Studies on fossil diatoms from the Gulf of Suez, Egypt

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By

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Dina Mohamed Ali

Abstract

The present study is aimed to investigate diatoms in sediments of the Post Zeit Formation within the northern, middle and southern provinces of the Gulf of Suez, Egypt. The three wells belong to two geological formations, Zaafarana Formation in the north and Ashrafi Formation in the middle and south. Three oil wells were chosen for the accomplishment of this work. Collectively, 166 samples were subjected to examination from the three petroleum wells, 58 samples at different depths were examined in the northern well North October (NO 124-1); 58 samples were also studied from the middle well GS 285-1 and 50 samples were studied from the southern well Shoabali_A9 (SA_A9).Taxonomical and morphological results from the three wells collectively yielded to the identification of 125 diatoms and silicoflagellate taxa, those taxa of paleoecological significance are described, giving their known geological age, their occurrence, distribution and salinity tolerance. From the northern well NO 124-1, 38 taxa were identified. Quantitatively, members of the Class Coscinodiscophyceae were dominant, only 26% of the species identified were autochthonous. Concerning the middle well GS 285-1, a total of 108 taxa were identified from this well. Quantitatively, members of the Class Coscinodiscophyceae were dominant, 42% of the species identified from this well were autochthonous. From the recorded taxa, a hundred and two were newly recorded at this site in the gulf. Finally, the flora of the southern well Shoabali_A9 (SA_A9) was discussed, a total of 39 taxa were identified; thus, this well was considered

the poorest one according to the number of taxa. Quantitatively, members of the Class Coscinodiscophyceae were dominant, only 36% of the species identified are autochthonous. From the previous interpretation, a pursuit of the Gulf of Suez palaeoenvironment from north to south was made possible. A succession of shallow marine-deep fresh water environment in the north, a deep marine in the middle and a shallow fresh water environment in the south is obvious. This illustrates a multi-purpose configuration of the gulf where the center was the core of the marine water body, and the extremities were abruptly occupied by temporary or transgressional section of neighboring fresh water bodies. These results came compatible with the submerging of the northern part of the Gulf of Suez with Alluvial and deltoid sediments in the Miocene, which in turn points to the presence of a fresh water source. From all the identified taxa collected from the three wells, 52% were autochthonous, i.e., have lived at the place of deposition. ***Neodelphineis pelagica*** was recorded for the first time from marine Japanese estuaries as rare and new diatom species in 1982, this species was found commonly in GS 285-1 and is thought to be recognized for the first time in Egypt.

Through the study of the autecology of the identified diatoms, some palaeoecological parameters of the Gulf of Suez were interpreted. It can be assumed that this work is a trial to begin a large-scale configuration and reconstruction of the Egyptian water bodies in the past ages, which can be a magic tool to decipher their future in the light of their past and present.

Keywords: Fossil diatoms, Gulf of Suez, Palaeoecology, Miocene, Pliocene.

Table of Contents

LIST OF TABLES

LIST OF FIGURES