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Bloc tectonic rotations recorded in the Neogene and Quaternary magmatic rocks from Northwestern Algeria: preliminary paleomagnetic results.

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The seismic activity of the Western Mediterranean area is partly concentrated in northern Africa, particularly in northern Algeria, as it was shown by the strong earthquakes of Zemmouri 21 May 2003 Mw=6.9 and the El Asnam 10 October 1980 Ms= 7.3. This seismicity is due to the convergence between Africa and Eurasia plates since the Oligocene. This convergence involves a tectonic transpression with N-S to NNW-SSE shortening direction, which is expressed by active deformation along the plate boundary.
Along the Tellian Atlas (Northern Algeria), active structures define NE-SW trending folds and NE-SW sinistral transpressive faults affecting the intermountain and coastal Neogene to Quaternary sedimentary basins (e.g. Cheliff and Mitidja Plioquaternary intramontaneous basins, ...). The NE-SW reverse active faults are coupled with NW-SE to E-W trending strike-slip deep faults. The active deformation in northern Algeria can be explained by a kinematics model of blocks rotation: the transpressive tectonics with NNW-SSE direction of convergence defines NE-SW oriented blocks, which have been subjected to clockwise rotation.
In north Algeria, paleomagnetic studies were carried out in the central area, on Neogene sedimentary and magmatic formations (Derder et al, 2009, 2011; 2013). They pointed out tectonic rotation of large blocks, in agreement with the kinematic model. Narrow zones represent important shear zone with strong rotation of smaller blocks (Derder et al., 2013).
A new paleomagnetic study was conducted on the recent magmatic rocks outcropping in the Northwestern Algeria, in order to validate this model on a regional scale. The study is still in progress and the preliminary results show presence of systematic clockwise blocks rotation.
These results confirm that the Africa-Europe convergence is partly accommodated in northern Africa by blocks rotations. They highlight that rotations are not homogeneous in north Algeria and thus the importance of future works in this area.

M.E.M. DERDER, B. HENRY, H. DJELLIT, C. DORBATH, H. YMEL, S. GHARBI, M. GUEMACHE AND A. ABTOUT : Bloc rotation tectonics in northern Algeria revealed by paleomagnetic investigations in the "Mitidja" basin (Algiers area, Algeria), "International Earthquake Symposium Kocaeli 2009". 17-19 August 2009
M.E.M., DERDER, B. HENRY, M. AMENNA, B. BAYOU, S. MAOUCHE, J. BESSE,
A. ABTOUT, H. BOUKERBOUT, M. BESSEDIK, S. BOUROUIS AND M. AYACHE : "Tectonic Evolution of the Active "Chelif" Basin (Northern Algeria) from Paleomagnetic and Magnetic Fabric Investigations", in " New Frontiers in Tectonic Research at the Midst of Plate Convergence "Intech Publisher" book, pp: 3-26, Intech Publisher, ISBN 978-953-307-594-5, 2011.
M.E.M. DERDER, B. HENRY, S. MAOUCHE, B. BAYOU ,M. AMENNA, J. BESSE, M. BESSEDIK, D. BELHAI AND M. AYACHE: Transpressive tectonics along a major E-W crustal structure on the Algerian continental margin: blocks rotations revealed by a paleomagnetic analysis. Tectonophysics, 593 (2013) 183–192