



Evidence for bloc rotation tectonics in the seismic Cheliff basin (northern Algeria) from paleomagnetic investigations

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The seismic activity in the Western Mediterranean area is mainly concentrated in northern Africa, particularly in northern Algeria, as it was shown by the 21 May 2003 Boumerdes and the 10 October 1980 El Asnam earthquakes (of moment magnitudes $M_w = 6.9$, and $M_s = 7.3$ respectively), which were among the strongest recent ones recorded in the western Mediterranean area. This seismicity is due to the convergence between Africa and Eurasia plates since at least the Oligocene. This convergence involves a transpression tectonic with N-S to NNW-SSE direction of shortening, which is expressed by active deformations along the boundary of these two plates.

In Algeria, the seismicity is focused in a coastal zone (the Tell Atlas) in the northern part of the country. Active structures define there NE-SW trending folds and NE-SW sinistral transpressive faults, which affect the intermountain and coastal basins of Neogene to Quaternary age (e.g. "Cheliff" basin, "Mitidja" basin). These reverse faults are coupled with NW-SE to E-W trending strike-slip deep faults. The active deformation in northern Algeria could thus be explained by a kinematic model of bloc rotation: the transpression tectonics with NNW-SSE direction of convergence defines NE-SW oriented blocs, which have been possibly subjected to clockwise rotation. The aim of this study is to look for such blocks rotation in the "Cheliff" basin (northern Algeria), by using the paleomagnetic tool. A paleomagnetic study has been thus conducted on the middle Miocene, Tortonian, Messinian and Pliocene sedimentary rocks cropping out on the eastern part of this basin. The study is still in progress, but despite the very weak intensity of the Natural Remanent Magnetization (NRM) measured on the samples, and the frequently observed magnetization instability during the thermal demagnetization, the preliminary results show that clockwise rotations have affected different sites of the studied area. The magnitude of these rotations varies depending on the area and the ages of the studied geological formations.

Such a result, which has to be established in other areas of the "Cheliff" basin, confirms that the deformation related to the convergence between the Africa and Eurasia plates is partly accommodated in northern Africa by blocks rotations movements.