



Central Anatolian Seismic Network: Initial Analysis of the Seismicity and Earth Structure

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Anatolian Microplate provides many of the clues to understand the geodynamic processes leading to continental collision, plateau formation, slab tearing / break-off and development of escape tectonics. During last decades, the tectonic evolution and dynamics of Anatolia has been the prime target of numerous research efforts employing wide spectrum of disciplines. However the Anatolian interior which is characterized by large magnitude lateral and vertical displacements, widespread Neogene volcanism and a complex tectonic history, is still under much debate and require a joint multidisciplinary approach to investigate the mantle-to-surface dynamics. In order to identify the crust and mantle structure beneath Central Anatolia and related seismicity, a dense seismic array that consists of 70 broadband seismic stations was deployed temporarily in 2013 as a part of the Central Anatolian Tectonics (CAT) project on continental dynamics. A year of seismic record has been processed and part of it was analyzed using various seismic methods. Distribution of preliminary earthquake locations supports the presence of seismic activity partly localized along major tectonic structures across the region. According ambient noise tomography results, upper crustal seismic velocity variations correlate well with surface geology while slow shear wave velocities dominate the lower crust indicating a weaker crustal rheology at the bottom. Furthermore, analysis of teleseismic P wave receiver functions revealed the presence of crustal low velocity zones associated to Neogene volcanism and sharp Moho variations near tectonic sutures and faults. By combining this new dataset with seismic data recorded by previous seismic deployments and national networks, we will have a complete seismic coverage for the entire region allowing researchers to image beneath Anatolia from mantle to surface with high resolution.