PHYSICO-CHEMICAL AND TRACE ELEMENT GEOCHEMISTRY OF SWARNA RIVER, SOUTHWEST COAST OF INDIA: A BASELINE STUDY

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The Swarna river, a small tropical river (80 km length) flowing in the southwest coast of India forms a major source of water for domestic use to a million inhabitants of Udupi district, Karnataka. The river flows through the sub-urban region with no major industries found in the present time but are likely in the near future as the area is fast developing with expansion in education and industrial sectors. This would result in higher freshwater withdrawal within the river basin due to population amplification. The river discharges annually 16,512 m^3 of water into the Arabian Sea, of which significant part is being discharged during the monsoon. The paper presents the preliminary results on the spatial and temporal (monthly scale) variability of trace elements along with physico-chemical parameters in the Swarna River for a period of six months. The river water is neutral to mildly basic in nature. The specific conductance which controls the partitioning behaviour of trace elements ranges from 23.3 to 44.5 µS/cm. Dissolved oxygen which defines the redox condition in water ranges from 6.96 to 8.75 mg/L. Major part of the river basin consists of silicate rocks like granite gneiss, dolerite dyke and laterite1. No studies have been made yet on the dissolved and suspended metal concentrations in the Swarna river and groundwater in the region, even as one million people use it for drinking purposes. The uptake of bio-available (dissolved) trace elements would affect the physiological functions of humans and other organisms. As the large community in this region depends on the freshwater of Swarna river, there is an urgent need to study the trace element geochemistry of this west flowing river for better water management and sustainable development. Preliminary results of the trace metal measurements are expected in March 2011.

[1] Kumar PKK (1997), Analysis of surface and ground water flow process in Western Ghats of Dakshina Kannada district, Karnataka (unpublished data).

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