1-Formation of the upper Cretaceous cherts in northeastern Sinai, Egypt

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Abstract

The Upper Cretaceous cherts in northeast Sinai, Egypt are found as nodules, tabular sheets and continuous beds within the carbonate dominated successions. They occur in the Halal, Wata and Matulla Formations and become a very conspicuous constituent in the Sudr Chalk. The chert framework is typical of all interstratal structures and is of two types: spotted and brecciated forms. The chert is classified into a fossiliferous and nonfossiliferous variety. The first is likely either to form packstone-grainstone fabrics or to form wackestone fabrics. The packstone-grainstone fabric is interpreted as replacing platform carbonate deposits at relatively lower energy but in an oxygenated environment while the wackestone fabric chert replaces low energy deep water carbonates. This Upper Cretaceous silica cycle was dominated by inorganic reactions involving dissolved silica, and there is much evidence of secondary diagenetic silicification. This process would have started in early diagenesis as opal-A, opal-C and opal-CT precipitated from interstitial waters. Ouartz represents the end product of recrystallisation. This transformation from metastable to stable silica phases is explained as a solid-solid diagenetic reaction as emphasised by delta(18)O. The nodular cherts have formed in coastal mixing zones with opal-CT and quartz supersaturation and calcite undersaturation. The source of silica of the deep water cherts cannot be explained by this mixing zone model and needs further study. On the other hand, there is no evidence of deposition of layered amorphous silica in either shallow or deep environments. (C) 1998 Elsevier Science Limited.

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2-LITHOSTRATIGRAPHY AND FACIES DEVELOPMENT OF UPPER CRETACEOUS CARBONATES IN EAST CENTRAL SINAI, EGYPT

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Abstract:
The Upper Cretaceous exposures in east central Sinai ate represented by carbonate-dominated successions interbedding few sandstone, chert, shale and marl horizons. The recognised rock units are correlated with their counterparts commonly used in the Gulf of Suez region and central Sinai including from base to top: the Raha Formation, Abu Qada Formation, Wata Formation, Matulla Formation and the Sudr Chalk.

Twelve limestone microfacies are encountered and are categorised as mudstones (pelmicrite and ostracod micrite), wackestones (pelagic biomicrite and foraminiferal biomicrite), grainstones (foraminiferal biopelsparite and oosparite), boundstones (bindstone and framestone), floatstones (coated-grained biomicrudite, rudist biomicrudite and shelly biomicrudite) and rudstones (shelly biosparudite). The dolostone microfacies include fine-medium crystalline ostracod dolostones and shelly dolostones. These microfacies have been compared with the Standard Micro-facies Types and their depositional environments are discussed.

The encountered litho- and biofacies suggest that the Cenomanian shallow transgressive sea had covered east central Sinai as far south as the Dahab region. By the advent of the Turonian, open marine subtidal conditions prevailed. This was followed by transitional conditions with shoals and tidal bars in the Late Turonian pointing to a regressive phase more pronounced at the southern localities. The rocks of the Matulla Formation were deposited in an oscillating environment of shallow subtidal to intertidal conditions during Coniacian-Santonian. In the late Santonian and during most of the Campanian-Maastrichtian, sedimentation was influenced by open marine conditions with low sedimentation rates; local shallow subtidal regressive events occurred.

Author Keywords: LITHOSTRATIGRAPHY; MICROFACIES; GEOLOGIC HISTORY; SINAI (EGYPT); CENOMANIAN TO MAASTRICHTIAN

KeyWords Plus: SEA-LEVEL CHANGES; ISRAEL; SUCCESSION

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