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A Hybrid Approach towards the Assessment of Groundwater Quality for Potability: A Fuzzy Logic and GIS Based Case Study of Tiruchirappalli City, India

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ABSTRACT

The present study aims to develop a new hybrid Fuzzy Simulink model to assess the groundwater quality levels in Tiruchirappalli city, South India. Water quality management is an important issue in the modern times. The data collected for Tiruchirappalli city have been utilized to develop the approach. This is illustrated with seventy nine groundwater samples collected from Tiruchirappalli city Corporation, South India. The characteristics of the groundwater for this plain were monitored during the years 2006 and 2008. The quality of groundwater at several established stations within the plain were assessed using Fuzzy Logic (FL) and GIS maps. The results of the calculated FL and GIS maps with the monitoring study have yielded good agreement. Groundwater quality for potability indicated high to moderate water pollution levels at Srirangam, Ariyamangalam, Golden Rock and K. Abisekapurm zones of the study area, depending on factors such as depth to groundwater, constituents of groundwater and vulnerability of groundwater to pollution. Fuzzy logic simulation approach has shown to be a practical, simple and useful tool to assess groundwater quality assessment for potability. This approach is capable of showing and updating the water quality assessment for drinking.

KEYWORDS

Groundwater quality, Fuzzy Logic Model, GIS, Potability, Tiruchirappalli City

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