Geophysical Research Abstracts, Vol. 7, 03669, 2005
SRef-ID: 1607-7962/gra/EGU05-A-03669

The Lithosphere-Asthenosphere boundary Beneath Tien Shan and Tibet Regions using S-receiver functions

P.Kumar (1), X.Yuan(2) and R.Kind(3)

GFZ-Telegrafenberg-14473, Potsdam,Germny,
email:prakash@gfz-potsdam.de,Phone:0049-3311243

We use S receiver function technique to investigate the structure of the lithosphere of the western Tien Shan, the western edge of the Tarim Basin and the Karakoram regions and in central Tibet. Significant energy of S-to-P converted waves at the crust-mantle and lithosphere-asthenosphere boundaries have been observed and used for determination of the thickness of the crust and the mantle lithosphere. The Moho lies at depth of 55-65 km in most parts of the Tien Shan and shallows to 40-55 km to the northern and western end of Tien Shan. In Pamir and Karakoram the Moho is slightly deeper, at ˜70 km depth, incorporating with the high topography there. The thickness of the lithosphere varies between 90 and 120 km underneath Tien Shan and increases to a value of 160 km beneath Tarim Basin. To the south of Tarim the lower boundary of the Asian lithosphere can be clearly followed to a depth of 270 km beneath central Pamir and Karakoram, while the Indian lithosphere is observed beneath Karakoram dipping from 130 km to 170 km towards the north. The observations indicate a scenario of continental collision and subduction, in consistence with seismicity and the surface wave tomography. Our observations of S-to-P converted phases in the central Tibetan region indicate a clear and consistent negative phase from depth range of 160-200 km and found coherent through out the region. The crustal thickness in Tibetan regions is about 70 to 80 km. We report the existence of Lithosphere-Asthenosphere boundary in the entire Tibetan region without much variations in thickness in the northern (north of BNS) and as well as in the southern Tibet (south of BNS).