

A NOTE ON HYDROGRAPHY OFF BOMBAY DURING THE END OF MAY, 1983.

-by-

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During a short training cruise for NCERT deputees on board 'Saraswati', the training-cum-research vessel of C.I.F.E. Bombay, serial observations on temperature, salinity, dissolved oxygen, etc. were made at four hydrographic stations, each spaced apart 30 n. miles along 19°N latitude, on 26th May 1983. The distance covered from the coast was 129 n. miles and the maximum depth recorded at the end seaward station was only 87 m.

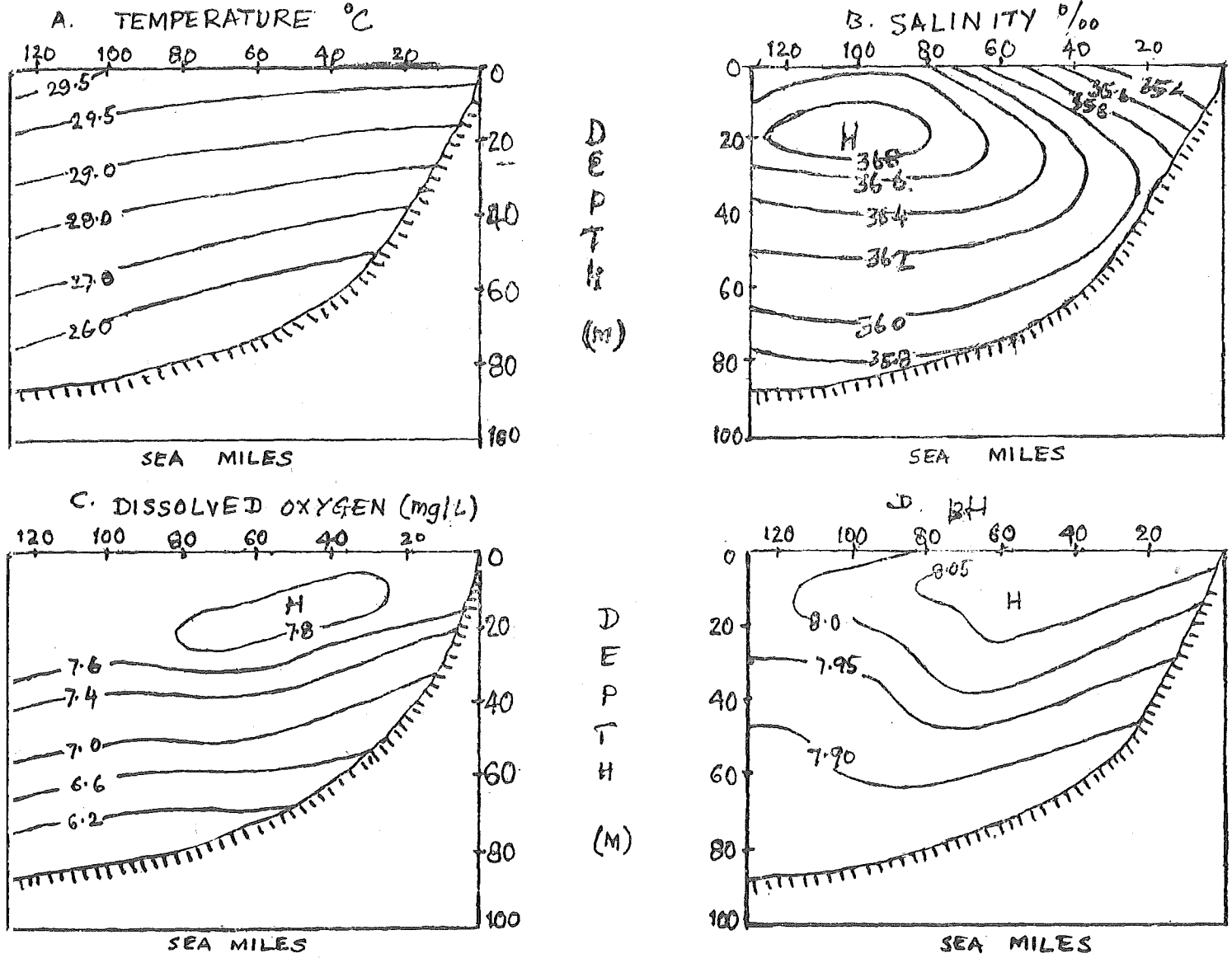
The data is presented in vertical distribution charts of parameter in Fig. 1 to 4. It may be noted that all the observations were made over a period of 12 hours only. The sky remained clear with small patches of clouds in the horizon. Air pressures remained uniform, but a little low at 1008 mb and northwesterly winds were blowing with a velocity of 10-12 Kmph.

DISTRIBUTION OF PROPERTIES

Temperature distribution is represented in Fig.1. Inshore waters are found a bit colder (difference 1.5°C) than the offshore waters. The gently upsloping isotherms towards the coast show a gradient of 5 cm per mile. They are almost parallel to each other. The thermocline formed is distinct but weak with a gradient of 1°C per 16 m. It is somewhat shallow in the shoreward region, commencing with depth of 20m or so and slowly tapering downward to a depth of 32m at the end of the section. This distribution is akin to that observed during the summer months with a comparatively well developed but weak southerly current.

Salinity distribution is represented in Fig.2. Similar to temperature distribution inshore waters are less saline than offshore waters. There is a marked change in the salinity in the surface mixed layer, especially in the area covered from 40 to 90 miles from the coast, where the gradient is 0.02° of salinity per mile giving rise to a sharp boundary at the surface. This occurs due to a southward moving current with a high core of salinity at depths of 10-25 m and extending for nearly 50 miles as indicated by a horizontally oblong cell with high values over 36.8‰. This current and the low vertical turbulence exhibited by this vertical distribution is again typical of summer months.

VERTICAL DISTRIBUTION OF HYDROGRAPHIC
PARAMETERS OFF BOMBAY ALONG 19°N
LATITUDE, MAY END 1983.



Dissolved oxygen distribution is represented in Fig. 3. The oxygen content over the entire shelf region shows high values of over 6.0 mg./l. Even the bottom waters have higher values. Oxygen distribution is similar to that of temperature and oxygen isolines are gently upsloping towards shore and a mild oxygen discontinuity occurs within the mild thermoclinic region with a gradient of 0.4 mg per 10m depth. A lateral oblong cell of high oxygen content is observed in the surface mixed layer especially at the current boundary region, which is indicative of high photosynthetic activity and lesser dissipation.

pH distribution is represented in Fig. 4, pH distribution is similar to that of oxygen in the trend and upsloping isoline of pH indicating generally lower pH in the shore region compared to that observed in offshore. A high pH in the 8.17 is noticed at intermediate depths in the high oxygen cell. However the photosynthetic activity in the offshore areas seem to have modified the values of pH at depths corresponding from 20-70m.

CONCLUDING REMARKS :

In general, the waters off Bombay upto the extent of investigation which was upto 129, n. miles show typical summer conditions towards the end of May when the observations were made. A relatively mild current with warmer and more salty water with the axis at around 100 miles from the coast is moving south ward and has thereby affected the near shore salinities. A relatively mild current boundary is observed at 50-70m. miles from coast, and may form the outward limit for the inshore pelagic fisheries, during the above period.

The signature of an oncoming SW monsoon on the hydrography off Bombay coast is not yet reflected by 28th May 1983.

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