31st General Assembly of the European Seismological Commission, Crete, 7-12 Sept. 2008
oral session ACQUIS-3-PROPAG, (Oral & Poster Abstracts, pg. 106-107)

An Overview of Anisotropy Studies in Central Greece using Recordings around the Gulf of Corinth and aftershocks of the 1999 Athens Earthquake

Kaviris G (1), Papadimitriou P (2), Makropoulos K (3)

(1) Department of Geophysics, University of Athens, 157 84 Athens, Greece, gkaviris@geol.uoa.gr, (2) Department of Geophysics, University of Athens, 157 84 Athens, Greece, ppapadim@geol.uoa.gr, (3) Department of Geophysics, University of Athens, 157 84 Athens, Greece, kmacrop@geol.uoa.gr

The Gulf of Corinth is a very active tectonic rift characterized by high seismicity level. GPS measurements indicate extension of the Gulf in an approximately N-S direction, with an extension rate of 10 to 15 mm/year. The southern part of the Gulf is dominated by the presence of large active normal faults in an almost E-W direction, dipping north. An anisotropic upper crust was revealed at the eastern part of the Gulf of Corinth using data recorded by the Cornet network. The same result was obtained at the western part of the Corinth Gulf, using data recorded by a temporary seismological network installed in the area. Aftershocks of the 1999 Athens earthquake (Mw=6.0) were processed to perform shear wave splitting analysis in Attica (to the NE of the Gulf) that hosts Athens, the capital of Greece. The hodogram and the polarigram, which is the polarization vector as a function of time, are the methods used for the determination of the splitting parameters. For each event that fulfills the selection criteria, the polarization direction of the fast shear wave, the delay between the two split shear waves and the polarization of the source were measured. Concerning the obtained mean values of anisotropy at the stations installed around both parts of the Gulf of Corinth, they vary between N90° and N142°. In the region of Attica the mean values of the anisotropy direction are almost parallel to the azimuth of the Parnitha fault, varying between N95° and N100°. The time delay between the split shear waves vary between 0.020s and 0.130s. The obtained anisotropy measurements are in agreement with the extensive dilatancy anisotropy (EDA) model, since the direction of anisotropy is independent from the event-station azimuth and perpendicular to the direction of extension.