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The rheological structure of the lithosphere in the eastern Marmara Region, TurkeyBülent Oruç^{a,*}, Tuba Sönmez^a^a Kocaeli University, Engineering Faculty, Department of Geophysical Engineering, Umuttepe Campus, 41380 İzmit/Kocaeli, TURKEY**Abstract**

The aim of this work is to propose the geometries of the crustal-lithospheric mantle boundary (Moho) and lithosphere-asthenosphere boundary (LAB) and the 1D thermal structure of the lithosphere, in order to establish a rheological model of the Eastern Marmara region. The average depths of Moho and LAB are respectively 35 km and 51 km from radially averaged amplitude spectra of EGM08 Bouguer anomalies. The geometries of Moho and LAB interfaces are estimated from the Parker-Oldenburg gravity inversion algorithm. Our results show the Moho depth varies from 31 km at the northern part of North Anatolian Fault Zone (NAFZ) to 39 km below the mountain belt in the southern part of the NAFZ. The depth to the LAB beneath the same parts of the region ranges from 45 km to 55 km. Having lithospheric strength and thermal boundary layer structure, we analyzed the conditions of development of lithosphere thinning. A two-dimensional strength profile has been estimated for rheology model of the study area. Thus we suggest that the rheological structure consists of a strong upper crust, a weak lower crust, and a partly molten upper lithospheric mantle.

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