

GROUNDWATER CHARACTERIZATION AND QUALITY ASSESMENT FOR IRRIGATIONAL PURPOSE USING GIS - A CASE STUDY OF KADAVANAR WATERSHED TAMILNADU, INDIA

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Abstract

The present study focuses mainly on groundwater quality assessment for irrigational purpose in the Kadavanar Watershed of Cauvery River, Tamil Nadu. The study area is underlain by Archean crystalline rocks. The Kadavanar Watershed lies between latitudes N 10°09'56.70" and 10°52'31.50", longitudes E 77°37'29.29" and 78°13'14.21" in the Dindigul and Karur districts of Tamil Nadu, with a total area of 2254.65 km² out of which is the plain area about 1857.58 km² while the hilly and forested terrain covers about 397.07 km². Representative groundwater samples were collected at 50 locations during pre - and post - monsoon seasons in the year 2014 and were analyzed for major cations and anions. EC, TDS Kelley's ratio, SAR values, Mg-Hazards, HCO₃ and RSC were derived and used to assess the irrigational suitability of these samples. The hydrochemical analytical data are projected in the Wilcox and USSL diagrams. Geospatial maps were prepared using GIS techniques. The study reveals that the majority of groundwater samples are suitable for irrigational purpose and could be used for all types of crops.

Keywords: Irrigation, salinity, Sodium Adsorption Ratio (SAR), spatial distribution map, Wilcox, United States Salinity Laboratory diagram (USSL).