Transpressional Evolution of the Variscan Belt in the Tinerhir Area (Eastern Anti-Atlas, Morocco)

Andrea Cerrina Feroni[1], Alessandro Ellero[1], Marco Malusà[2], Giovanni Musumeci[1,3], Giuseppe Ottria[1], and Riccardo Polino[2]
[1] CNR - Istituto di Geoscienze e Georisorse, Via S. Maria 53, I-56126, Pisa, Italy
[2] CNR - Istituto di Geoscienze e Georisorse, Via Valperga Caluso 35, I-10125, Torino, Italy
[3] Dipartimento di Scienze della Terra, Università di Pisa, Via S. Maria 53, I-56126 Pisa, Italy

The Tinerhir region, located in the eastern sector of the Anti-Atlas, represents the southern margin of the Variscan belt of the Moroccan Meseta which is interpreted as a foreland belt consisting of Paleozoic allochtonous units overlying the Saghro Precambrian basement along thrust faults gently dipping to the north.

New field and structural data from the Paleozoic sequence exposed on the northern side of the Saghro inlier unravel a polyphase deformation history developed during the Late Carboniferous under anchizonal metamorphic conditions. This deformation history is sealed by Late Cretaceous deposits unconformably overlying the Paleozoic belt. The first deformation phase (D1) is marked by tight to isoclinal folds associated to a slaty cleavage (S1) well developed in the politic formations. The syn-D1 tectonic contacts between allochthonous units consist of top-to-the SE low-angle thrusts with down-dip to oblique slickenlines. The second deformation phase (D2) is characterized by E-W striking upright open folds developed from decametre to hectometre scale, gently overturned toward south, with an upright crenulation to slaty cleavage axial-plane foliation (S2). D1 tectonic contacts are in turn reactivated by D2 fault systems. These latter systems have a N70°- 80°E strike, dip steeply to the north, and bear oblique to down-dip slickenlines. Kinematic analysis performed on thrust surfaces and high-angle faults indicates that reverse slip was coupled with dextral strike-slip movement.

These data point to a polyphase transpressional deformation of Variscan age in the eastern Anti-Atlas, characterized by southward folding and thrusting coupled with dextral strike-slip, as already documented for other sectors of the southern margin of Moroccan Meseta.

Key words: Variscan belt, polyphase deformation, transpression, Southern Morocco