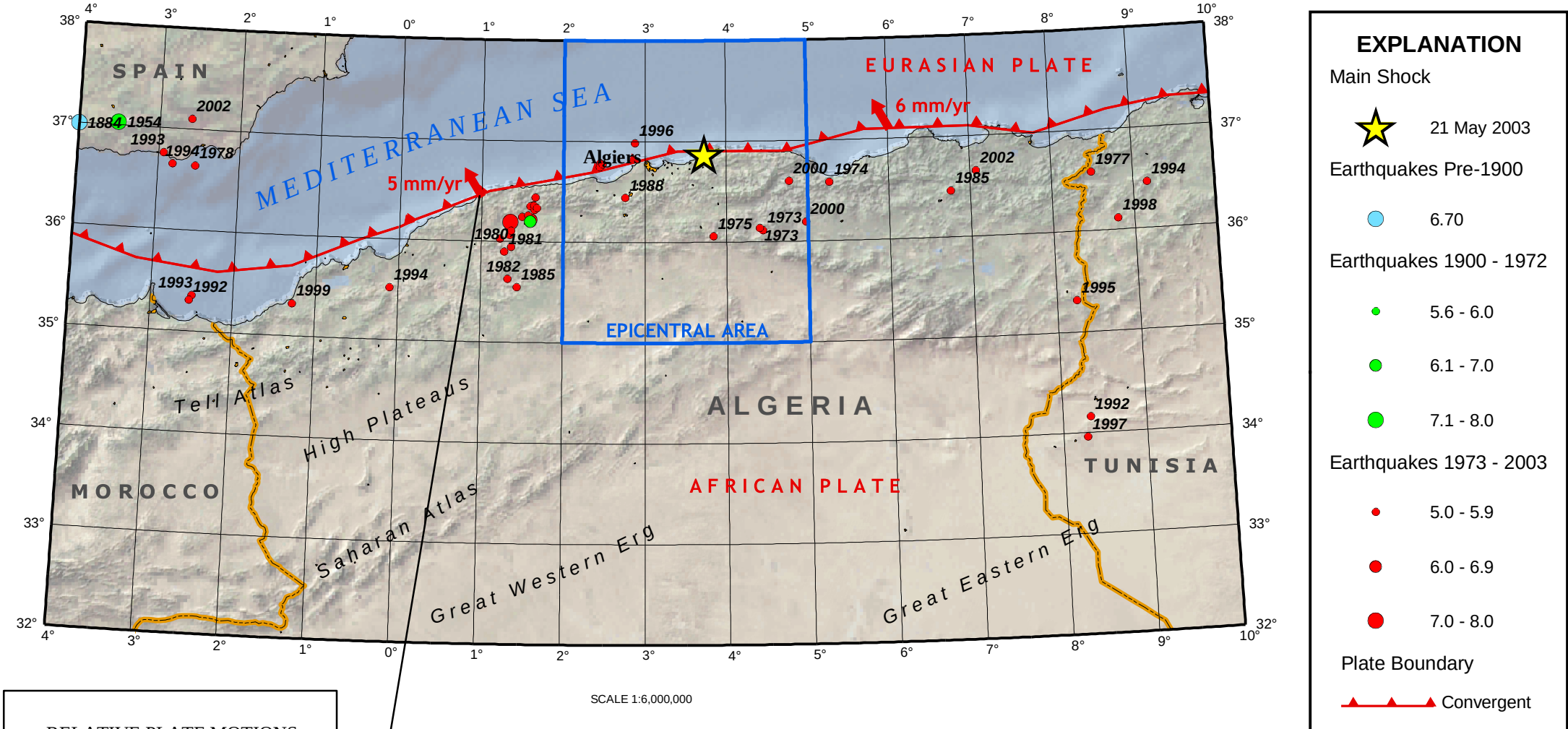


M6.8 Boumerdes, Algeria Earthquake of 21 May 2003

Plate Tectonic Setting



RELATIVE PLATE MOTIONS

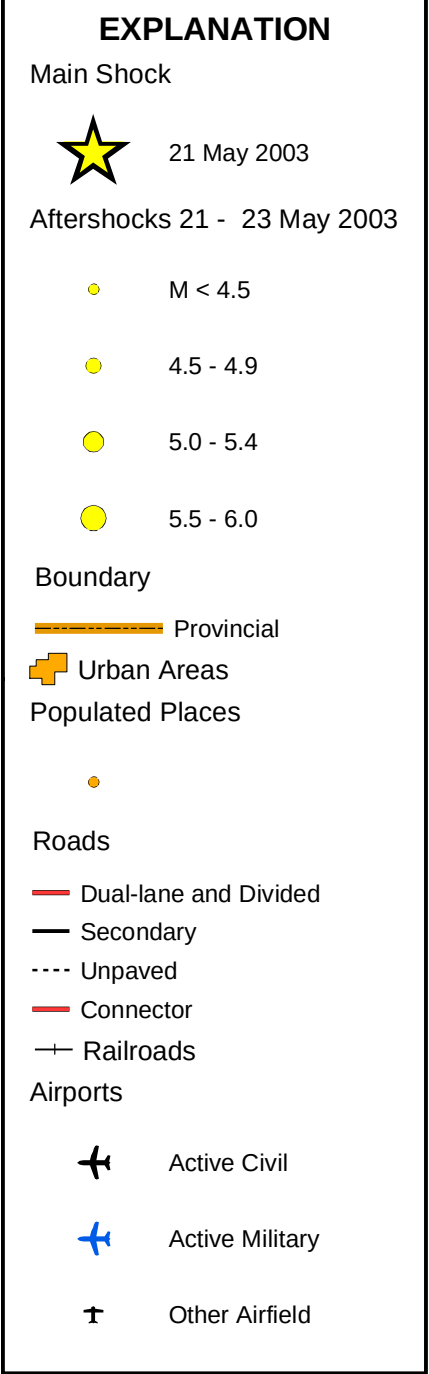
The relative motion of adjacent tectonic plates is depicted on the map by short vectors located at selected locations on the plate boundary. In this presentation, one plate is assumed to be rigid and fixed. The vector therefore represents the direction of the moving plate relative to the fixed plate. The rate of relative motion is labelled next to the vector.

The components of the vector perpendicular and parallel to the plate margin approximate convergent/divergent and transverse direction of motion between the plates, respectively. As viewed from the fixed plate, an inward directed component suggests convergence at and near the plate boundary that may be expressed as crustal folding, uplift, thrust faulting, or plate subduction. Similarly, an outward directed component suggests plate divergence such as would be expected at a zone of crustal spreading. Transcurrent or transform faulting would be expected when the predominant vector component is parallel to the plate margin.

