



Stress field variations along the Maghreb region derived from inversion of fault plane solutions

Farida Ousadou (1), Louis Dorbath (2), abdelhakim Ayadi (1), Catherine Dorbath (2), and Sofiane Gharbi (1)

(1) Centre de Recherche en Astronomie Astrophysique et Géophysique (CRAAG), Bouzareah, 16340, Alger, Algérie, (2) Institut de Physique du Globe de Strasbourg, UMR 7516, CNRS. Université de Strasbourg, 5, rue Descartes, 67084 Strasbourg Cedex, France

The analysis of the stress state along the Maghreb region is made on the basis of the inversion of focal solutions. We have inverted the main shock and aftershock focal mechanisms of the strongest seismic events that occurred in five seismogenic zones from west to east : Al Hoceima (2004), Cheliff (1980), Tipasa-Chenoua (1989), Zemmouri (2003) and Constantine (1985). Most of the focal mechanisms of the aftershock sequences have been constructed within this study. Compressive stress regime is observed in the central part of Algeria between Cheliff and Zemmouri. On both edges of the Maghreb region, the stress regime becomes strike-slip in Constantine region and in the Moroccan Rif. These different regimes seem to be linked to the free-edge effect (Ionian slab subduction) and to the dynamics of the Alboran Sea in the eastern and western part of the study area respectively. The sigma1 directions experience an anticlockwise rotation of about 20° from eastern to central Algeria. We observe that the difference between the direction of sigma1 and the direction of convergence decreases towards the west. In central Algeria, where the collision is not perturbated by edge effects, both directions are the closest.