Structural and compositional changes of coral – rudist reefs within a sequence stratigraphic framework in the mixed clastic/carbonate Cardenas Formation (central Mexico)

By

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The Campanian - Maastrichtian Cardenas Formation from central Mexico is an about 1300 m thick sedimentary sequence. It is subdivided into three lithologic members that consist mainly of marls, silt - sandstones, and conglomerates. In the Lower and Upper Member, limestone units containing coral - rudist reefs, which are among the last known to exist worldwide, interlayer the clastic strata. This research analyses distribution and variations in structure and taxonomic composition of the coral - rudist reefs in the Upper Member of the Cardenas Formation. In addition, the microfossil biostratigraphy of associated strata will be evaluated. In combination, these data will allow establishing (i) a sequence stratigraphic framework for the Upper Member of the Cardenas Formation, (ii) a chronology of Late Cretaceous faunal and environmental changes in central Mexico, and (iii) correlation with other rudist - bearing Formations from the Gulf of Mexico and the Caribbean area. First results indicate a superordinate transgressive sea - level trend that includes smaller scaled sequences, which are obscured by episodic inputs of clastic sediments derived from the uplifting Sierra Madre Oriental to the west. The smaller scaled sequences comprise deepening - upward sequences, defined by a shoreface - calcareous algae (restricted lagoon) - coral/rudist (lagoon) - marl (inner shelf) facies transition, and shallowing-upward sequences, defined by a hippuritid (inner shelf) - actaeonellid (sand bar) - coral/rudist (lagoon) facies transition.