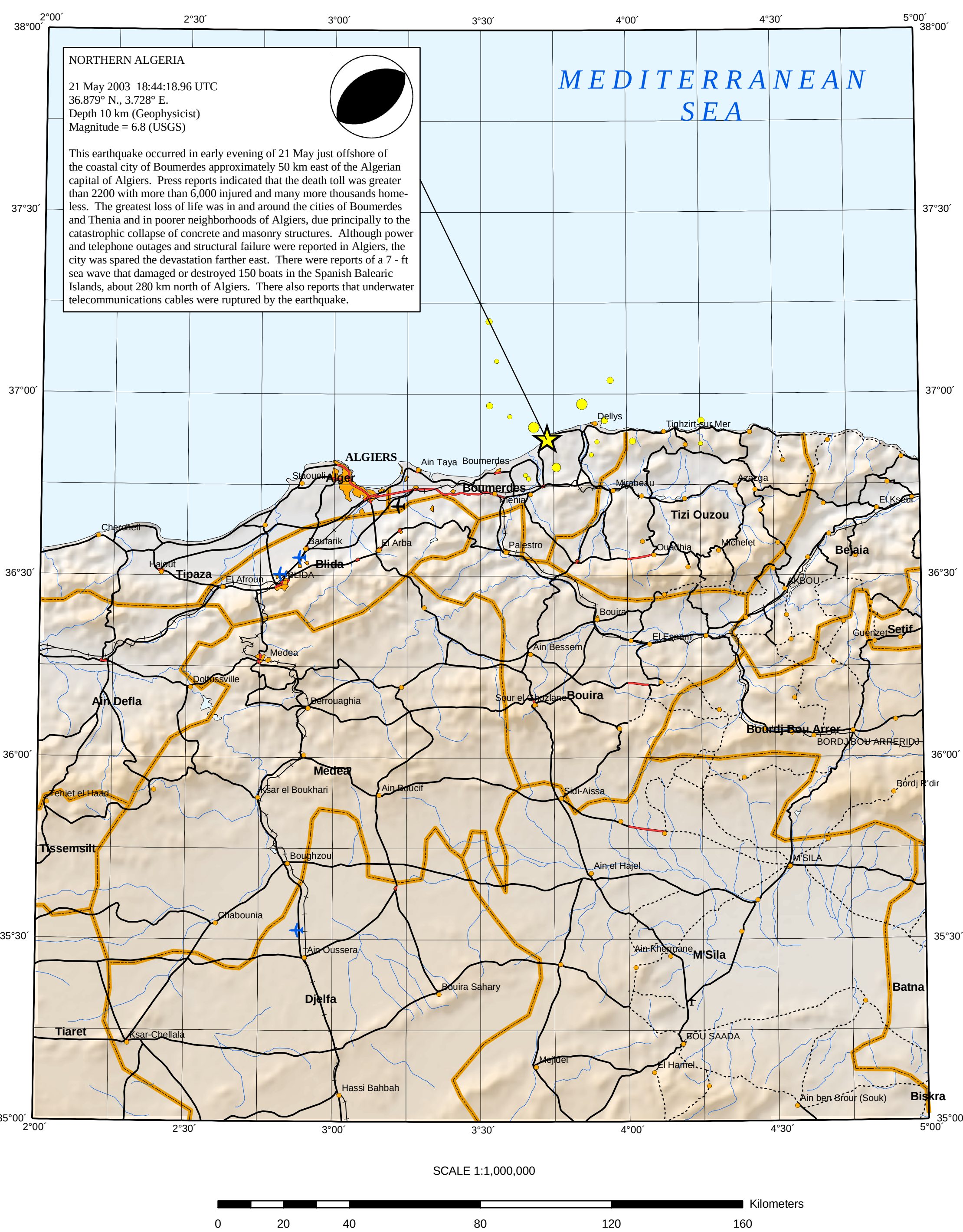
DISCUSSION

The earthquake occurred in the boundary region between the Eurasian plate and the African plate. Along this section of the plate boundary, the African plate is moving northwestward against the Eurasian plate with a velocity of about 6 mm per year. The relative plate motions create a compressional tectonic environment, in which earthquakes occur by thrust-faulting and strike-slip faulting. Analysis of seismic waves generated by this earthquake shows that it occurred as the result of thrust-faulting.

