

Title: Assessment of groundwater potential zones in data-scarce regions using GIS-based multicriteria decision making approach

Author Names: Kishor Dandapat, Uday Chatterjee, Sandipan Das, Arpita Patraa, Harekrishna Manna, Anitabha Ghosh

Abstract: Groundwater is an essential natural resource that sustains numerous ecological systems and human lifestyles. The Jhargram district is facing persistent groundwater development issues, requiring comprehensive monitoring and planning, as most farmers heavily rely on groundwater for crop production. The groundwater potential zone of the Jhargram district was classified into five classes, viz., very high (5.82%), high (50.81%), moderate (30.33%), low (13.01%), and very low (0.03%), zones, respectively. The results were assessed for validity using ROC curves, which demonstrated an accuracy rate of 80.4%. The calculation of the AUC was performed in order to assess the overall accuracy of the predicted GWPZ. The GWPZ map is crucial for implementing artificial recharge structures like percolation ponds, bunds and trenching in semi-arid regions. It aids in developing sustainable groundwater management policies, mitigating drought, climate change, and water scarcity, and aiding farmers, regional planners, policy-makers, climate change experts, and local governments.

Keywords: Groundwater potential, AHP, multicriteria, geospatial

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