

Shear-wave splitting characteristics during 2014 in the Western Corinth Gulf (Greece)

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The Gulf of Corinth, located in Central Greece, is one of the most tectonically active regions in Europe. Most of the seismicity occurs in the western part of the Gulf, with the most recent destructive event being the 1995 Aigion earthquake, while since then intense seismic swarms act as the main expression of seismic energy. The dense seismological networks, comprising of seismographs belonging to the Hellenic Unified Seismological Network (HUSN) and the Corinth Rift Laboratory Network (CRLN), permit the precise location of hypocenters. Events that occurred during 2014 and fulfill the strict selection criteria, i.e. located within the shear-wave window (angle of incidence smaller than 45°) and with shear-wave amplitude of the vertical component smaller than that of the horizontal ones, are used to perform an anisotropy study. The splitting parameters that are determined using polarigrams and hodograms are the polarization direction of the fast shear-wave, the time-delay between the two split shear-waves and the source polarization direction. The obtained results per station are presented using rose diagrams and equal-area projections. Most anisotropy directions strike WNW-ESE, perpendicular to the NNE-SSW extension of the Gulf of Corinth and in accordance with the maximum horizontal compressive stress component. Furthermore, the polarization direction for each station was found to be independent of the event's azimuth. Thus, anisotropy in the Western Gulf of Corinth is probably due to the existence of fluid-filled microcracks, in agreement with the Extensive Dilatancy Anisotropy (EDA) model. Changes in directions can be attributed to the Anisotropic Poro-Elasticity (APE) model. The results are directly compared with the ones obtained using events that occurred during 2013. Temporal variations of the splitting parameters are also investigated, given that they have been associated with changes in a region's stress regime in several cases.

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