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THE ORIGIN OF MUD IN THE NORTHERN SAFAGA BAY, RED SEA, EGYPT

Stefan MÜLLEGGER & Werner E. PILLER

Institut für Erdwissenschaften, Karl-Franzens-Universität, Graz

The northern bay of Safaga is situated on the west coast of the Red Sea on Egyptian territory and comprises an area of about 45 km^2. The bay represents a mixed carbonate – siliciclastic sedimentary system and is characterized by several facies types in a relatively small area. This is due to a distinct morphology of the sea floor which leads to different water currents and subsequently to a characteristic sediment distribution.

The "West area" (PILLER & PERVESLER, 1989) is dominated by a flat plain, between 30 and 38 m depth. This part of the bay is designated as "mud facies" (PILLER & MANSOUR, 1990).

Carbonates dominate with more than 80% in the mud fractions. Non – carbonate minerals are represented by quartz and feldspar. Carbonate minerals are dominated by Mg – calcite, especially in the mud fractions. This high content may be related to a bioclastic origin, as is supported by the mainly silty grain size composition of mud. To verify these data three sediment samples from the "mud facies" have been used to analyse the composition of mud in that area.

The mud was split into two grain size fractions: 63µm - 45µm, < 45µm. Up to now the fraction 63µm - 45µm has been studied. The composition was determined by point counting under DSM (Digital Scanning Microscope) supported by EDS. For this reason reference samples have been produced by fracturing identified, sand sized grains. For point counting 15 distinguishable categories of grains were used.

In general, the mud mainly consists of fragments of mollusks, foraminifera, aggregate grains as well as quartz (not differentiated between detritus and sponge spicules), echinoderms and soft corals spicules. The content of unidentified grains is approximate 20%.

Dependent on the locality of sampling the composition varies. As expected correlations between facies types, Mg – contents, Sr – contents, water currents and grain categories can be observed. Samples taken close to the margin of the basin show lower concentrations in quartz and non-biogenic components than samples from the centre of the mud basin. Samples close to areas designated as "coralgal – facies" are dominated by mollusks and foraminifera with a high proportion of unidentified grains. No fragments of chlorophyts and corals were identified in the studied fraction. This could be due to the particle size used for these analyses. Other organism groups like bryozoa, ostracoda, crustacea, tunicata, rhodophyta and sponges occur in small numbers in all samples.

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