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المستودع الرقمي للمدرسة مبني على المنصة المفتوحة DSpace و يتم إدارته من طرف مديرية المكتبة للمدرسة العليا .

كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

Abstract : The aim of this study is to assess the main climatic characteristics and their impact on the hydrological regime at the watershed and the hydrodynamic functioning of the aquifer in the Eastern Mitidja plain (Algeria, 2,382 millions km²). In detail, specific objectives are to determine the recharge mode of the aquifer, to propose solutions for the groundwater overexploitation and to remedy the seawater problem in its northeastern part. The application of three statistical methods (Pettitt's, Buishand's U statistic and, Lee and Heghinian's tests) and two drought indices (SPI and Ipmc) allowed identifying the wet and dry periods for the time interval 1906-2018. In addition, the piezometric maps analysis for the years 1973, 1981, 2015 and 2020 was carried out to investigate the hydrodynamic behavior of the study area and to determine the effect of the hydrological regime on the hydrogeological functioning of the aquifer. Results obtained by the application of the three statistical methods and two drought indices indicate two distinct periods. The first period is wet and it extends from 1906 to 1973, while the second period is dry and it goes from 1974 to 2018. It is characterised by a rainfall deficit between 15% and 19% compared to the previous period (1906-1973). Furthermore, a significant drawdown in the piezometric levels is observed from 1973 to 2020, varying between 10 and 80 m, that indicates a negative trend of piezometric levels. This drawdown coincides with the rainfall deficit noticed during the period 1973-2018. Also, seawater intrusion was observed in the northeastern part of the plain. To enhance groundwater management, an effective remediation strategy is to use an artificial recharge technique from the existing wastewater treatment plants in the region, complemented by stopping the pumping of wells in coastal zones that are affected by seawater intrusion supplemented by a hydro-chemical monitoring of the groundwater.

Key words : Coastal aquifer ; Drought indices ; Piezometry ; Overexploitation ; Seawater intrusion

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