Sequence stratigraphy and Plio-Pleistocene tectonics of the Rharb continental shelf

Mohamed SAHABI*, Pascal LE ROY**, Nissrine MAAD *, Marc André GUTSCHER**, Mohamed. DAKKI***, Mohamed HSSAIN***, Lahcen AIT BRAHIM****, Nadia M'HAMMDI*****, Alain TRENTESEAUX******, Brigitte VAN VLIET LANOE**

*Laboratoire Géosciences Marines, Département des Sciences de la Terre, Faculté des Sciences d'El Jadida, 24 000 El Jadida, Morocco
**Université Européenne de Bretagne, Université de Brest, CNRS, UMR 6538 Domaines Océaniques, Institut Universitaire Européen de la Mer, Place Copernic, 29280 Plouzané, leroy@univ-brest.fr
***ONHYM, Rabat Agdal, Morocco
****Faculté des Sciences de Rabat, Université Mohamed V, Avenue Ibn Batouta B.P. 1014, Rabat-Agdal, Morocco
***** Institut Scientifique, Av. Ibn Batouta, BP 703, 10106, Rabat Agdal, Morocco
******Université Sc. & Tech Lille, UFR Sc. de la Terre. Sédimentologie et Geodynamique. UMR 8577 CNRS. SN5, 59655 Villeneuve D'Asq Cedex, France.

The Atlantic NW Moroccan Rharb continental shelf defines the Western termination of the Southern Rifan corridor and is a part of a foreland basin bounding by the Rifan Cordillera to the North and by the Mesetan domain to the South. Its deep structure is characterized by the termination of an accretionary wedge which thins to the west and to the south and occupies the central Gulf of Cadiz. It emplacement results in the development of the Rif foreland basin during the Neogene and it is followed by a well Plio-pleistocene progradational wedge fed by sediments carried by the Oued Sebou corresponding to the most important river of the Moroccan atlantic coast. The Rharb continental shelf provides consequently an interesting geological setting to study the interactions between eustasy and tectonics and the driving mechanisms controlling the stratigraphic patterns of this offshore foreland basin. The stratal architecture of the corresponding Pleistocene deposits was analyzed from high resolution seismic data acquired during the two surveys performed in 2003 and 2007 and completed by interpretation of industrial seismic lines provided by the morrocan Office National des Hydrocarbures et des Mines (ONHYM). The detailed interpretation of seismic lines and isochron maps of the Upper Pleistocene seismic units calibrated with the Log data and completed by micropaleontologic analysis of cuttings bring evidence of the tectonic control of the offshore Rharb basin infilling. The latitudinal contrast of the geometry of system tracts is drive by a differential distribution of accomodation in relation to the location of the flexural forebulge at the southern edge of the basin and to the reactivation of the offshore extension of E-W trending Lalla Zahra Ridge located at the termination of the Rif front. Results also show the progressive shift of the compound buried paleo-valleys of the Oued Sebou.