

## **Gravity Modelling in a Complex Rift Basin, Red Sea and Gulf of Aden**

Pedro Baptista<sup>1</sup>, Ricardo Bertolotti<sup>1</sup>, Alastair Beach<sup>1</sup>, John Aitken<sup>1</sup>, Adnan O. Bu Fateem<sup>1</sup>

<sup>1</sup>Exploration, Mubadala Petroleum, Abu Dhabi, UNITED ARAB EMIRATES

### **ABSTRACT**

Crustal thickness and the identification of the Ocean-Continent Boundary (OCB) has important implications for the location of reservoir and source rocks and basin modelling in terms of the proper determination of heat flow, maturation analysis and hydrocarbon migration pathways. In extensional settings, the position of the OCB allows estimation of the degree of extension and hence basin evolution. The Red Sea is a young and failed rift system, that opened from the south to the north with the extent of continental crust uncertain. The presence of thick salt further complicates gravity modelling. Five gravity transects were modelled:

Gulf of Aden, where there is well-delimited oceanic crust and the position of the OCB is, more or less, known, but salt is absent, Southern Red Sea, where oceanic crust is expected and salt is present, Three transects through the northern red Sea where salt is thick and it is uncertain whether oceanic crust is present. Comparison of the modelling results from the known to the unknown, improved the understanding of the position of the OCB and crustal thickness and, despite the uncertainties, has had a significant positive impact on the prospectivity of the Red Sea.