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Delineation of groundwater recharge zones in the Mitidja plain, north Algeria, using multi-criteria analysis

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Abstract:

This work aims to identify the potential groundwater recharge zones in the Mitidja plain (north Algeria) using the multi-criteria approach. The analysis was based on the use of a geographical information system (GIS) and remote sensing to establish eight thematic maps, weighted, categorized and inserted, that allowed us to establish the potential zones' map for groundwater recharge. Three potential groundwater recharge classes were defined corresponding, respectively, to low (26%), moderate (47%) and high (27%). The best groundwater potential zones are situated in the piedmont of the Blidean Atlas (the south of the study area), precisely, upstream near to wadis (wadi El Harrach, wadi Djemaa, wadi Mazafran) and the western aquifer limit, where the hydrogeological units are formed by the alluvium formation which is characterized by high hydraulic conductivity, high water flow, low slope, low drainage, low quantity transported sediments and good water quality. The obtained results, in this work, describe the groundwater recharge potential areas and supply information for a suitable mapping and the management of aquifer resources in the study area.

Key words: GIS ; groundwater ; Mitidja plain ; Multi-criteria analysis ; Recharge zones ; Remote sensing

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