the observed values of costal uplift is compatible with the offshore continuation of the south Mitidja basin faults system.

SEISMOTECTONIC EVIDENCES IN THE ZEMMOURI-THENIA (ALGERIA) REGION BEFORE THE M=6.8 ZEMMOURI EARTHQUAKE OF MAY, 21 2003: THEIR RELATIONS WITH COSEISMIC RUPTURES

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Numerical imagery and aerial photographs provide evidence of past drainage diversions associated with known and inferred active faults in the region of Thenia-Zemmouri. The analysis of drainage patterns provides useful information about the evolution and recent history of faulting that may be difficult to obtain by conventional geological analysis. Diversion of the Isser River and evidence or 6 levels of uplifted Quaternary alluvial and marine terraces indicate that the Thenia-Zemmouri region is tectonicaly active.
Moreover, the Pliocene and Holocene deposit of this area as well as the terraces are slightly folded in NE-SW direction related with NW-SE compression.
This region shows also a main fault rupture oriented NW-SE called Thenia fault which presents a moderate seismicity suggesting that this area still active. One of the strongest historical earthquakes (ML 5.2) have occurred in the vicinity of the fault, but have flot been attributed conclusivel to slip on the Thenia fault.
On May 21st, 2003 this area was affected by a strong earth-quake (M=6.8) causing 2500 victims and 1500 disappeared. The epicentre was located at the Mediterrean see in the area of Zemmouri. The seismic data of the main and aftershoks (focal mechanism) shows an offshore thrust fault diping towards the South with a NE-SW direction. Coseismic NW-SE cracks were observed in the NW expansion of the Thenia fault. Near Boumerdes, this direction is deviated to the NE-SW and took a direction parallel to the coast line.
A coseismic rising of at least 2 meters was noted in the minutes preceding the earthquake. The permanent rising is about 40 to 60 cm and affected the whole coast line from Bologhine (Algiers) in the East to the Cap Djinet in the West (70 km).
This paper describe the sismotectonics structures observed before the Zemmouri-Thenia earthquake of May 21, 2003 and their coseismic behaviour such ground cracks, landslsides after the main shock. While waiting for more reliable results of data (bathymetric data of the geophysics fiels investigations MARADJA, data of seismological synthesis) one gives an interpretation of major offshore NE-SW thrust fault and it relation with the Eastern Mediterranean tectonic province.

REGIONAL MOMENT TENSOR ANALYSIS OF THE 2003 ALGERIA EARTHQUAKE SEQUENCE

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We use regional broadband seismograms to determine the seismic moment-tensor of the destructive May 21, 2003 Mw = 7.0 Algeria earthquake and its larger aftershocks. We perform two types of inversion: near-real time fully automatic and off-line manual. For the automatic inversion, we use near-real time data to provide reliable, rapid earthquake source parameter information after large, potentially damaging events. Solutions are available within 90 minutes after an event and are sent to the European-Mediterranean Seismological Centre. We obtained automatic solutions for the main shock and six larger (Mw = 4.7) aftershocks; the solutions were later confirmed by manual analysis. For manual analysis, we add off-line data, available days to months after an event, and repeat the inversion. The more complete data set allows analysis of several immediate aftershocks that could not be analysed automatically due to main event coda and of many smaller events. All 27 solutions (3.8 = Mw = 7.0) have shallow source depths (10 - 20 km). The majority has a thrust mechanism and their average P-axes orientation of 338° is consistent with the predicted Africa-Eurasia plate motion direction of 330°. Three strike-slip events also show similar P-axes orientations. The fault plane orientation of the thrust mechanisms varies from E-W to near N-S. The variability is well constrained by the waveform data indicating changes in fault orientation and fault segmentation.

FOCAL MECHANISM AND RUPTURE PROCESS OF 2004 ALHOCEIMA (MOROCCO, MW=6.2) EARTHQUAKE FROM TELESEISMIC AND REGIONAL BROAD-BAND DATA

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We have study the focal mechanism of the 2004 Alhoceima (Morocco, Mw=6.2) earthquake using teleseismic and regional broad-band data. The solution obtained shows strike slip motion with planes striking respectively on NNE-SSW and WNW-ESE direction and horizontal pressure axes in NNW-SSE direction. We inverted body waves at teleseismic distances using as initial orientation the solution obtained from 126 P polarities. A model of extended source with rupture velocity between 2.5-3.0 km was used for the inversion. We find a complex rupture with four events at shallow depth (2-8 km). The rupture started at 6 km depth and propagated toward the south with maximum seismic moment releases at the first step (80% over a total of 1.8 x10e18 Nm). Similar result was obtained from slip inversion. An aftershock occurred on 12/03/04 (Mw=4.8) was used as empirical green function using broad-band data at re gional distances (40 to 300 km) to estimate the source time function. Comparison of these results with those obtained for the 1994 earthquake show similar behaviour, namely, a complex rupture process and apparently no relation of the 1994 and 2004 shocks with the Nekor fault, the most important geological feature in the studied area. The stress pattern derived from the 1994 and 2004 focal mechanisms are in agreement with the regional stress pattern in the Alboran Sea: horizontal compression in NNW-SSE and horizontal extension in E-W direction.

A PHYSICAL MODEL FOR AFTERSHOCKS TRIGGERED BY UNIFORM STRESS DROP ON A RECTANGULAR FAULT (poster)

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Starting from the displacement produced by an elementary point dislocation, known as the Somigliana tensor, we find the static displacement, strain and stress produced in an elastic medium by a finite size rectangular fault after its dislocation with uniform stress drop. The time-dependent rate of triggered earthquakes is estimated by a rate-state constitutive law applied to a uniformly distributed population of faults whose equilibrium is changed by the Coulomb stress change. The results of our simulations have shown some important consequences of the model. The rate of triggered events, immediately after the perturbation on an elementary volume of the medium, is exponentially proportional to the stress change, but the time at which the rate begins to decrease is variable from fractions of hour for positive stress changes of the order of some MPa, up to tens of years for smaller stress changes. As a consequence, the total number of triggered events (obtained integrating the rate predicted by the model over infinite time) is proportional to the stress change in that point. This model, applied to the perturbation produced by slip with constant stress drop on a rectangular fault, predicts that the total number of events triggered on a plane containing the fault (supposing that this is the only active part of the whole volume surrounding the fault) is proportional to the 2/3 power of the seismic moment. As a consequence, the total number of aftershocks produced on the fault plane scales in magnitude as 10^{M}. Including the negative contribution of the stress drop