

**GEOCHEMISTRY OF GROUNDWATER IN THE ARID  
REGIONS OF DECCAN TRAP COUNTRY,  
MAHARASHTRA, INDIA**

Raymond A. Duraiswami<sup>1,2</sup>, Babaji Maskare<sup>1</sup> and Uday Patankar<sup>2</sup>

<sup>1</sup>*Department of Geology, University of Pune, Pune*

<sup>2</sup>*Groundwater Surveys and Development Agency, Pune*

*E-mail: raduraiswami@unipune.ernet.in*

**Abstract**

Maharashtra is predominantly an agrarian state and is underlain by Deccan Traps and other Precambrian suites of rocks. The rain-shadow drought prone region constitutes an important agroclimatic region of the state. In general, depleting groundwater levels and over-exploitation of the resource due to repeated droughts have characterized such areas. However, with the advent of irrigated agriculture, the water levels in some of the command areas began to rise leading to water logging. This scenario has left its imprints on groundwater quality trends. Study of geochemistry of groundwater indicates its evolution from a  $\text{Ca+Mg} > \text{Na+K}$ ,  $\text{HCO}_3+\text{CO}_3 > \text{Cl+SO}_4$  hydrogeochemical facies to  $\text{Na+K} > \text{Ca+Mg}$ ,  $\text{HCO}_3+\text{CO}_3 > \text{Cl+SO}_4$  facies. Several irrigation water quality indices such as electrical conductivity, sodium adsorption ratio, percent sodium, residual sodium concentration and total hardness were evaluated in the context of groundwater quality evolution and pollution in contrasting hydrogeological regimes. These contrasting groundwater scenarios in command and non-command areas call for corrective interventions.

*Keywords:* Groundwater, Groundwater quality, Agricultural productivity, Salinity, Drought prone region.