

Evolution of Sedimentary Systems Tracts in the Tarfaya Basin (Moroccan Atlantic Margin) from the Lower Cretaceous to the Present: Interaction of Structural Evolution, Climate and Eustasy

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2D marine seismic reflections data from the Tarfaya Atlantic margin of southern Morocco, interpreted in the light of well logs data, allowed us to define a structural and stratigraphic framework of the Tarfaya basin from the Lower Cretaceous to the Present and to quantify the interplay between the developing structure, sedimentary systems and the resulting sequence stratigraphic architecture.

In the first step of this study, the stratigraphic framework of the area was established by the application of a general seismo- and tectonostratigraphic analysis. We define four main tectonostratigraphic stages: the prerift (Precambrian-Palaeozoic) corresponds to Hercynian deformation, the synrift (Late Triassic-Early Jurassic) characterized by half graben structures which are bounded by NE-SW striking listric normal faults and filled with continentally derived shales and sandstone, the post rift (Upper Jurassic-Upper Cretaceous) marked by the installation of the carbonate platform of the Upper Jurassic which underwent variable subsidence. With erosional base level lowered, thick sequence of continental to marine-deltaic clastic sediments was deposited at the Early Cretaceous period. The Middle and Upper Cretaceous marked by a general transgression of eustatic origin and the inversion of the Tertiary expressed by tectonic instability that is linked to the evolution of the Atlas and Rif belts and interferes with glacio-eustaticity starting in the Oligocene with the Antarctic and Arctic glaciations.