Construction of a Balanced Cross section through the Tell and Atlas domains of Eastern Algeria

Bernard Verbeken

Candidate for MSc. Reservoir Geology and Geophysics

Universitat de Barcelona & Universitat Autonoma de Barcelona

Abstract

In the frame of a wider project dedicated to the Atlas System of North Africa, we present a 327 km long generalized balanced cross-section in Eastern Algeria. This section starts in the external part of the Tell in the north and reaches the Sahara Platform to the south. It has been constructed with the help of the Sismage © software, using in-house TOTAL subsurface data (seismic, wells), available geological maps and scientific literature. The study allows us to illustrate a complete cross-section of a wide inverted rift basin. The following points are emphasized: (1) the persistence of extensional deformation up to the end of the Early Cretaceous; (2) the importance of salt activity during the Mesozoic sedimentation and (3) the existence of two periods of strong inversions (Middle-Late Eocene and Miocene called Atlas I et II events) with in between a relative tectonic quiescence. Southward, the South Atlas Front marks the transition with the poorly deformed Sahara Platform. Northward is the Tell System characterized by the emplacement of a submarine accretionary wedge between the two Atlas events. Finally the petroleum consequences of the tectonic scenario are assessed. Further work is required to complete the cross-section northward up to the Mediterranean coast and to restore the initial geometry.

Keywords: Eastern Algeria, Mole of Constantine, Tell, Atlas, South Atlas Front, Regional Balanced Cross section.