

THE HYDROGRAPHY OF THE ARAB'S GULF, EGYPT

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During the period January 1977 to February 1978, eight cruises were taken over which 129, hydrographic stations were covered over the four seasons. At each station, temperature, salinity and dissolved oxygen oxygen were measured at different depths.

In the gulf, the surface water temperature fluctuated from 28°C in August to 17°C in February. The surface salinity varied from 39.00‰ in Autumn to 38.60‰ in spring.

The water masses were identified at each season.

Introduction:

The Arab's Gulf is a large indentation between Ras El Daba and Alexandria, about 90 miles long, Fig. (1). Pollution in the gulf is mainly from oil, chemical, industrial and sewage wastes. The aim of this study is to show salinity and temperature structure in the horizontal and vertical direction at each season (Maiyza, 1979).

Temperature structure:

In the horizontal direction, the surface water temperature varied from 17°C in February to 28°C in August. Below 100 m depth, the temperature showed an annual cycle opposite to that happened at the surface. In the vertical direction, the thermoclines developed mainly during the summer, the temperature gradient varied between 0.1°C in winter and 10°C in summer.

Salinity variation:

The horizontal distribution in the gulf was affected mainly by the drainage water from El-Max pumping station, rains in winter and

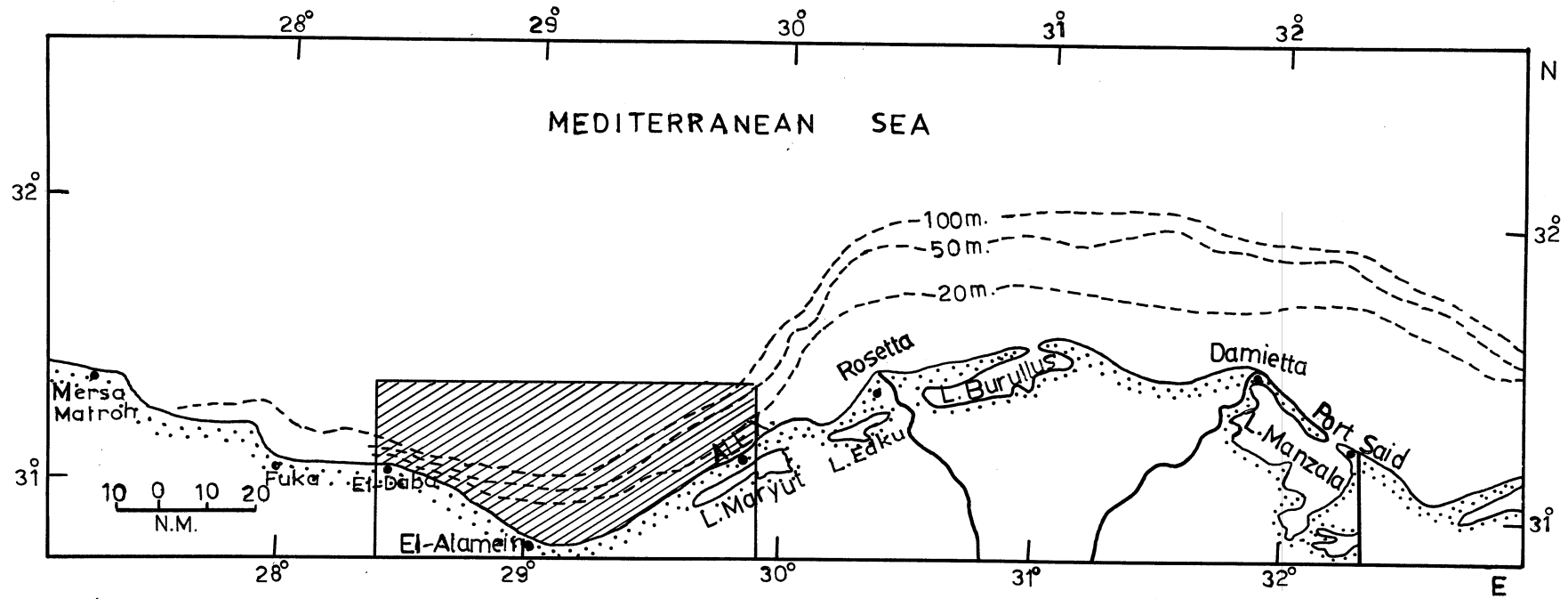


Fig.(1)- Chart of the Egyptian coast, showing the area of investigation.

