

Contribution of hydrochemistry to the characterization and assessment of groundwater resources: the case of Tebessa alluvial aquifer (Algeria)

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Abstract Assessment of groundwater resources requires the knowledge of geometric and hydrodynamic features. In the Mio-Plio-Quaternary aquifer of the plain of Tebessa (Algeria), the groundwater quality is deteriorating. Different methods using geochemistry (ions Na⁺, Cl⁻, SO₄²⁻, NO₃⁻) and conductivity are compared with the hydrogeological information to identify the main processes involved in the increase in pollution. The evaluation for water contamination is based on the method proposed by Tolga *et al.* (2009) for irrigation waters, and on that proposed by Neubert *et al.* (2008), for those intended for drinking water supply. This method is a new technique of indexation of water sensitivity to pollution. It combines data from water chemistry and the results obtained by applying the DRASTIC model to the area of study. The obtained maps of sensitivity reveal zones that coincide almost perfectly with those of strong anthropogenic activities. Suitable water management policies are needed to save this unconfined aquifer and provide the data necessary to define the area at increased risk from these phenomena.

Key words assessment; water sensitivity; DRASTIC; management; risk; Plain of Tebessa, Algeria