



Tomographic Image of Indian Lithosphere break-off beneath the Pamir Hindukush Region

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The crustal and upper mantle structure beneath the Pamir-Hindukush collision zone and surrounding areas is investigated using more than 40000 travel times from 5775 events located in the study region recorded by the stations of the worldwide seismic network and reported at the ISC catalogue. All available epicentral distances ranges were considered. All sources were located during three subsequent steps: (1) absolute location based on arrival times of most available phases; (2) double difference relocation; (3) source parameters recalculation at the main inversion step simultaneously with the velocity model. The high resolution of the resulting images is confirmed by various synthetic tests. Under SW Hindukush the northwards subducting Indian plate is imaged throughout the upper mantle and transition zone. Further to the NE, within a 300 km wide zone the upper part of the plate overturns and then the slab breaks-off after its necking at ca. 250 km depth. The tomographic images also provide evidence for belts of thickened (200-250 km) lithosphere beneath the southern border of Tarim, under Tien Shan and the Indus suture zone.