System of Chiba Watershed (Cape Bon Peninsula)

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Abstract : Climate change combined with the increase in anthropogenic activities will affect coastal groundwater systems around the world and, more particularly, the Cap Bon region in the North East of Tunisia. This study aims to study the impact of climate change and human stress on the salinization and quantification of groundwater in the Wadi Chiba watershed. In this regard, a hydro-climatological study and a hydrogeological study were carried out based on the characterization of the aquifer system of the eastern coast at the level of the watershed of Wadi Chiba in order to seek to identify, first of all, the degradation of the state of the aquifer on the quantitative level by the study of the piezometric and its evolution over time. Secondly, we sought to identify the degradation of the state of the aquifer qualitatively by using the geochemical method, in particular the major elements, to assess the mineralization of the aquifer water and understand its hydrogeochemical functioning. The study of the Na + / Cl- and Ca²⁺ + / Mg²⁺ chemical relationships confirmed the presence of a marine intrusion downstream of the Wadi Chiba watershed northeast of Cap-Bon accompanied by a piezometric depression. For this purpose, we proceeded to: 1) Mapping of both piezometric data and salinity. 2) The interpretation of the mapping results. 3) Identification of the origin of the localized deterioration in the quality of the aquifer water. Finally, the analysis of the results showed that the scarcity of water is already forcing human actions in the Chiba watershed due to the irrigation of agricultural lands and the overexploitation of the water table in the study area.

Keywords : climate change, human activities, water table, Wadi Chiba watershed, piezometric depression, marine intrusion

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