



Deep structure of the Algerian margin offshore Great Kabylie: Preliminary results of an offshore-onshore seismic profile (SPIRAL campaign)

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In October-November 2009 the Algerian-French SPIRAL research program (Sismique Profonde et Investigation Régionale du Nord de l'ALgérie) was conducted onboard the R/V Atalante in order to understand the deep structure and tectonic history of the Algerian Margin using multichannel and wide-angle seismic data. An extensive dataset was acquired along five regional transects off Algeria, from Arzew Bay to the west, to Annaba to the east. The profiles range from 80 to 180 km long and around 40 ocean-bottom seismometers were deployed on each profile. All profiles were extended on land up to 125 km by land-stations to better constrain the structure of the margin and the nature of the ocean-continent transition zone.

We present the preliminary results from modeling of deep and superficial structures in the central Algerian margin, more precisely in the region of the Great Kabylie where a N-S transect of combined wide-angle data using a set of 40 OBS (ocean bottom seismometer) and 24 on-land seismological stations and reflection seismic data was acquired. The profile with a total length of about 260 km (140 km offshore and approximately 124 km onshore), crosses from the north to south the Algeria-Provence Basin, the central Algerian Margin and onshore the geological unit of the Great Kabylie that represents the Kabylides block and the transitional zone between the internal zone (Kabylides) and the external zone in the central Algeria. The network (OBS and seismological stations), recorded 1031 low frequency air gun shots in order to ensure good penetration in the crust. Travel time tomography of first arrivals time of OBS data has yielded a preliminary model of P wave velocities along the profile. In the oceanic domain, a relatively thin crust of about 5 km thickness was imaged overlying a mantle characterized by seismic velocities of about 8 km/s, and covered by a thin sedimentary layer of about 2 km thickness. For the study of the sedimentary cover near the margin several MCS profiles were acquired in this region during the Spiral survey and previously by the Maradja cruise. This data sets allows to image reactivation of the Algerian Margin in this region.