

QUALITATIVE STUDY OF GROUNDWATER IN THE COASTAL AQUIFERS OF A PART OF KRUSHNAPRASAD BLOCK, PURI DISTRICT, ODISHA, INDIA

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ABSTRACT

Qualitative study was carried out on a number of groundwater samples collected from Krushnaprasad Block, Puri district. Krushnaprasad block is basically a saline tract having low rainfall and high evapotranspiration. Therefore, there is little replenishment of fresh water or rainwater. The chemical parameters such as Na^+ , K^+ , Ca^{2+} , Mg^{2+} , SO_4^{2-} , Cl^- and HCO_3^- and ratio parameters such as Na/Cl , Cl/HCO_3 , Ca/Mg are used to identify the intrusion of saltwater in the coastal aquifers. The results were observed in each sample and were compared with standards of WHO, ICMR and ISI. The hydrochemical results were plotted in Piper diagrams to determine the water types prevailing in the study area and also to delineate various groundwater types.

Keywords: Qualitative study, groundwater, Coastal Aquifers, saltwater

INTRODUCTION

Groundwater is an important and essential natural resource of the planet earth. Use of groundwater has been increasing in our day-to-day life. Groundwater is cheaper, more convenient to consume and less vulnerable to pollution as compared to fresh water. We therefore use it for different purposes like domestic, agricultural, drinking etc. Pollution in groundwater is less visible but more difficult to clean up than pollution in rivers and lakes. Now-a-days, groundwater is being polluted due to improper disposal of waste on land. Major sources include industrial, household, chemical, garbage landfills, excessive fertilizers and pesticides used in industry and agriculture. In the coastal part of Orissa, ground water is being polluted due to saltwater intrusion. Therefore, it is very essential to measure the quality of groundwater to have a better environment. The present study is undertaken to carry out qualitative study of groundwater in a systematic manner and to present the results to the concerned authority so that future planning can be framed accordingly.

STUDY AREA

The study area (Figure-1) is located between longitudes $85^\circ 10' 28.38''\text{E}$ and $85^\circ 37' 50.68''\text{E}$ and latitudes $19^\circ 28' 00.58''\text{N}$ and $19^\circ 53' 02.25''\text{N}$ falling in Survey of India toposheet no. E45B2, E45B6, and E45B10, in 1:50,000 scale and cover an area of about 151 km^2 in Krushnaprasad, in the coastal belt of Odisha. It is located approximately 75.6 km east of the district headquarter Puri. Its elevation is 25 m above sea level and is about 174 km away from the state capital Bhubaneswar. National estimation of beach change has identified krushnaprasad as one of the environmental hotspots and in eastern coastal tract of Odisha, the salinity hazard is widespread.

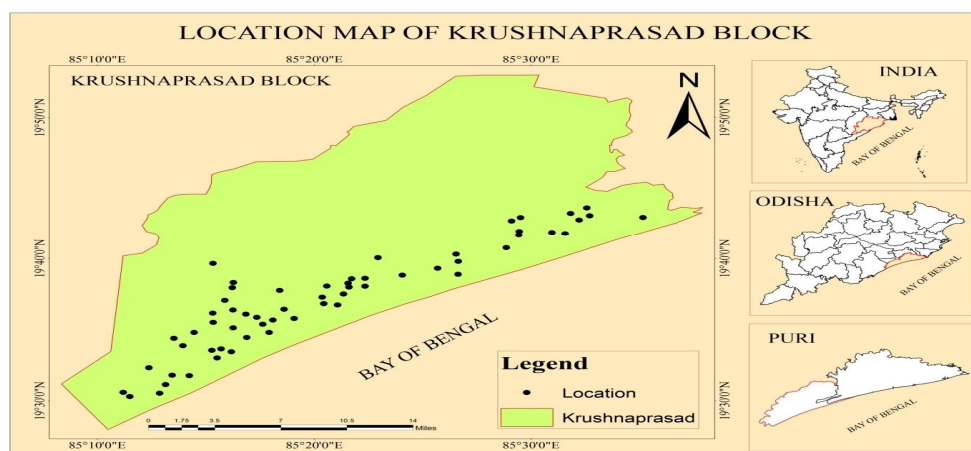


Figure 1: Location map of Krushnaprasad block