

عنوان مقاله:

Efficiency assessment of AHP and fuzzy logic methods in suitability mapping for artificial recharging (Case study: Sarbisheh basin, Southern Khorasan, Iran)

محل انتشار:

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خلاصه مقاله:

Recently, special attention has been paid to artificial groundwater recharge in water resource management in arid and semi-arid regions. Water resources distribution in these regions is extremely uneven, both in spatial and temporal forms and groundwater is the only water resource and is a major constraint on economic and social development. Artificial groundwater recharge is considered an appropriate strategy for overcoming the problem of water scarcity in these areas. Parameters considered in selecting groundwater artificial recharge locations are diverse and complex. In this study factors such as: land slopes, infiltration rate, depth of water table in aquifers, quality of alluvial sediments, land use, land owner density, geological consideration, and water quality and quantity are considered in determining the most suitable areas for groundwater recharge at Sarbisheh basin in the eastern part of Iran. Thematic layers for the above parameters were prepared, classified, weighted, and integrated in a GIS and RS environment by means of Analytic Hierarchy Process and fuzzy logic. Land-use maps were developed from satellite images and other digital maps of topography and geology alongside field investigations were also prepared. The results indicate that Analytic Hierarchy Process and fuzzy logic are reasonably suitable. However, the AHP is better than Fuzzy for practical purposes. Using different approaches for localizing provides the region with suitable context for developing and improving groundwater state. According to the results, employing Fuzzy methods, Boolean, and AHP are compatible with the proper location and this compatibility proves the goodness of the results.

کلمات کلیدی:

Artificial recharge, Analytic Hierarchy Process (AHP), Fuzzy logic, GIS

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