



Depth-dependent seismic anisotropy beneath the Turkish-Anatolian Plateau from SKS and Ps splitting analysis

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In this study we investigate seismic anisotropy across the Turkish-Anatolian Plateau by joint analysis of shear-wave splitting of SKS and Moho-converted P-to-S phases. With this approach we are able to decipher the different contributions of crustal and mantle anisotropy.

We process SKS waveforms and teleseismic receiver functions at more than 120 broad-band stations operated across the Turkish-Anatolian Plateau during the last decade. The complete data set and the joint approach allow for the investigation of lateral and depth variations of seismic anisotropy across this tectonically active region.

The results of the SKS splitting analysis illustrate systematic azimuthal variations in splitting parameters at many stations. Furthermore, the Ps splitting analysis of receiver functions at some stations reveals significant crustal anisotropy. By correcting for the influence of crustal anisotropy on the SKS splitting, we obtain splitting parameters that are directly linked to the mantle anisotropy.

The crustal anisotropy show significant lateral variations across the tectonic boundaries between different crustal fragments in the plateau. This pattern implies the signature of tectonic structures. The corrected mantle anisotropy shows a relatively uniform pattern across the plateau implying that the main part of the mantle anisotropy is caused by the relative motion of the lithospheric plate over the underlying asthenosphere. We intend to extend this approach to cover the entire region of the Middle East.