BIOGEOCHEMICAL CYCLES OF NUTRIENTS AND CHLOROPHYLL A IN RELATION TO COASTAL CURRENTS IN JORDANIEN WATERS OF THE GULF OF AQABA, RED SEA

By:

Khaled Jamaan Al-Sokhny

B.Sc. Earth and Environmental Sciences, Yarmouk University, 1997

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Approved by:

Nejem Al-deen Yousef....................................Chairman
Assistant professor of Marine Geology, Yarmouk University.

Mohammed Badran ........................................Member
Assistant professor of Oceanography/Coastal Environmental Chemistry, University of Jordan-Marine Science Station.

Mahmood Awad.........................................Member
Associate Professor of Hydrology, Yarmouk University

Tariq Al-Najjar ........................................Member
Assistant Professor of Marine Biology -Planktology, University of Jordan-Marine Science Station.

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Abstract

It has been established that there is higher nutrient (Ammonia, Nitrate, Nitrite, Phosphate and Silicate) and chlorophyll a concentrations in coastal water of the Gulf of Aqaba compared to offshore waters especially during summer. Taking into consideration the absence of river runoff or supplies of these nutrients from land, these relatively higher nutrient concentrations may be related to supplies from the deep water via the coastal currents, specially the density currents. Six hundred and eight water samples were collected from coastal and deep water for one year on a biweekly basis starting from late September 1999 through to beginning of September 2000 at different depths (0-125m). Temperature measurements indicated that there was a stratification period in summer while mixing was dominant in winter. Significant difference between the day and night parameters was calculated using a factor called (Residue). This was calculated by a simple mathematical technique, subtracting the day parameter from the night one. This residue indicated that the difference between the day and night increased as the water column decreased. Salinity showed minor variations between day and night. Sigma-t exhibited an opposite behavior of temperature. Regarding the nutrients, the differences between day and night was mainly in spring. Chlorophyll a measurements indicated that there were higher concentrations during the daytime compared to the nighttime. Current measurements showed that the eastern currents had no obvious effect on the nutrient concentrations in the coastal area, indicating no significant effect of the current on the higher nutrient concentrations in the coastal water. Also indicating that these higher concentrations are significantly related to chemical and biological processes within the coastal water environment.