

The bitter lakes between the past and present

Girgis F. SOLIMAN* and Selim A. MORCOS**

*National Institute of Oceanography & Fisheries, Anfoushi, Alexandria (Egypt)

**Division of Marine Sciences, UNESCO, 75700 Paris (France)

The Bitter Lakes of Suez Canal were characterised with layers of salt deposits of about 13m thick. After the opening of the Suez Canal in November 1869, a salt barrier of salinity greater than 65‰ was formed in the lakes which acted as an obstacle for the migration of the marine organisms between the Mediterranean and the Red Seas.

Four cruises were conducted in the Bitter Lakes during summer periods (1982-1986), to study water circulation, decrease of salinity with time, and situation of the salt barrier in the lakes. Temperature, salinity and currents were measured at different depths. The mean water level during the same period was also obtained.

A minimum salinity of about 43.5‰ has been recorded during the last few years. A difference in salinity values of about 1.0‰ is observed between winter and summer seasons in comparison with that obtained in 1966 (4.0‰). The water in the Great Bitter Lake circulates in clock- and anti-clock wise directions conformable with the tidal currents. Due to the prevailing north winds in summer, the water piles up in the southern part of the Great Bitter Lake, which generates an anticyclonic motion in the vertical plane as well as drives a southward current depending on the amount of water flowing from Lake Timsah, Lake Menzalah and the Mediterranean Sea.

After the last deepening and widening of Suez Canal and Bitter Lakes in 1976, the evaporation potential is highly significant factor in increasing the salinity of the lakes during summer. Such increase is estimated as 1.2‰. Finally, the salt bed is about to be exhausted and its effect on salinity is insignificant. The salt barrier which has been dominating for more than hundred and twenty years is going to be disappeared. Presently, the migration of the marine organisms between the joined seas can occur occasionally at any time without any osmotic problem.