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كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

**Abstract :** Coastal aquifer overexploitation represents a concerning trigger for water salinization around the world and especially in arid and semi-arid regions along with urban growth and urbanization, as well as land use human-induced changes. This study aims to assess the groundwater quality in the Mitidja alluvial aquifer (northern Algeria) along with its suitability for domestic and agricultural utilizations. A hydrogeochemical approach, based on the interpretation of groundwater physiochemical parameters (EC, pH, dry residue,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{HCO}_3^-$ , and  $\text{NO}_3^-$ ) collected during the wet and dry periods for the years 2005 and 2017 along with an isotopic characterization, including stable isotopes to identify the recharge sources for the samples collected in October 2017, has been proposed. The results show the presence of three dominant hydrochemical facies: (i) calcium chloride, (ii) sodium chloride, and (iii) calcium bicarbonate. Groundwater mineralization and salinization are so ascribable carbonates and evaporitic dissolution, especially during the dry periods, and to the presence of seawater. Ion exchange significantly affects groundwater chemistry along with human activities which directly or indirectly contribute in raising groundwater salts concentration. Specifically,  $\text{NO}_3^-$  concentrations are very high in the eastern portion of the study area which is exposed to fertilizers pollution where also the Richards classification pointed out the necessity of limit water utilization for agricultural use. The  $\delta^2\text{H} = f(\delta^{18}\text{O})$  diagram indicates that the recharge origin for this aquifer is mainly due to the oceanic meteoric rainwater from the Atlantic and the Mediterranean Sea. The methodology proposed in this study can be applied in the similar worldwide coastal areas in order to contribute and sustainable water resource management in these regions.

**Key words :** Mitidja alluvial plain, Groundwater quality, Hydrogeochemistry, Isotopic tool

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