

Kinematic Analysis of the High Atlas in the Tinerhir Area (Southern Morocco): Evidence of a Transpressional Foldthrust Belt

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The Tinerhir region (Southern Morocco) is a key area to study the relationships between the Alpine High Atlas belt and the Cretaceous deposits unconformably overlying the Paleozoic cover at the northern boundary of the West African Craton. Recently, the southern margin of the High Atlas has been interpreted as a top to the south frontal thrust (South Atlas front) bounding a thin-skinned thrust system of Triassic-Jurassic rocks detached from their basement in the frame of a pure compressional deformation.

Our structural geological study focuses on the kinematic analysis of fault systems outcropping along different transects in the Tinerhir area. In this area the overall structure of the Meso-Cenozoic successions consists of south-verging asymmetrical fold systems with sub-vertical axial planes, associated to steeply NNW-dipping faults that are broadly parallel to the fold axes and to the steeply dipping bedding. These faults display down-dip slickenlines, with a top to the SSE sense of movement, associated to widespread oblique or horizontal striations that highlight an important strike-slip component. Paleostress determinations, obtained from faultslip data collected from several measurement sites, indicate the occurrence of strike-slip and compressional tensors, with a quite steady sub-horizontal σ_1 trending NW-SE.

These results suggest a transpressional evolution for the High Atlas southern margin comparable with those of the northern boundary of the High Atlas, whose features of transpressive fault are already recognized, and emphasise the importance of fault-slip analysis to define the geodynamic evolution of orogens.

Key words: fault-slip analysis, fold-thrust belt, transpression, High Atlas, Southern Morocco