Geophysical Research Abstracts
Vol. 12, EGU2010-4781, 2010
EGU General Assembly 2010


# Detection of ground deformation in the area of the 2009 Abruzzo earthquake by GNSS techniques

Alessandro Caporali
University of Padova, Dipartimento di Geoscienze, Padova, Italy (alessandro.caporali@unipd.it)

The April 6, 2009, Mw=6.3 earthquake in Abruzzo (Central Italy) is associated with displacements on the surface which are well visible in the time series of permanent GPS stations within few tens of km from the epicentre. We present time series of coordinates which show such coseismic displacements, and their spatial correlation. We exploit this correlation by combining the observed coseismic 3D displacements with an elastic dislocation model, and obtain estimates for the position and orientation of the fault plane, and the slip vector at depth. The results are compared with similar results obtained by GPS, but a partially different set of stations, by InSAR with Envisat and Cosmos SkyMed data, and classical seismological techniques of hypocenter location and fault plane solution, finding in most cases an excellent agreement. The analysis of the GPS time series has additional information not yet exploited, such as high frequency effects, and the effects of postseismic relaxation. Thus the Abruzzo earthquake offers an interesting example of how space borne techniques (InSAR, GNSS) can monitor creep and transient deformation leading to and following brittle failure, complementing the data obtained by classical seismological techniques.