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Project TIPAGE wide-angle seismic data reveals the crustal structure along a profile across the Pamir and southern Tien Shan.

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Utilizing seismic refraction / wide-angle reflection data from six approximately in-line earthquakes, two-dimensional P and S velocity models and a Poisson's ratio model of the crust and uppermost mantle have been derived along the 400 km long main profile of the TIPAGE (TIen shan – PAmir GEodynamic program) project. These models show that the crustal thickness varies from about 65.5 km close to the southern end of the profile beneath the South Pamir through about 73.5 km under Lake Karakul in the North Pamir, to about 59.5 km, 60 km S of the northern end of the profile in the southern Tien Shan. Average crustal P velocities are low with respect to the global average, varying from 6.22-6.32 km s^{-1}. The average crustal S velocity is 3.60-3.65 km s^{-1} along the whole profile and thus average crustal Poisson's ratio (σ) varies from 0.245 in the south to 0.255 in the north. The main layer of the upper crust extending from about 2 km below the Earth's surface to 26 km depth below sea level (b.s.l.) has P velocities which increase from 5.93 km s^{-1} in the south to 6.07 km s^{-1} in the north. This is in contrast to the S velocities which decrease from 3.50 km s^{-1} in the south to 3.44 km s^{-1} in the north with a corresponding increase in σ from 0.23 to 0.26. The low value of 0.23 for σ at the southern end of the profile is similar to that within the corresponding layer beneath central Tibet and is indicative of felsic rocks rich in quartz in the α state. The lower crust below 31 km b.s.l. has P velocities ranging from 6.2-6.3 km s^{-1} at the top to 7.2 km s^{-1} at the base. σ for this layer is low at about 0.25 which is similar to values found in the northeast Tibetan plateau. Within the uppermost mantle, the average P velocity is about 8.10 km s^{-1} and σ is about 0.26. Assuming an isotropic situation, then a relatively cool (650-750°C) uppermost mantle beneath the profile is indicated. This would in turn indicate an intact mantle lid beneath the profile.