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Uppermost Mantle Temperatures converted from Pn velocities and crustal thickness in the Anatolian Region

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Estimates of lithospheric temperature are challenging but essential given that the evolution, deformation, and dynamics of the Anatolian lithosphere as it interacts with its surroundings are fundamentally connected to temperature. To map out lithospheric geotherms, crustal thicknesses from receiver functions are combined with a tomographic model of Pn velocities. To map velocity into temperature, we assume the upper mantle has a fertile lherzolite composition, use the elastic parameters from Schutt and Lesher [2006, 2010], and use anelastic parameters from Jackson and Faul [2010]. Pn velocities as a proxy for temperature are advantageous in that the Pn kernel has a narrow depth range, allowing the geotherm to be pinned fairly precisely. Initial models show uppermost mantle temperatures vary from about 650°C-850°C, with the highest temperatures in eastern Turkey and the southeastern Black Sea. Here temperatures are high enough that the lower crust may be partially molten, or at least very mobile.