

New Sismotectonic Zoning of Northern Morocco

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In this work, a new sismotectonic zoning of the North of Morocco is proposed. It is based on a new database which includes recent work (some affirmation where questionable) in the fields:

- Geology (active faults, travel rates, geometrical characteristics, chronology of the various recent tectonic phases).

- Geophysics (instrumental and historical seismicity, focal mechanisms, nature crust).

- As well as the geodynamic context of the convergence of the plates Africa-Europe in the area going from the Atlantic Ocean to the Mediterranean sea passing by the Straits of Gibraltar.

New zoning sismotectonic suggested is not limited to the borders of the north of Morocco. It takes into account all the seismic sources (from 100 to 400 km) able to generate strong earthquakes destroying purposes on Morocco, such that of Lisbon in 1755 on the level of the transforming fault Azores- Gibraltar.

New catalogues of the historical seismicity from 1045 to 2005 (Peláez and Al 2006), and instrumental from 1900 to 2005 (Tadili and Ait Brahim 2006) as well as active faults (Ait Brahim 2006) were elaborated. The most influential parameters having effects on the definition of the characteristics of the source areas were predetermined with an acceptable precision.

New elaborate zoning that includes 12 sismotectonic zones, each one corresponding to a volume of the earth's crust, were analyzed and interpreted. The data were used to determine its static and dynamic states. Each sismotectonic zone presents homogeneity of the potential sismogene and its mode of deformation obtained with using the data on the seismicity, the strain and the stresses. For the zones made up of faults, we specified each time, the geometrical characteristics, the chronology of the various motions corresponding to the succesives tectonic episodes and the associated seismicity and the associated seismicity.

This new zoning will be of a great contribution for the future probabilistic studies for the definition of the seismic risk and the determination of accelerations of the ground in the north of Morocco.