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Seismotectonic map and geodynamic evolution in Northwest Africa (Maghreb region and Western Mediterranean)

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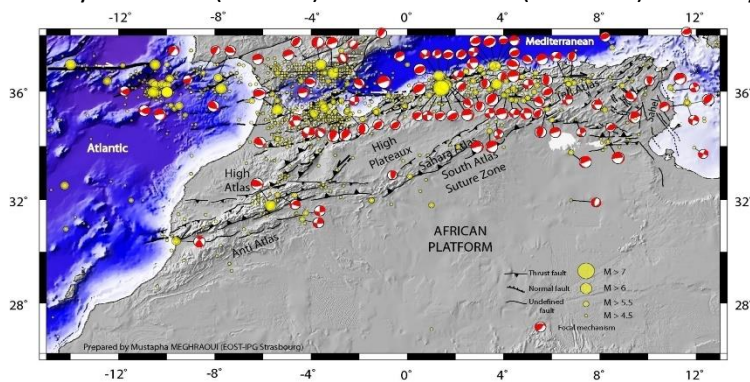
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Seismotectonic studies play a key role in the assessment of seismic hazard in earthquake prone areas. Part of the western Mediterranean region, the Maghreb area is one of the most active regions demonstrated by the large seismic episodes reported in seismic catalogues and research studies. The Maghreb comprising Algeria, Morocco and Tunisia experienced during the last decades large to moderate earthquakes such as those of Agadir (Morocco) February 29th 1960 (Ms 5.9), El Asnam (Algeria) October 10th 1980 (Ms 7.3), Al Hoceima (Morocco) May 26th 1994 (Mw 6.0), Zemmouri (Algeria) May 21st 2003 (Mw 6.8) and Al Hoceima (Morocco) February 24th 2004 (Ms 6.4) [1], [2].



Our aim is to present a detailed seismotectonic study of the region and its related geodynamic evolution based on tectonic and seismic activity, recent GPS observations, and stress tensor solutions derived from focal mechanisms, geological observations and moment tensor inversion. The seismotectonic map summarizes the main tectonic features and updated seismological information [3]. This map (Fig.1) shows that the

Maghreb area is a region where significant tectonic activity induced a pronounced crustal deformation along the plate boundary between Africa and Eurasia.

Figure 1: Seismotectonic map of Northwest Africa as prepared in the frame of the IGCP-601 (UNESCO-IUGS) project.

Several lineaments were drawn up in different areas: The Rif, the high and middle Atlas (Morocco), the Tell Atlas (Algeria), and the Tunisian Atlas. The geodynamic evolution of the Mediterranean area is complex due to the existence of various tectonic systems [4]. However, in the Ibero-Maghrebian area, the collision between the African and Eurasian plates controls the regional geodynamics with convergence movement since the lower Cenozoic. The western section of the Africa-Eurasia plate boundary starts from the Azores triple junction and crosses the Maghreb regions until Sicily.

References:

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