

Geology Evolution of the Atlantic Margin Basins of Morocco

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The Atlantic margin of Morocco extends over some 2.934 km from Cap Spartel in the north to Lagouira in the South. It is one of the oldest passive margins on earth and it is conjugate to the Nova Scotia margin of North America. Because of its key position within the central Atlantic ocean, and its promising hydrocarbon potential it was the object of extensive research programs and industrial exploration studies. The results of these works reveal that, with the exception of the segments adjacent to the Rif and the Atlas mountains where complications due to the Alpine orogeny were superimposed on typical passive margin processes, the Moroccan Atlantic margin shows a broad homogeneity in its geodynamic evolution. This evolution can be subdivided into two main phases: a rifting phase that started in late Triassic to Early Jurassic times, followed by a drifting phase which initiated around 180–170 Ma. In the present work we propose to review the main stratigraphic and structural features that characterize each of these two phases within the Atlantic Moroccan margin as a whole, followed by a geological description of individual offshore and onshore basins that compose this margin starting from north to south. The description is essentially based on regional seismic transects and borehole data.

Syn-rift salt presently forms a widespread diapiric province that extends along the Moroccan Atlantic margin over some 900 km. Its northern edge is offset and overlapped by the Rif- Betic thrust belt, its eastern limit makes an inland incursion into the Essaouira-Agadir onshore basin and its southern edge extends into the Tarfaya-Laayoun basin. Its western limit roughly coincides with the S1 magnetic anomaly. Salt is present in the sections of most onshore and offshore basins and has generally played an important role in their post Triassic tectono-sedimentary evolution. This important role, however, contrasts with the relatively fewer previous works that were solely devoted to salt tectonics with respect to other aspects of the geology of these basins. We propose here to illustrate this role by selected regional reflection seismic transects and to try to understand the areal/temporal distribution of salt in the Atlantic Moroccan basins.