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GIS for Precise Spatial Filtering of Non Suitable Groundwater Quality Zone in Upper Thirumanimuttar Sub-Basin, Cauvery River, Tamilnadu, India

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Abstract:

GIS is a powerful tool in analysing the multiple thematic maps at a time. GIS analysis is carried out in the present study to locate the best groundwater quality zones in upper Thirumanimuthar sub basin, Cauvery River. 51 groundwater samples were collected and analysed for pH, conductance, calcium, magnesium, carbonate, bicarbonate, chloride, sodium, potassium, sulphate etc.,. Kelley's ratio, SAR values, Mg-hazards and RSC were calculated for the above parameters. The analyzed values were evaluated in detail and compared with WHO water quality standards. It is observed that, most of the groundwater quality parameters, values are not potable for drinking and irrigational use. Based on US salinity diagram, most of the groundwater samples belongs to C3-S1 (58.82%), indicating high salinity and low sodium water, which can be used for almost all types of soil with little danger of exchangeable sodium. To understand the spatial distribution of unsuitable zones, ArcGIS was employed. Attributes were linked and spatial interpolation mapping was done. Inverse distance weighted Interpolation technique was followed for raster and vector mapping. GIS analysis (integration Analysis) is very well used in the present investigation to locate the best quality groundwater domain.