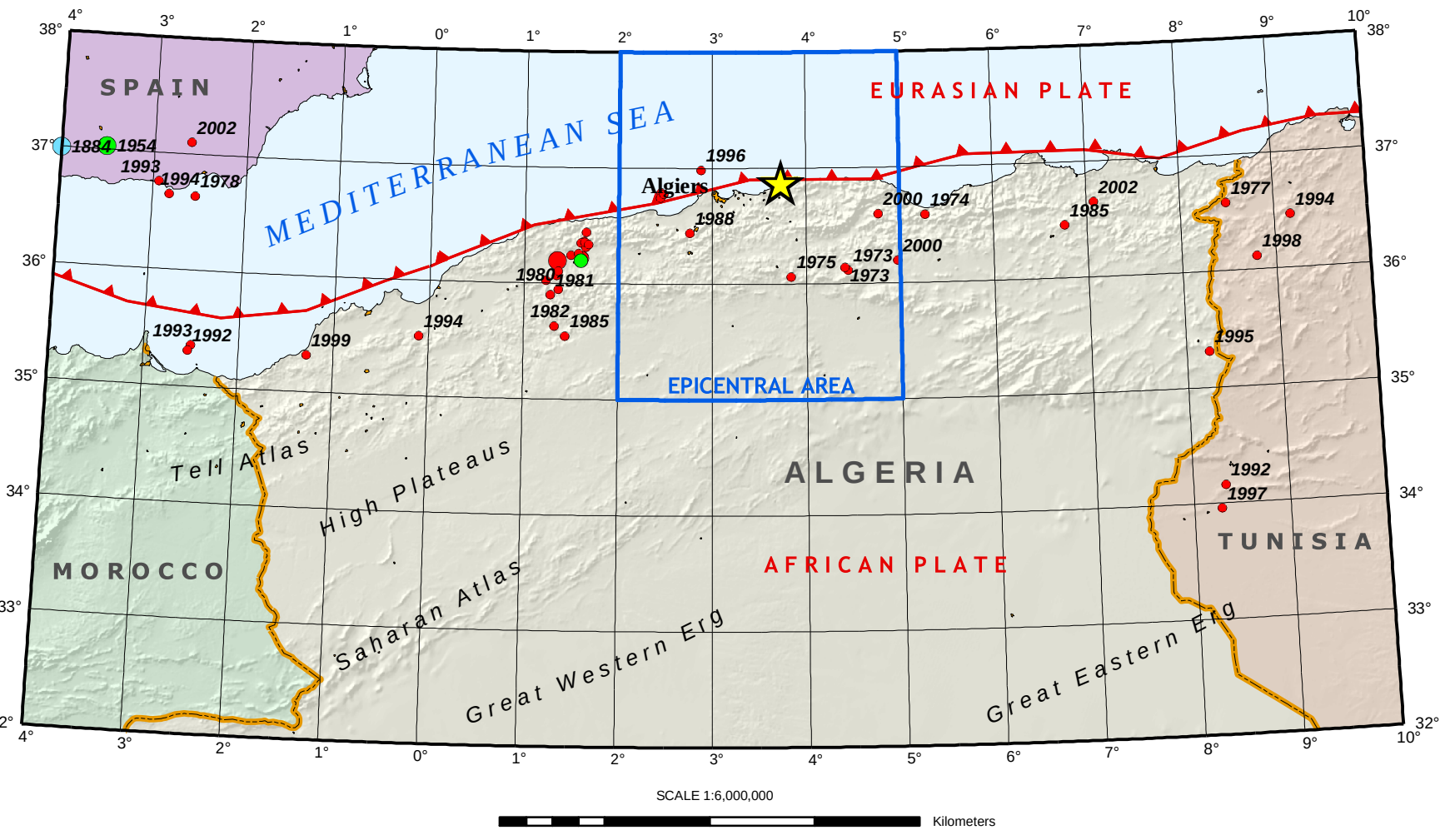
Algeria has experienced many destructive earthquakes. On October 10, 1980, the city of El Asnam (formerly Orleansville and today El-Cheliff) was severely damaged by a magnitude 7.1 earthquake that killed at least 5000 people. The site of El Asnam is situated approximately 220 km to the west of the recent earthquake. The same city, as Orleansville, had been heavily damaged on September 9, 1954, by a magnitude 6.7 earthquake that killed over 1000 people. On October 29, 1989, a magnitude 5.9 earthquake struck about 110 km to the west of the recent earthquake and killed at least 30 people.



