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of these events can help to define the present day kinematics of this complex plate boundary zone. Here, we combine the data from three accurate satellite geodetic systems (ENVISAT, GPS and SPOT) to study the Al-Hoceima event and its aftershocks. Two interferograms generated from descending and ascending ENVISAT satellite radar images record two components of the coseismic displacement field. In addition we measured co-seismic displacement vectors at several GPS sites. The correlation of two 2.5 meter resolution SPOT-5 images shows that the horizontal slip along the surface rupture due to this earthquake must be smaller than the measurement uncertainty, of the order of half a meter. Although some minor surface crackings were observed in the field, their small vertical throw (decimeter), lack of horizontal throw, short length (2 km) and valley-parallel strike suggest that they are secondary features. By combining these data with elastic dislocation models, we consider the two possible rupture planes that strike NNE-SSW and WNW-ESE. Our interpretation suggests that the collisional strains in the southern part of the boundary zone are mostly accommodated in the northern Rif Mountains and the Alboran microplate.

RUPTURE ANALYSIS OF DECEMBER 10, 2003
CHENGKUNG, TAIWAN EARTHQUAKE (MW 6.5)
BASED ON TELESEISMIC AND STRONG-MOTION DATA SETS – ID 1742

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With different data sets of teleseismic and strong-motion we analyze slip distribution of Chengkung earthquake (MW 6.5, BATS) that occurred on 10 December 2003 (01:38:13.5, UTC) near a coastal town of Chengkung in eastern Taiwan. The epicenter is located at 23.066 N and 121.398 E with a source depth of 18 km (CWB). The earthquake ruptured Chihshang fault which is a thrust fault trending in NNE direction and dipping to southeast. This information of the casual fault is inferred from field observations of numerous cracks or fissures near the surface trace of the Chihshang fault. This faulting draws attention of earthquake scientists due to its position as a part of plate boundary between the Philippine Sea and Eurasian plates and due to its seismotectonic behavior revealing with a creep. At the same time this event has another striking feature due to a fan-shaped pattern of co-seismic displacements since its focal mechanism solution indicates almost a pure thrust faulting. The fault plane that we envisaged for this event is defined with a strike of 23, a dip of 42 and an average rake of 75 based on focal mechanism solutions reported by different agencies (HIR, USGS and BATS). Preliminary slip models produced for teleseismic data consisting of 35 broadband stations indicate that the rupture mechanism for this event appears with two slip patches. Prevailing slip patch nucleated near the earthquake hypocenter and then propagated to the SSW part of the rupture plane. The second patch is also appearing at SSW part, but at a shallower depth relative to the first patch. This result may answer questions like “why maximum ground-motion displacements are observed at some strong-motion stations to the southwest of the earthquake epicenter?” Further findings of slip models and rupture mechanisms will also be discussed.

RUPTURE AT STRIKE-SLIP FAULTS - RESULTS OF NUMERICAL MODELLING AT PLANAR AND INCLINED FAULT SEGMENTS – ID 1769

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Strike-slip faults are commonly characterized by changes in strike and dip on a variety of scales. In particular faults with strike changes in a kilometre-scale can rupture in individual earthquakes with meters of offset. Models of strike slip faults without and with a bend were investigated numerically with the three-dimensional distinct element code 3DEC. Tectonic loading, stress accumulation, subsequent failure with stress transfer, and the possibility of these processes were investigated. A Mohr-Coulomb slip model with stick-slip behaviour was used for the loaded fault segments. Repeated failure processes are simulated since an instantaneous healing process was introduced. The loaded segments themselves were embedded in a sliding fault surrounding. The generated earthquake sequences possess the characteristic features of real earthquake catalogues, such as magnitude-frequency distributions according to the Gutenberg-Richter law, significantly varying temporal occurrence of main events, and foreshock-aftershock distributions. The spatio-temporal distribution of large events were especially analysed. The simulated earthquake sequences were used to calculate the long-term time-dependent probability of the next large earthquake on the distinct fault segments. The distribution of the inter-event times were fitted to several well-known statistical distributions. The differences of these fits are discussed with respect to the distinct distributions. Further, the possibility of cascading (i.e. the rupture of local segments immediately one after the other) is investigated.

THE SAORGE-TAGGIA LINE, WESTERN LIGURIA (ITALY): MULTIDISCIPLINARY ANALYSIS OF A COMPLEX FAULT SYSTEM – ID 1827

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In this contribution we show as studies based on combined seismological and geological investigations result in a better knowledge of a seismogenic structure and give hints on its mechanism of rupture. The Saorge – Taggia line, western Liguria, is a system of strike slip faults with NW – SE orientation. It extends from the coast up to a northern limit, the Breil-Sospel-Monaco fault, a NE-SW strike slip structure. The structure shows a remarkable geological complexity and a diffuse seismicity which confirms its active character. In the past, some significant earthquakes were later associated to the Saorge-Taggia system, causing a growing interest on the structure leading to a seismic monitoring performed on both sides of the French-Italian border. Such a concentration of seismic stations enables to reveal, record and localize earthquakes with very low magnitude threshold and with error in the determination of hypocentral parameters extremely contained. This enables the ideal conditions for the application of detailed historical invesigations. We present, in a preliminary form, the combined results of techniques to determine shape and deep extension of seismic lines (seismic tomography), the precise position of hypocenters and the fault mechanisms. They suggest that the strike slip nature of the structure is not equally spread but turns to a more transtensive component in the northern part of the system; the seismicity is less evident in the south termination of the fault, but it may be masked by anthropic activities and sedimentary thickness. Finally, a comparison between historical and current seismic activity seems to evidence that the fault alternates period of low magnitude, frequent events with medium to strong, isolated episodes. The likely interaction with the surrounding and cutting lineations makes hypothesis on the nature of this kind of energy release uncertain.

IMAGING OF SEISMIC RUPTURE PROCESS OF THE CYTHERA M6.7 EARTHQUAKE (JANUARY 8, 2006): INVERSION FROM THE RELATIVE SOURCE TIME FUNCTIONS. – ID 1877

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On January 8, 2006 at 11:34 UTC a strong earthquake of 6.7 magnitude occurred near the island of Kythira, about 200km south of Athens. The shocks have been felt in regions, far from