



## **Kinematics of the Zagros Fold-Thrust Belt (Iran)**

**D. Frizon de Lamotte**(1), P. Leturmy(1), J. Letouzey(2), S. Sherkati(3), M. Molinaro(1,4)

(1) Université de Cergy-Pontoise (CNRS UMR 7072), France, (2) IFP, Rueil-Malmaison, France, (3) NIOC, Tehran, Iran, (4) now at Shell, The Netherlands (dfrizon@u-cergy.fr)

The Zagros orogen results from a variety of geodynamic processes including subduction, obduction and finally collision during the Cenozoic. During this last stage, which is still active, the deformation propagated in the Arabian margin and platform leading to the development of the Zagros Fold-Thrust Belt (ZFTB).

Extensive field work and interpretation of subsurface data allow us to present six generalized cross-sections across the Central and Eastern ZFTB. The variation of the structural style both horizontally and vertically is controlled by the mechanical stratigraphy and, in particular, by the presence (or not) of intermediate décollements within the sedimentary pile. Restoration of the cross-sections show that the shortening is of the same order from one section to the other. However, it appears to be unequally distributed, suggesting variations in the basal décollement shear strength.

On this basis, fold kinematics is discussed using cross-cutting relationships and structural style variation as indicators of the sequence of deformation. The net result is that two main phases of deformation must be separated in the Mio-Pliocene tectonic evolution of the ZFTB: a Mio-Pliocene thin-skinned phase followed by a Pliocene to recent thick-skinned phase, which is currently expressed by the seismicity within the basement.

Finally, we will show how the geometry at depth of the Zagros orogen, characterized by a thick crust but a relatively thin lithosphere, is in good agreement with the geodynamic scenario deduced from the analysis of surface and subsurface data in the ZFTB.