

## **Crustal Structure of the Moroccan Margin from Wide-Angle and Reflection Seismic Data**

**F. Klingelhoefer<sup>1</sup>, D. Aslanian<sup>1</sup>, J.-L. Olivet<sup>1</sup>, M. Sahabi<sup>2</sup>, J. Perrot<sup>3</sup>, L. Geli<sup>1</sup>, H. Nouze<sup>1</sup>, I. Contrucci<sup>1</sup>, J.-P. Rehault<sup>3</sup>, and P. Unternehr<sup>4</sup>**

<sup>1</sup> Ifremer, France

<sup>2</sup> Univ. El Jadida

<sup>3</sup> Univ. Brest

<sup>4</sup> Total

Two deep seismic cruises were conducted as joint projects between Ifremer, Total, and the Universities of Brest, El Jadida and Lisbon to constrain the deep crustal structure of the Moroccan continental margin. During the SISMAR cruise four combined wide-angle and reflection seismic profiles were acquired on the northern Moroccan passive margin. Two profiles were shot parallel and two profiles perpendicular to the margin. During the DAKHLA cruise, a total 1500 km of seismic reflection and wide-angle profiles were acquired off the southern Moroccan margin.

Modelling of the reflection and wide-angle seismic data from the SISMAR survey images the thick sedimentary cover of the margin, which is locally perturbed by salt tectonics. The sedimentary basin thickens from 1.5 km on normal oceanic crust to a maximum thickness of 6 km at the base of the continental slope. The crust thins from 35 km underneath the continent to about 7 km at the western end of the profile. Modelling of the seismic data from the DAKHLA cruise reveals a 10 km deep sedimentary basin including two high velocity carbonate layers. The crustal thinning from 30 km at the continental part to 7 km in the oceanic part occurs over a 100 km wide zone. Oceanic crust east of the M25 magnetic anomaly displays higher velocities in layer 3 than west of the magnetic anomaly. This change in velocity suggests a possible link to changes in accretionary processes of the oceanic crust. A comparison of wide-angle models from the northern and southern experiment show similar continental crustal thickness and structure in both regions, but a wider ocean – continent transition zone in the south.

Keywords: Crustal Structure; Moroccan Margin; Seismic data;