

STUDY ON THE HOURLY DYNAMICS OF THE COASTAL SURFACE WATER FLUX ALONG THE VELLAR RIVER MOUTH, TAMILNADU COAST - A GEOCHEMICAL APPROACH

S. Chidambaram, Rakesh, Ayan Ali Khan, N. Ganesh , M. Nepolian , S. Vasudevan , R. Thilagavathi,

*AL. Ramanathan, Shyam Ranjan and VS. Aditya

Department of Earth Sciences, Annamalai University, Annamalai Nagar

**SES, JNU, New Delhi*

**E-mail: chidambaram_s@rediffmail.com*

Abstract

A study on the Submarine Groundwater Discharge (SGD) in the coastal Cuddalore region in south-east India has been carried out. Online monitoring of Radon, Water Level, Electrical Conductivity (EC) and Ph has been carried out for twenty four hours. Hourly measurement has been made and correlated with tidal values using the WX Tide 32 software. The SGD measurements were made using a modified seepage meter. EC varies from 51 to 52.9 ms/cm with the highest EC being recorded at 3.40pm. The pH ranges from 7.24 to 7.86 with the highest values observed at 7.40pm. Radon measurement values range from 71Bq/m³ to 1 Bq/m³. The highest water level of 1' bmp (below the measuring point) is in the Parangipettai coast. Lesser SGD (1.4 – 59.0 cm/day) was measured during fresh groundwater discharge. The Stable isotope $\delta^{18}\text{O}$, δD with EC and SGD values show that an increase in EC and enrichment of $\delta^{18}\text{O}$ are mainly due to salinity of sea water. This study reveals a match between these parameters and water level variation and the tide coupled with minor variations due to influx of surface water. Saline discharge (re-circulated water), fresh groundwater discharge (terrestrial discharge) and surface water mixing processes were identified along the coast.

Keywords: SGD, Water Level, Tide, Electrical Conductivity, Radon, Stable Isotopes