

Cyclic Carbonate Facies Changes on the Middle to Upper Cenomanian Arabian Carbonate Platform, SE Turkey: An Approach for the Causes of Short- and Long-Term Sea-Level Change

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The studied Cenomanian shallow water platform carbonates of the Derdere Formation lies on the northern Arabian platform in Mardin area, SE Turkey. The sedimentology and cyclic nature of the facies along the studied composite sections have been analysed in terms of cyclostratigraphy. In the lower section, alternations of benthic foraminiferal - algal packstone/wackestone and bioturbated bioclastic wackestone/lime mudstone take place at the base of small scale cycles. Alternations of bivalve/ostracod wackestone/packstone and lime mudstone with ostracoda or dolomitic limestone/dolostone or fenestral limestone facies lie at the top representing a relative shallowing feature in this part of the section. At the top of the cycles mud cracks can be occasionally observed. In the middle part of the lower section, a cross bedded bioclastic tidal channel deposit is recorded. In the upper section, slope to outer ramp carbonates lies at the bottom and characterized by echinoidal-crinoidal bioclastic wackestone to packstone facies. This facies alternates with bivalve packstones which display oriented accumulation of monotaxic bivalve species down dip orientation with an imbricate fabric. Matrix of the bivalve packstone is composed of micrite with planktonic foraminifera and calcispheres. Inside of the shells includes abundant "Favreina" like caprolite fossils and displays a pelloidal grainstone facies. Presence of abundant monotaxic shells infilled by "Favreina" like fossils with orientation has been interpreted that suspension feeding bivalve shells caused an increase in bioaccumulation on the shelves and transported down the slope of the Arabian Platform by a unidirectional flow.

Bioclastic wackestone/packstone facies with crinoids and echinoids including benthic foraminifera, ammonites and ostrea takes place in the middle part of the section representing a relative deepening. Nerinid gastropod, dasyclad algae, benthic foraminifera bearing pelloidal intraclastic wackestone-packstone facies occurs at the top most part of the section representing a relative shallowing. Consequently, oriented bivalve accumulation indicates current controlled transportation. No storm or mass flow evidence was observed. Cyclic carbonate facies changes revealed that collaboration of climate, carbonate production and subsidence played important role on small meter scale sea level changes. However, sea level and tectonics contributed in large scale as alternating shallowing and deepening cycles in 10's meters.