

Hydrochemistry of Krishna Delta, East Coast, India

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In order to assess the chemical quality of groundwater in Krishna delta, a systematic hydro-geochemical study was carried out. 143 groundwater samples were collected from 52 villages and towns. Chemical analysis was performed for major and trace elements. This study indicates that: (1) these waters are nearly neutral to alkaline in pH (7.4-8.6) and their total dissolved solids vary from 660-5065 mg/l. (2) Salinity basis, these waters are characterized by fresh, brackish and saline types. About 60% groundwaters are already brackish/saline. (3) These are classified as Na-Cl, Na-Ca-Cl-HCO₃, Na-Mg-Cl-SO₄ and mixed types. About 37% water belongs to Na-Ca-Cl-HCO₃ type. (4) Na and Cl are the most dominant ions; a good correlation existed between Na vs. Σ cations and Cl vs. Σ anions. (5) In various locations, NaCl type of groundwater is altered to mixed type where as no such alteration is found in Na-Ca-Cl-HCO₃/ Na-Mg-Cl-SO₄ type of water. (6) Groundwaters, which are located right side of the Krishna river (north Krishna delta) are more affected by seawater intrusion compared to left side of the river (south Krishna delta). Such intrusion is directly related with withdrawal of water, influence of seawater aggression, tidal effect and rainfall conditions. (7) In various places equilibrium conditions are not properly existed but seawater intrusion and fresh groundwater dilution activity observed simultaneously.

Keywords: Krishna delta; Coastal Aquifer; Seawater Ingression/Intrusion, India.