

عنوان مقاله:

The assessment of groundwater vulnerability: A case study in the Doroud-Boroujerd aquifer, Iran

محل انتشار:

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خلاصه مقاله:

Background: Agricultural, industrial, and residential activities have caused the vulnerability of the groundwater of the Doroud-Boroujerd aquifer to pollution in Lorestan province, Iran. This study aimed to investigate the vulnerability of the Doroud-Boroujerd aquifer using a set of intrinsic (DRASTIC, IV) and specific (SI, LU-IV) vulnerability assessment methods. Methods: The DRASTIC model with seven parameters of groundwater depth, net recharge, aquifer media, soil media, slope, the effect of the vadose zone, and hydraulic conductivity of the aquifer has the highest number of parameters. The total dissolved solids (TDS) index was used to compare the efficiency of different methods. Results: The results showed two classes of medium and high vulnerability with an area of ۷۳.۷۱% and ۲۶.۳%, respectively, in the DRASTIC model. The SI model had two classes of low and medium vulnerability. The IV model had three classes of low to high vulnerability, of which the high class with an area of ۷۵.۹۴%, had the largest extent. The LU-IV model also included four classes of very low to very high (۹۲.۰۲%) vulnerability. The validation of DRASTIC, SI, IV, and LU-IV models with TDS index showed a weak correlation between vulnerability maps and TDS values, so it can be concluded that this index alone is not a good indicator for validation. Conclusion: The results of vulnerability assessment of different methods generally showed that the groundwater of this area is highly vulnerable, so it is recommended to take the necessary measures to prevent, control, and manage these valuable water resources.

کلمات کلیدی:

Groundwater, Water pollution, Soil, Iran

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