

Salt tectonics in the deepwater of Atlantic Morocco

Haddou Jabour¹ and Gabor Tari²

1 ONHYM, Rabat, Morocco, 34, Ave. Al-Fadila,
Rabat 10050, Morocco

2 OMV Exploration and Production
Trabrennstrasse 6-8
Vienna 1020, Austria

The salt basin of Atlantic Morocco has the dimensions of about 100 km width on average and almost 1000 km in length. As opposed to the Aptian salt basins of the South Atlantic, in the Central Atlantic the salt was deposited during the last stage of rifting prior to the continental breakup in the Uppermost Triassic and Lower Jurassic.

The Moroccan salt basin was subdivided into distinct segments based on the most characteristic salt-related structural features. In the southernmost end of the Moroccan salt basin, in the Cap Juby area, there are only a few salt pillows and diapiric salt walls outboard of the Jurassic shelf margin. Northwards, more active diapirs dominate the rest of the Tarfaya and Souss (Agadir) Basins. The “salt-rich” Ras Tafelney Plateau and offshore Essaouira has the most advanced salt structures offshore Morocco with a large number of allochthonous salt sheets and canopies prominent salt nappe extending the salt basin significantly beyond the depositional limit of the salt. The basinward edge of the salt basin in this Ras Tafelney and Safi segment of the Moroccan margin is clearly allochthonous, with a prominent toe-thrust zone suggesting at least 15–20 km of basinward movement from the autochthonous salt basin. In the offshore Doukkala Basin the continuation of the salt nappe at the deepwater basinward edge of the salt basin is poorly constrained due to the general lack of seismic data, but the amount of overall salt beneath the slope appears to be decreasing as there are fewer salt tongues and diapirs. The Mazagan Plateau has almost no salt beneath it but numerous diapirs were documented outboard of it in the ultra-deepwater). The offshore Casablanca area to the south of the pre-Rifean nappe system has some large salt walls and diapirs. The basinward extent of this salt basin segment is also unconstrained due to lack of seismic data coverage. However, the salt basin clearly projects to the north beneath the pre-Rifean nappe system.