Geophysical Research Abstracts
Vol. 21, EGU2019-13155, 2019
EGU General Assembly 2019

Frequency-Dependent Shear Wave Attenuation along the Central Anatolia, Turkey

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Central Anatolia, a transition zone between extensional regime in the west and compressional deformation in the east, is characterized as a plateu with several volcanic provinces. Within the Central Anatolian Plateu (CAP) two blocks exist as seperated by Central Anatolian Fault (CAF). These are Kırşehir Block in the north and Anatolide-Tauride Block in the south. Due to displacement along CAF, volcanic activity has been identified. Our main aim is to elucidate crustal attenuation properties linking to tectonic features in this region. Intrinsic and scattering attenuation variations provide present day properties of seismic attenuation in the crust that can hint at the type of deformation in the past/present. We utilized local earthquakes with focal depths smaller than 10 km. To estimate intrinsic and scattering attenuation parameters, we compute synthetic seismograms via an non-emprical approach that is based on acoustic radiative transfer theory to compute synthetic coda wave envelopes. A fit between observed and synthetic envelopes is performed for each individual earthquake in five different frequency bands (0.75 to 12 Hz) in order to estimate attenuation parameters. Our results suggest that, intrinsic attenuation appears to be slighty dominant over scattering attenuation in the study area. 2D spatial distributions of attenuation parameters clearly marks Kırşehir and Anatolide-Tauride blocks. Regions with high absorption values corresponds to volcanic provinces and we observe relatively low attenuation values in southeastern parts.