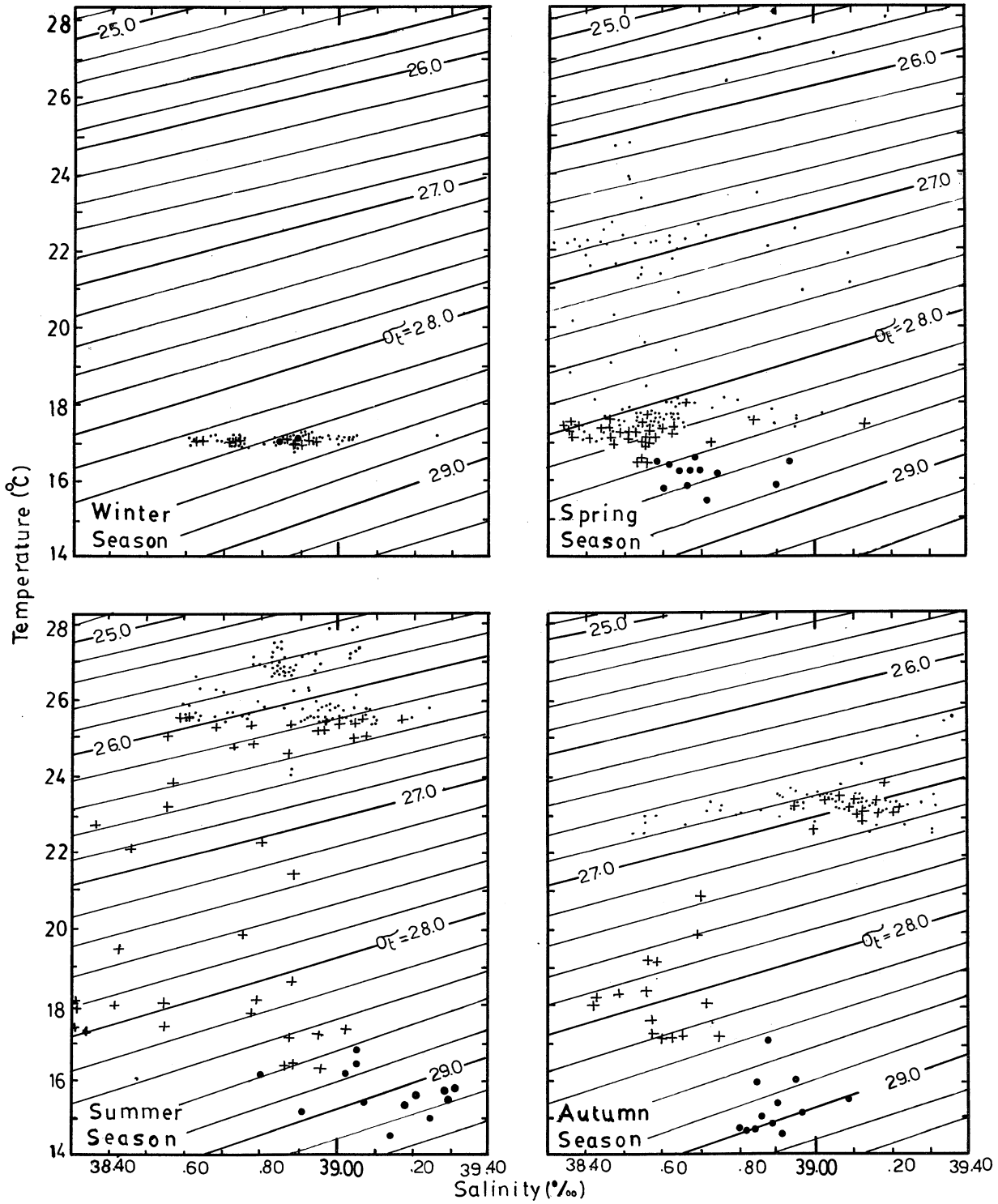


Fig. (2) — T-S Diagrams for all observations taken in the Arab's Gulf during the four seasons of 1977.

○: 0-30 m. +: 50-100 m. ●: >100 m.

high evaporation in summer. The surface salinity varied in the Gulf from 35.20‰ to 39.10‰ .

The vertical distribution of salinity during the four seasons, reflect the vertical homogeneity in salinity during the winter season within the 300 m water column. Between 50 and 100 m levels, the maximum salinity was observed in winter with a minimum one in autumn.

Water masses:

The T-S diagrams show the seasonal variation of the water masses in the Arab's Gulf, Fig. (2). In winter, the water column was homothermal with slight variation in salinity. In spring, two water masses were developed. In summer, three water masses were observed, surface layer of high salinity, subsurface minimum salinity and a layer of secondary maximum salinity. The three summer water masses were still existed in the autumn season with slight differences in temperature and salinity.

Circulation in the Arab's Gulf:

Study of the current in the Arab's Gulf using surface drifters indicated two current systems;

1. Main current system from west to east mainly at the offshore area parallel to the coast with an average velocity from 5.0 to 16.0 cm/sec.
2. Southwesterly current in the inshore area with velocities varied from 3.0 to 20.0 cm/sec.

References:

I.M. Maiyza, 1979 (Hydrography of the Arab's gulf, Egypt). M.Sc. thesis, Faculty of Science, Alexandria University.