

The significance of Cretaceous gastropods abundance in San Juan Raya, Southern Mexico

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The San Juan Raya region is a Lower Cretaceous fossiliferous locality in the southeast of Puebla State, Mexico. It is an important zone for the abundance and variety of fossil fauna, mainly gastropods, pelecypods and corals. Gastropods are the dominant group and the most representative species are the genus *Cerithium*, *Pyrazus* and *Craginia*.

The fossils are found in the San Juan Raya Formation of Aptian age. This unit consists of gray and greenish-gray shale, erratic purple-gray shale and calcareous shale, gray and greenish-gray sandstone and calcareous sandstone of fine to medium grain size. The alternation of shales and calcareous sandstones suggests that the deposition occurred in coastal environmental conditions, near the shoreline covered by shallow and calm water in a lagoon environment. The presence of rudist and coral suggest that the water had a tempered temperature.

Modern marine carbonate sediments accumulate where carbonate producing organisms are abundant and siliciclastic input is low. Such accumulations occur today in two main environments: 1) warm, low-nutrient carbonates (WLN), and 2) cool, high-nutrient carbonates (CHN). There are few

carbonates from warm, high-nutrient carbonates (WHN) environment because these conditions are very rare (Allmon 2007). The WHN depositional environments might have been widespread during the Cretaceous and Paleogene because in these times, the nutrient-rich waters were warmer than they are today; the Cretaceous nutrients fluxes could have been produced by the combination of volcanism, terrestrial runoff and upwelling. Today the accumulations of marine gastropods occur mainly in CHN conditions, they were common in both carbonate and siliciclastic facies in the Cretaceous and Paleogene but occur in the Neogene only in siliciclastic sediments.

Gastropod abundances in the San Juan Raya Formation were founded in siliciclastic rocks from the Early Cretaceous, due to a greenhouse effect the abundant nutrient attributed to the region is the near rift zone.

REFERENCE

Allmon, Waren D. , 2007, Cretaceous Marine Nutrients, Greenhouse Carbonates, and the Abundance of Turritelline Gastropods. *Jour. of Geology*, v. 115, pp. 509-523.