

A NOTE ON IONIC DISTRIBUTION IN THE ESTUARY
OF VASISHTA GODAVARY

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ABSTRACT

Investigations on the ionic distributions in the estuarine waters of Vasishta Godavari were carried out during May, June, November and December of 1976 at surface, 2, 4 and 9 m depth. The results indicated that there is a considerable change in the variation of the ionic distribution starting at a depth of 2 m.

Key-words : Conductivity, ions, Vasishta Godavari Estuary.

Vasishta Godavary joins the Bay of Bengal at Antarvedi a village located on the east coast near the Narsapur town. The river takes a sudden change in direction and flows approximately N-S direction and adjoins the town of Narsapur. The estuary extends over a distance of 10 km.

In a bid to study the interaction of the incoming fresh water of the river and sea water in the Estuary, a series of investigations on the water quality in the river at different locations were made during the months of May, June, November & December 1976. Water samples from surface as well as from depths of 2, 4 and 9 m were collected by employing a country boat. Fig. 1 presents the location map and indicates six positions where sample collections were made. Each position is identified by its nearest land mark. During the collection of the samples the boat was kept static by holding it rigidly with the help of two long poles on either side. Water samples at different levels were collected using Nansen bottles. Due to the changes in the river bottom depths, the lowest observation depths were not the same.

The temperature was immediately noted and samples transported to a temporary Laboratory at Y.N. College, Narsapur. Electrical conductivity of all the samples was measured. All the water samples were analysed for the three cations of calcium (Ca) magnesium (Mg) and sodium (Na) and the three anions of chloride (Cl) bicarbonate (HCO_3^-) and sulphate (SO_4^-) using standard methods described by Taylor (1958) and Yogel (1978).

The results of the variations of conductivity expressed in micromhos and all the other ions expressed in ppm are plotted for station no 5 and are shown in fig.2. The results of all the other stations tend to be similar and therefore not presented. The immediate observation could be that though conductivity seems to be increasing with depth the variations are minimum and uniform. Among all other ions chloride, calcium, magnesium and sodium indicate considerable variations with depth. The sodium and chloride ions in

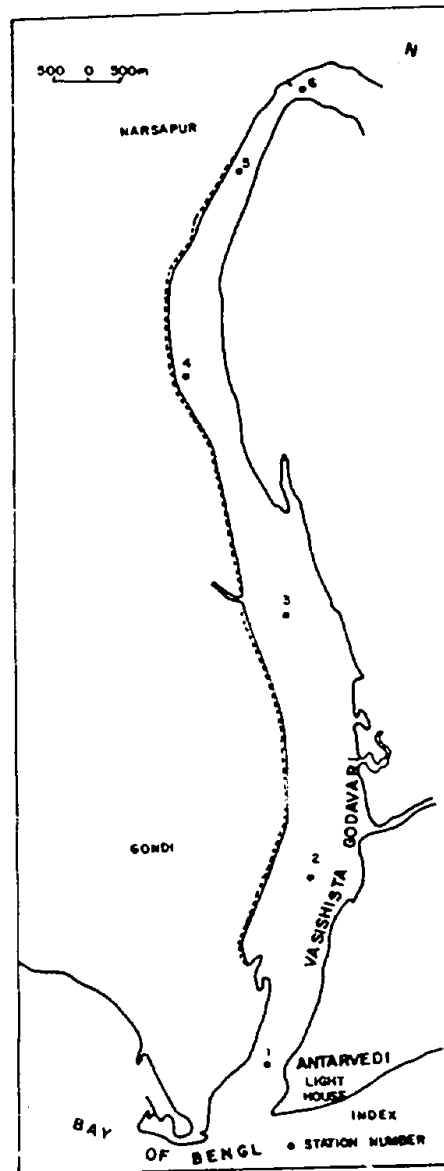


Fig. 1. Location map.

the month of June seems to be decreasing from the surface to a depth of 4 m from where a gradual increase is seen. This may be indication of the surface waters being affected by the tide and the intermediate layer being affected by the summer waters of the river. The deeper waters are perhaps affected by the sea water gradually. Similarly a surprising condition seems to exist with regard to calcium and magnesium, while calcium decreases in its content during the month of June from the surface upto a depth of 2 m magnesium indicates a similar fall in the month of November. The months of June and November indicate two different conditions. During the month of June the river flow is low and subdued while in the month of November, after the monsoon the river water is high and more turbulent. These two conditions are perhaps brought out by the above variations of calcium and magnesium.

