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Stress field in the Western part of Africa-Eurasia boundary from the Azores to Tunisian Atlas.

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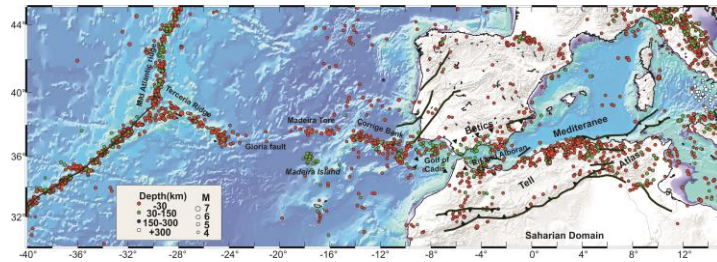
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The Africa-Eurasia plate boundary displays, a transition from simple deformation at the Azores triple junction in the Atlantic ocean to a complex and deformed zone in Atlas mountains in Morocco, Algeria and Tunisia. The plate boundary is well delimited from the Azores Islands, to Strait of Gibraltar and become diffuse in the Maghreb area. Although most earthquakes along this plate boundary are shallow and generally have magnitudes less than 5.5, many devastating earthquakes occurred in this region such those of: Mw 7.1, 08th May 1939 (Santa Maria Island), Mw 8.2, 25th November 1941 (mid-Atlantic ridge), Ms 8.0, 25th February 1969 (mid-Atlantic ridge), Mw 7.3, 10th October 1980, (El Asnam, Algeria); Mw 6.4 21st May 2003 (Zemmouri, Algeria) (Figure1) [1].

Most of the studies concluded to a convergence movement between the Africa and Eurasia in the NW-SE direction with anticlockwise rotation. Moreover, the general stress regime shows extension in the Azores region, right-lateral strike slip motion in the Gibraltar strait and Alboran Sea, and compression in the Maghreb Area[2].



The aim of this work is to present a new insight of the tectonic stress regime along the plate boundary zone derived from the orientation of principal stress axes (σ_1 ; σ_2 , σ_3) of the Western Mediterranean from the Azores to Tunisia plate boundary zone, calculated using focal mechanism parameters inversion.

In this study we have used Michael's method to invert our focal mechanisms [3]

Figure 1: seismicity of the western Mediterranean region.

References:

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- [2] Ousadou F. et al., (2014) Stress field variations along the Maghreb region derived from inversion of major seismic crisis fault plan solutions, *Tectonophysics*. DOI:10.1016/j.tecto.2014.06.017.
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