

## **The Tectono-Stratigraphic Development of the Jahama Platform Margin and Western Sirt Trough, Offshore Libya**

**Reem Aboushoug<sup>1</sup>, David R. Boote<sup>2</sup>, and Agust Gudmundsson<sup>1</sup>**

<sup>1</sup>Earth Sciences Department, Royal Holloway University of London, Egham, Surrey, United Kingdom.

<sup>2</sup>DavidBoote Consulting Ltd., London, United Kingdom.

### **ABSTRACT**

The offshore Jahama Platform and the adjacent western Sirt Trough form part of the Sirt 'Embayment', extending from the onshore Sirt rift province to the lower Sirt slope and Ionian abyssal plain in the north. Lightly explored so far, the Sirt Embayment has very significant exploration potential for large reserves of oil and gas. For example, Agip tested oil in Aptian and Jurassic carbonates, while gas has been proven in mid-Cretaceous, transgressive sandstone. Repsol has found both oil and gas in some of its wells, including the significant Hess gas discovery on the Jahama Platform margin. The offshore Sirt may thus prove to be a prolific petroleum province. Like the onshore Sirt, the offshore trough and bounding platform were formed by Early to mid-Cretaceous rifting. The rift topography was subsequently infilled and buried during the later Cretaceous and early Cenozoic. At some time during the late Paleocene the Jahama Platform was partially unroofed and Eocene marls now overlie Cenomanian shallow water carbonates. Erosion appears to be limited to the platform margin with a more complete section preserved further inboard. This tectonic event can be correlated with uplift along the Jifarah Arch to the west and Cyrenaica Platform to the east and may be related to a Syrian Arc compressional episode in the Eastern Mediterranean. Rapid subsidence of the Sirt Trough is recorded by overlapping Eocene fill sequence and burial during the Oligocene when clastic sequences prograded far to the north, funnelling sandstones into the offshore. Further structural readjustment/inversion occurred during the Oligocene and early Miocene when most of western Libya was uplifted and partially unroofed. This appears to have triggered extensive sliding and slumping offshore. Messinian drawdown of the Mediterranean is reflected by incised canyon development linking back to the Sahabi canyon system onshore and deposition of lowstand evaporites further outboard with deep water Plio-Pleistocene shales above. Projections from the onshore suggest the Sirt-Rachmet shale extends into the offshore with possible source facies in the Eocene. Reservoir targets include mid-Cretaceous shoal water carbonate/reefs and Oligocene- Miocene turbidite sandstones.