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# A new evidence for the prevalence of isostasy in the support of the Anatolian plateau

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The Anatolia - Aegean region is an area of intense deformation. Vertical motions are an important part of the tectonic evolution, of which the eastern and central Anatolian plateaus are a direct result. Recently, geological and thermo-mechanical models imply dynamic topography as the engine of the plateau formation. The large variations on the estimates of the dynamic topography are a result of the used crustal models and density estimates with large uncertainties. In this study, we provide accurate crustal thickness maps of the Anatolia-Aegean domain computed from a large volume of broadband seismic data. In addition, we display high-resolution seismic sections of the internal structure of the crust in Western Anatolia and Central Anatolia. Density contrasts are derived from the same seismic data set and Bouguer gravity anomaly computed from the EGM2008 model.

Our crustal thickness model is highly correlated with the topography suggesting that the Anatolian plateau is close to isostatic equilibrium. Residual topography is overall small (< 500 m). The average density difference between crust and upper mantle computed from our crustal model and Bouguer gravity anomaly is lower than the global average. The East-to-West gradient of the crustal thickness and topography is nearly constant in between Taurides and Pontides, which may indicate a low viscosity lower-crust supported by a thin mantle lithosphere beneath the Anatolian plateau. We propose that lower crustal flow smooths any lateral changes in the crustal structure. This flow may be induced by gravitational potential energy differences between eastern Anatolia and the Aegean Sea.