

Abstract

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Currents in front of Manzalah Lake, Egypt

The coastal area in front of Nile Delta is considered one of the most interesting natural laboratories not only because of its coastal processes and evolution of erosion and accretion, but also because of its economic importance related to Egyptian natural sources. Knowledge of coastal water circulation is one of the basic tools useful in the management of fisheries as well as in oil and gas resources development. The present study is concerned with the analysis of current and meteorological measurements in the coastal water in front of Lake Manzala between Damietta and Port Said. The results of this analysis show that in Shallow Water the current flow was strongly rectilinear and influenced by the wind field. Current flow was directed towards the east-south-east and west north-west, with 52% and 13% of all current speeds occurring in this sector respectively. Higher current speeds were towards the east-south-east with a maximum value of 0.87 m/sec towards ESE recorded on January 2000. The mean current speeds ranged from 0.146 m/sec at 1 m depth to 0.095 m/sec at depth 6 m. Rapid changes in direction of the current flow were observed at this location, which appeared to be associated with abrupt changes in wind direction. In Deep Water, the maximum current speed recorded was 0.50 m/sec towards ESE during January 2000 and, was associated with the maximum wind event. There was a tendency for the flow to be directed more towards the south-east and north-west with 29% and 14% of all current speeds occurring in these sectors respectively. During low current speeds, the directions were more variable and a diurnal variation in current speed and direction was often observed.