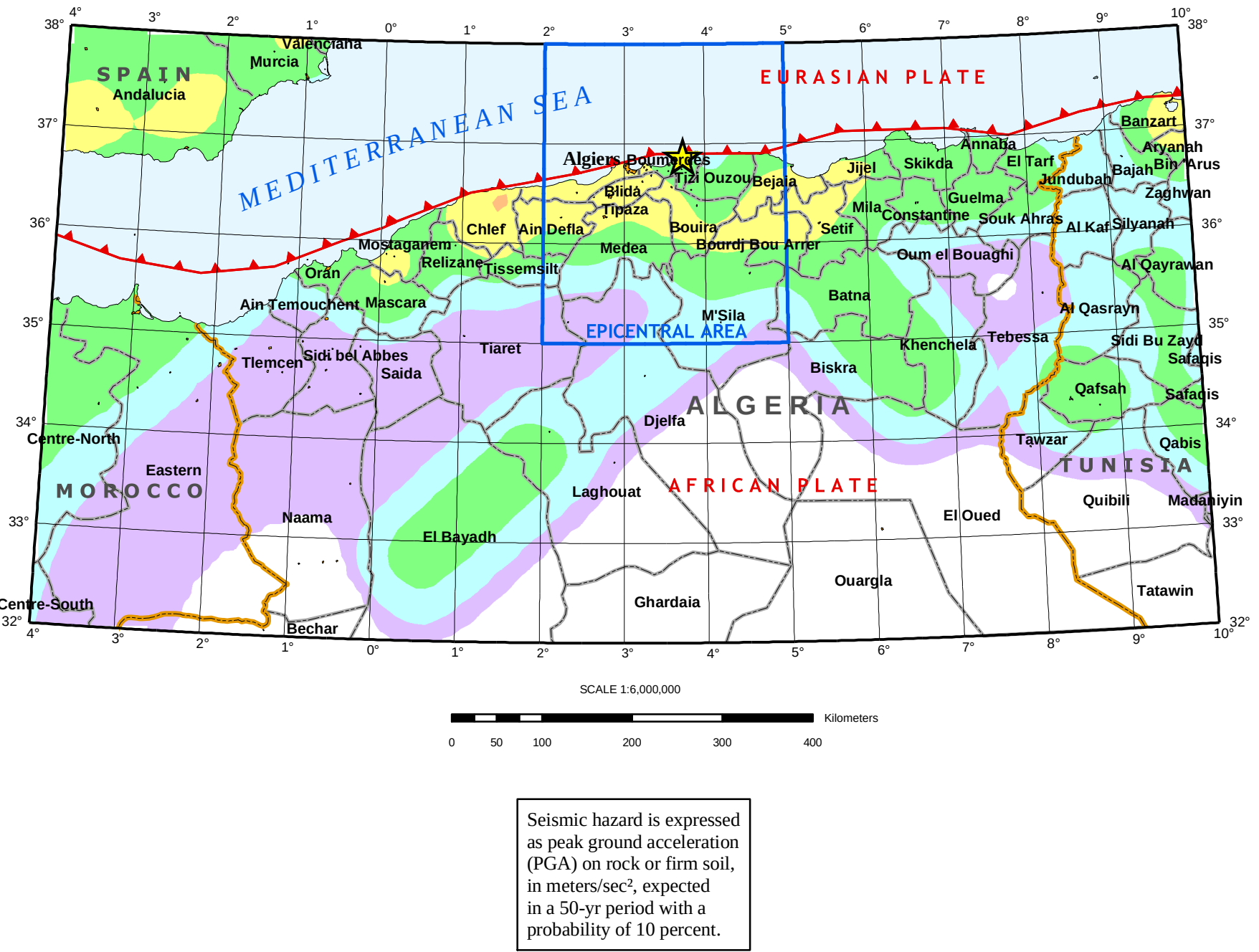
Epicentral Area



Earthquake History of Northern Algeria and Vicinity



Generalized Seismic Hazard



DATA SOURCES

EARTHQUAKES AND SEISMIC HAZARD
USGS, National Earthquake Information Center
NOAA, National Geophysical Data Center
IASPEI, Centennial Catalog (1900 - 1999)
Handbook of Seismology and Earthquake Engineering
Global Seismic Hazard Assessment Program

PLATE TECTONICS
Smithsonian Institution, Global Volcano Program

BASE MAP
NIMA and ESRI, Digital Chart of the World
USGS, EROS Data Center

DISCLAIMER

Base map data, such as place names and political boundaries, are the best available but may not be current or may contain inaccuracies and therefore should not be regarded as having official significance.

Map prepared by U.S. Geological Survey
National Earthquake Information Center
27 May 2003
Map not approved for release by Director USGS