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Joint inversion of receiver function and surface wave dispersion for crust and uppermost mantle velocity structure beneath station ISP (Isparta, Turkey)

M. Erduran (1), Ö. Çakir (2) and T. Tezel (3)

1) Karadeniz Technical University, Department of Geophysics, 61080, Trabzon, Turkey (merduran@ktu.edu.tr / Fax:+90- 462 325 74 05), (2) Tip Fakültesi Caddesi, Türkis Apartmani No 1/5, 06620, Abidinpasa, Ankara, Turkey, (3) General Directorate of Disaster Affairs, Earthquake Research Department, 06530, Ankara, Turkey

We jointly invert teleseismic radial-component receiver functions and regional Rayleigh and Love surface wave data for 1-D shear wave velocity structure beneath station ISP. The area under consideration is known as Isparta angle and has very distinct position in the Anatolian plate tectonics. It is located in the Alpine-Himalayan orogenic belt where the Aegean-Anatolian and the African plates merge. The regional events used for the Rayleigh and Love group velocity analysis have broad azimuthal approach to the station. The inversion results show that the crust and uppermost mantle shear-wave velocity structure beneath station ISP is complex comprising a low velocity zone in the lower crust, which is underlain by a Moho structure represented by a gradational velocity change over a depth interval of ˜10 km thickness. We place the Moho discontinuity at ˜36 km with an associated Sn velocity of ˜4.4 km/s. The mid-crust depth range is represented by a fairly constant velocity of ˜3.5 km/s and the waves in the lower crust slow down to ˜3.2 km/s. The shear velocities within the topmost 5 km increase sharply from unusually low velocity (i.e. ˜2.2 km/s) to the upper crust velocity (i.e. ˜3.2 km/s). The current study is supported by The Scientific&Technological Research Council of Turkey (TUBITAK).