Geophysical Research Abstracts,
Vol. 10, EGU2008-A-10622, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-10622
EGU General Assembly 2008


# Coseismic velocity variations across the fault system of the Gulf of Corinth associated with the 2001 M=4.2 event.

**L. Cociani** (1), C. Bean (1), H. Lyon-Caen (2), M. Möllhoff (1)

(1) Seismology and Computational Rock Physics Laboratory, UCD School of Geological Science, University College Dublin, Ireland, (2) Laboratoire de géologie, École supérieure, 24 rue Lhomond, 75252 Paris cedex 05, France

Studying fault and fracture *in-situ* properties is important for gaining a better understanding of many geological and geophysical phenomena. In this work we focus on the temporal variations of fracture stiffness across an active fault system. The analysis of the temporal variations in the seismic velocity across faults can be used to estimate the *in-situ* stress variations. Seismic propagation velocity depends on the fault stiffness, which is a function of stress. We use the Coda Wave Interferometry (CWI) technique, which allows us to estimate with high precision, velocity changes between repeating earthquakes. CWI was applied to 6 families of repeating earthquakes recorded by the Corinth Rift Laboratory Network (CRLN), belonging to the 2001 seismic swarm which occurred on the southern shore of the Gulf of Corinth close to the town of Aigion. This area is the most seismically active place in Europe and is possibly the fastest continental rift in the world hence is a suitable natural laboratory for studying active fault systems. Four out of six multiplets show a 0.2% decrease in the seismic velocity of wave propagation across the fault system coincident or immediately after a local 4.2 magnitude event. This velocity variation indicates a probable decrease in the fracture stiffness, possibly associated with a local unclamping of the dominant fault system. An assessment of the Coulomb stress change on neighboring faults, related to the $M_w$= 4.2 event will be presented in an effort to constrain the physical interpretation of our results.