

Contribution of Spatial Geodesy in the Seismic Risk Study

Aicha Derkaoui and Messaoud Hacini (Algeria)

Key words: Deformation measurement; Positioning; Risk management

SUMMARY

In the Mediterranean region, African and Eurasian plaques clash. The plate boundary associated with this convergence corresponds to a deformation zone. This deformation of the region is associated with seismicity that affects a number of countries.

In northern Algeria, seismic activity resulting from this convergence is mainly concentrated in the Tellian range, where moderate to strong events have occurred. The most active region is the coastal part. Seismicity in northern Algeria is therefore rooted in the geodynamic context of the western Mediterranean region.

The importance of the northern zone of Algeria seismicity, attested by historical documents makes it imperative to better know the seismic hazard and to study the kinematics as well as the tectonic deformation in this area, we used the tool from space geodesy: GPS, which has become an irreplaceable tool today because of the surface it can cover and the precision it can achieve for geodynamic and seismic deformation studies.

Spatial geodesy measurements make possible to quantify the Earth's surface deformation with accuracy of the order of mm / year. These measurements tell us about the physical processes responsible for these movements. In particular, it is for the moment the only observations which make it possible to study in a coherent way the deformations from the scale of the large tectonic plates (1000 km) up to the scale of the faults (10 km).

The results of this research associated with those provided by the other disciplines of earth sciences including seismology will be used to better understand the distribution of the deformation and to quantify it. And in a second time, this information can be used to evaluate the seismic

risk.

Key words: GPS, seismic hazard, tectonic plates, Geoid.

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