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MIDDLE TO UPPER CRETACEOUS HIGH FREQUENCY CYCLIC RECORDS ON THE ARABIAN CARBONATE PLATFORM, SE TURKEY; CLIMATIC AND TECTONIC CONTROLS

Yilmaz, I. O[1], Hosgor, I[2] , Mulayim, O[3], Sari, B[4], Simmons, M[5]

[1] Department of Geological Engineering, Middle East Technical University, 06800, Ankara, Turkey,
[2] Çalık Enerji, Oil and Gas Directorate, Söğütözü, Ankara
[3] Turkish Petroleum Company, Cankaya, 06800, Ankara, Turkey
[4] Dokuz Eylul University, 35210 Alsancak , Izmir, Turkey
[5] Halliburton, Abingdon, UK

The Mardin study area, SE Turkey, lies on the northern Arabian Platform. The sedimentology and cyclic nature of the facies along the studied composite sections have been analysed in terms of cyclostratigraphy and sequence stratigraphy. The primary cyclic alternation of facies is meter-scale, and laterally may show variations along the Arabian Platform. The larger-scale cyclic alternations are 10s of meters in scale and can be correlated as generic 3rd order sequences with nearby areas.

Alternations of benthic foraminiferal - algal packstone/wackestone and bioturbated bioclastic wackstone/lime mudstone takes place at the base of small scale cycles. Alternations of bivalve/ostracod wackestone/packstone and lime mudstone with ostracoda or dolomitic limestones/dolostone or fenestral limestone facies lie at the top. At the top of the cycles mud cracks can be occasionally observed. These small-scale cycles can be associated with climate induced sea-level changes. The large-scale cyclic facies variations indicate a shallowing upward trend with mainly bioclastic shallow water platform carbonates at the base and followed by hemi pelagic facies at the top without unconformity and indicate a large-scale control in the background in Cenomanian.

There is a record of drowning of the carbonate platform during the Santonian-Maastrichtian interval in SE Turkey. It indicates a tectonic control leading to sudden subsidence and phosphate deposition take place directly on top of the platform carbonates within the initial pelagic facies. The pelagic carbonate successions display alternations of bioclastic packstones/wackestones and chalky facies or alternations of calciturbidites and chalky facies within the Campanian. The successions are ultimately covered by thick-bedded reefal carbonates incorporating rudists, oysters, other bivalves and bryozoa. This large-scale shallowing upward trend is interpreted as a tectonically-driven sea level change.

Tectonically-controlled sea level changes are thus observed on a large-scale with relatively long duration on the Arabian Plate, however small-scale cycles can represent combined climate/oceanographic/tectono-oceanographic changes.

The global Campanian and Cenomanian/Turonian black shales corresponding to oceanographic events act as marker beds that may help unravel tectonically-driven and eustatically-driven relative sea-level changes.