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HYDROGRAPHY OF THE INSHORE WATERS OF MADRAS COAST FOR THE PERIOD JANUARY 1973 TO MARCH 1975

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ABSTRACT

Study on the changes in salinity, pH, temperature dissolved oxygen and phosphate, nitrite, silicate and nitrate content of the inshore surface waters of the Madras coast from January 1973 to March 1975, shows that magnitude of changes of the different parameters varied widely between 1973 and 1974, and the pattern of their fluctuations generally confirms the earlier findings.

Water samples were collected from the inshore surface waters off Madras city, where the depth ranged from 20 to 30 metres, and the changes in salinity, pH, dissolved-oxygen content, phosphate, nitrite, silicate and nitrate were monitered from January 1973 to March 1975. Observations on the sea surface temperature were made from an area adjoining the Madras Harbour. The variations observed were subjecaed to smoothing analysis and are depicted in figures 1 and 2.

The fluctuations of salinity follow a similar trend reported earlier by the author (Muthusamy, MS). The post-monsoon recovery continues up to May

and is succeeded by a steady decrease that precedes a sharp fall during the North East Monsoon months. It would seem that the changes in salinity are hardly affected by the local rainfall. The heavy rainfall of August 1973 is the highest recorded during the period of study. It only resulted in a slight lowering of salinity during the month. The failure of the North East Monsoon over this region in 1974 made little impact on the fluctuations of salinty and the sharp decline observed during this season is close to what was recorded during the corresponding period in 1973 and the previous years (Muthusamy, MS). The pH continued to remain around 8.4 as reported earlier (Muthusamy, MS).

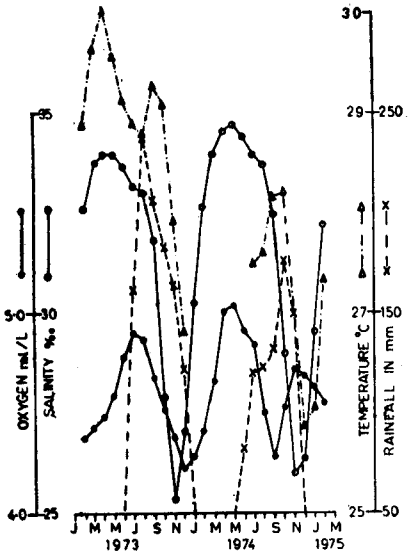

FIG. 1. Fluctuations of salinity, dissolved oxygen, temperature and the rainfall as recorded by the Meenambakkam observatory.

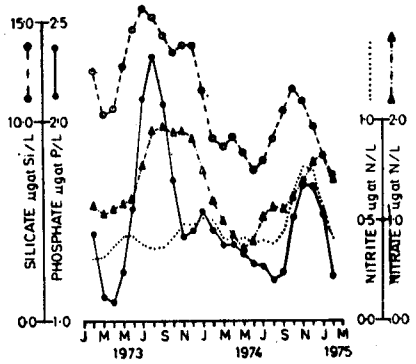

FIG. 2. Fluctuations of Phosphate, Nitrite, Silicate and Nitrate.

The changes in the temperature of the sea surface are presented in Fig. 1. There appears to be two high (April and September-October) and two low temperature periods (July-August and December) in a year. Subrahmanyan (1959) has found that a double oscillation of the sea-surface temperature is a common feature for the warmer areas of the seas around India.

The inshore surface waters of the Mdras coast were found to be rich in dissolved-oxygen content almost throughout the yar. It is significant to note that a decrease in dissolved-oxygen content reported by earlier workers (Varma and Reddy 1959; Subrahmanyan and Sen Gupta 1965; Muthusamy, MS) occurring normally in September is conspicuous by its absence in 1973 but manifests itself in September 1974. A steady decline in dissolved oxygen content observed

from October to December in 1973 may be due to any of the oxygen demanding processes propounded by Subrahmanyan and Sen Gupta (1965) to explain a similar trend noted by them.

The seasonal variations of the nutrients observed are more or less similar to those reported earlier (Muthusamy, MS). In 1973 the declining trend observed from January is less pronounced and the values tend to show an increase even from March as it was reported by earlier workers (Varma and Reddy 1959; and Subrahmanyan and Sen Gupta 1965) but in 1974 it extends up to June. The enormous increase in the local rainfall recorded from June to August 1973 makes but a little dent on salinity, nevertheless it embellishes the values of the nutrients so as to belittle the yearly increase that normally occurs during the North East Monsoon period. Hence the magnitude of changes during this season (June to August) depends on the intensity and duration of the rainfall which appears to assist actively the various other factors mentioned in an earlier account (Muthusamy, MS) as responsible for the replenishment of the inshore waters with nutrients.

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