IONIC DISTRIBUTION IN ESTUARINE WATERS

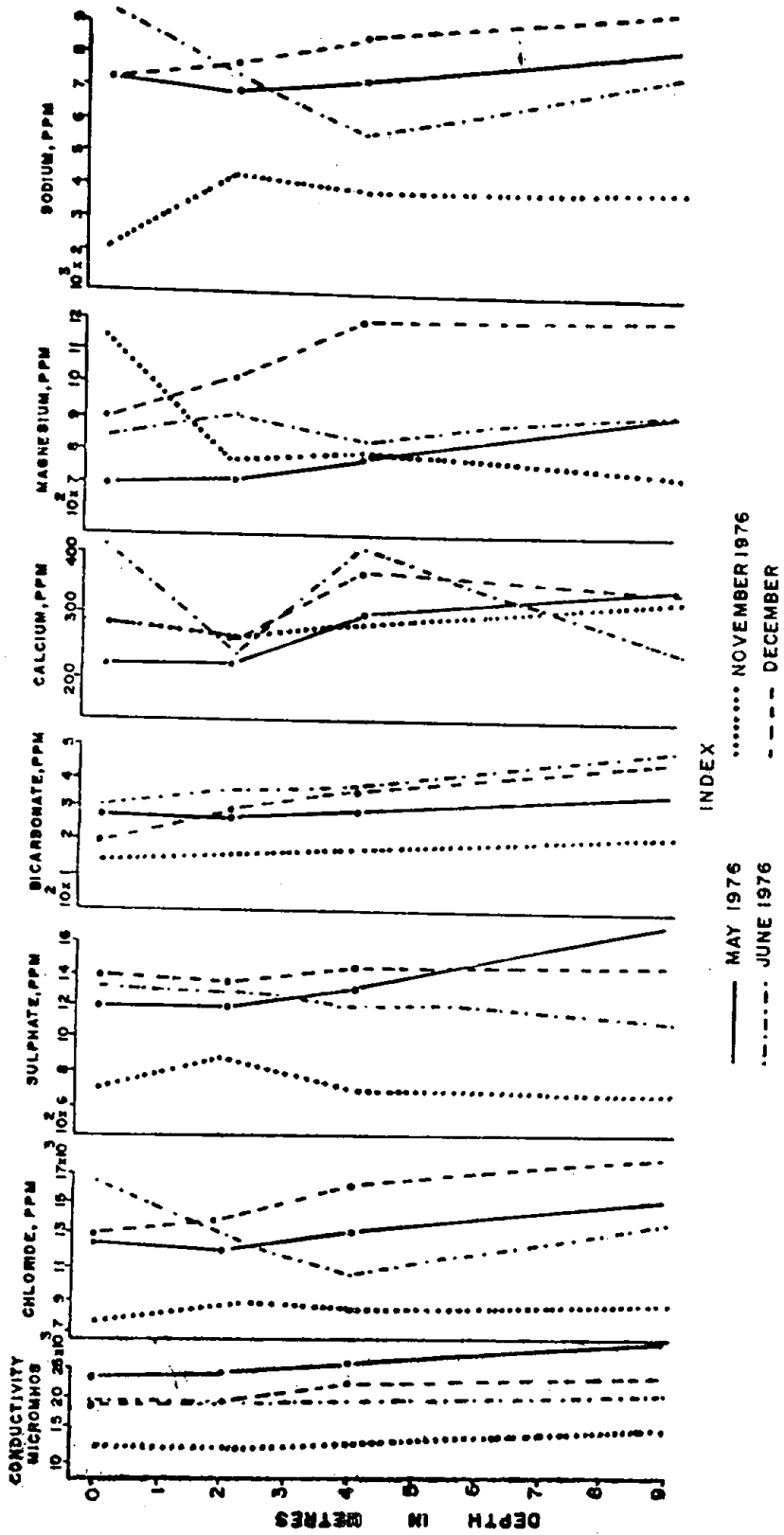


Fig. 2. Chemical quality variations.

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