



Upper Mantle Anisotropy Beneath Aegean and NW Anatolia Inferred from Shear Wave Splitting Measurements

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Shear wave splitting measurements contribute to our understanding of past and current deformations in the lithosphere, upper mantle and asthenosphere of various tectonic regimes. In this study, we investigate seismic anisotropy in the upper mantle beneath the Aegean and NW Anatolia by evaluating high quality SKS and SKKS waveforms from teleseismic earthquakes recorded at 14 broadband seismic stations at the Biga Peninsula, Lesvos Island and the North Aegean Sea. Earthquake data ($M_w \geq 5.5$; $h \geq 10$ km; 2008-2018) with epicentral distances in the range of 85° – 120° were retrieved from national seismographic networks of Turkey and Greece via the Earthquake Data Center System of Turkey (AFAD; <http://tdvm.afad.gov.tr/>) and the European Integrated Data Archive (EIDA; <http://orfeus-eu.org/webdc3/>). Splitting measurements in this study were obtained from both tangential energy minimization and splitting intensity approaches to ensure the reliability of results. Later we performed an averaged stacked misfit surface method for all analysed events at each station. Station averaged splitting measurements inferred from various methods usually exhibit similar patterns as these updated data sets reveal fast polarization directions mainly in the NE-SW orientation. These directions coincide with the finite extensional deformation in Western Anatolia induced by the subduction process along the Hellenic arc that are compatible with prior anisotropy studies (e.g. Hatzfeld et al., 2001; Paul et al., 2014; Confal et al., 2016).

References

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