A PRELIMINARY STUDY ON THE NUTRIENTS IN THE AL-KABIR AL-SHIMALI RIVER ESTUARY (SYRIA)

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In spite of the presence of several, permanent and seasonal, rivers in the Syrian coastal region, there is not, as far as we know, any study on their different hydrochemical properties, especially concerning the seasonal variations of nutrients in the estuarine waters, and their effect on the marine coastal ecosystems. Al-Kabir Al-Shimali river is the longest Syrian coastal river (96 km.); its estuary is situated in the south of Lattakia city. The tidal regime of the Al-Kabir Al-Shimali river estuary (KSRE) is low, as it is the case of the Eastern Mediterranean river estuaries, and the intermixing estuarine zone is relatively limited.

This research aims to make a first series of inspections on the nutrients levels in the KSRE, and we hope to develop it later to cover hydrochemical and biological cycle in the KSRE and neighboring coastal waters.

The sampling program is carried out between January 1991 and February 1992. Nutrients were determined in surface waters only. Analyses of nutrients were based on standard spectrophotometric methods (AMINOT & CHAUSSEPIED, 1983). The indophenol blue technique was used for ammonium determination, while nitrite and nitrate were analyzed as a pink azo compound before and after reduction of the samples on cadmium columns treated with copper sulfate. Orthophosphates (reactive phosphorus) were determined by molybdenum-blue technic. Salinity and temperature were measured in situ with a S-C-T-meter (YSI-33); an ulterior measurement of salinity were performed by titrametric method of Knudsen.

The salinity, of the studied estuarine waters, were ranged between 0.0 and 23‰, and the temperature between 8 and 31°C for the whole annual cycle. Nitrates are the more abundant nitrogenous nutrient (1.7 to 37.8 umol/l), and they have the wider seasonal variations. Ammonia concentrations ranges between 0.3 and 5.2 umol/l. Nitrite concentrations were below 1.2 umol/l. The concentration of orthophosphates is usually smaller than 1.7 umol/l. The concentrations of all nutrients decrease in the sea outside the river estuary.

Nutrients concentrations, which studied in the KSRE waters, showed very different variations according to the season and to the considered nutrient (Figure 1). Nitrates and orthophosphates were highest in winter and decreased in spring and summer. Ammonium and nitrites show relatively important concentrations in summer also, after a distinct decrease in April 1991.

The behaviour of nutrients in the intermixing estuarine zone, as it concerns their seasonal variations, and the biological activity of the estuarine ecosystem. The main tendency is accumulation during winter and removal during summer.

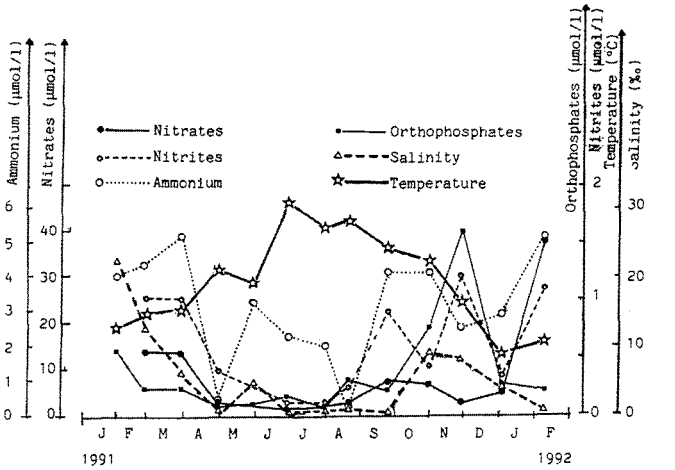

Figure 1: Seasonal variations of nutrients, salinity and temperature in the Al-Kabir Al-Shimali river estuarine waters.

REFERENCES

AMINOT A. & CHAUSSEPIED M., 1983. Manuel des analyses chimiques en milieu marin., CNEXO, Brest, BNDO/Document., 393p.