T/SD1/P5/ID50 **– SHEAR-WAVE SPLITTING AND TEMPORAL VARIATION OF TIME DELAY IN NW PELOPONNESUS (GREECE)**

G. Kaviris[1], V. Kapetanidis[1], P. Papadimitriou[1], K. Makropoulos[1]
[1]Department of Geophysics, University of Athens, Greece

The Gulf of Corinth, located in Central Greece,is one of the faster expanding and most seismically active continental rifts around the world and is characterized by normal faulting in an approximate E-W direction. In NW Peloponnesus, in the area between the Corinth Rift and the Hellenic Arc, there is a transition zone characterised by dextral strike- slip faulting. On 4 February 2008 a seismic swarm, characterized by two moderatesize earthquakes (Mw=4.6, 4.5), occurred in this area. The analysis of earthquakes of the sequence revealed the existence of shearwave splitting, which is related to the existence of anisotropic medium. All the events that were selected for the anisotropy study are located within the shear-wave window, having incident angles smaller than the critical, as well as clear and impulsive S wave arrival phases on the horizontal components. In addition, the amplitude of the S wave phase on the vertical component was smaller than on the horizontal ones. The methods used to determine the splitting parameters, which are the polarization direction of the S_{fast} wave, the time delay between the two split shear waves and the source polarization direction, are the polarigram and the hodogram. The S_{fast} polarization directions of the fast shear wave vary between N81° and N129°. The coherence of the fast shear wave polarizations, irrespective of the azimuth of each event, is consistent with shear-wave splitting due to seismic wave propagation through an anisotropic medium. These observations are consistent with the general NNE-SSW direction of extension in the Gulf of Corinth and, therefore, in agreement with the extensive dilatancy anisotropy (EDA) model. Time delays are sensitive to small changes in microcrack geometry, since changes in shear wave splitting can be used to monitor the small-scale stress-induced deformation of microcracks throughout the rock mass. This process occurs before a level of microcracking, known as fracture criticality, is reached when rocks are expected to fracture. Temporal variations in shear-wave time-delays have been observed before several earthquakes worldwide. The obtained values of time delays vary between 0.020sec and 0.090sec. Nevertheless, a decrease of the time delay values was observed after the occurrence of the first moderate earthquake, implying changes of the medium's properties.