



STRATIGRAPHY AND STRAIN PARTITIONING

ACROSS THE EARLY JURASSIC SOUTH-TETHYAN PALAEOMARGIN

OF THE MOROCCAN HIGH ATLAS (ERRACHIDIA AND RICH DOMAINS)

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Abstract

This paper describes a tectono-stratigraphic model of the synrift evolution of the South-Tethyan palaeomargin of Morocco. The model is constrained by mapping of a set of inverted extensional tilted blocks, by facies analysis of carbonate platform and turbiditic hemipelagic synrift deposits, and by high resolution dating of the Early Jurassic succession. Depositional sequences succession of the High Atlas of Rich vary significantly in thickness, facies and architecture from one tectonic block to another. During the early to transitional rift stage (Sinemurian to Carixian substages), the entire Moroccan High-Atlas was affected by low-rate, normal faulting controlling the

emplacement

of an extensive, low-gradient carbonate and reef platform except in the distal domain of the

margin where hemipelagic deposition related to high-rate faulting prevailed. During the late

Domerian rift climax (*Subnodosus* and *Gibbosus* sub-chronozones), a rapid increase in

accommodation space and block tilting caused by high-rate normal faulting brought about the

localized drowning of the carbonate platform and the development of calciturbidites and of

starved deposits in the northern, distal, domain of the margin. A restricted carbonate platform

persisted in the southern, proximal, domain of the margin. The carbonate platform overlying

the southern, proximal, tilted blocks was drowned in the latest Domerian (*Hawskerense* subchronozone) and earliest Toarcian (*Tenuicostatum* sub-chronozone) late synrift stage by a

eustatic sea-level rise. Our work also shows that temporal strain partitioning and crustal

thinning on the South-Tethyan passive margin was driven by the rapid coalescing (2 my) of

upper crustal, seaward-dipping synsedimentary normal faults with a low-angle, lower crustal

inherited detachment involving the development of 7–15 km fault spacing and associated

tilted blocks.

Key words: High Atlas, Early Jurassic, synrift, stratigraphic partitioning, strain partitioning.