

Seismic Tomography of western Himalayan Orogen

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We analyzed teleseismic waveform data recorded on 18 broadband stations along a 400km long profile from Delhi to Karakoram in the western Himalaya. These stations with an average station spacing of 60 km operated from July 2002- Oct 2003 as a part of the Indian initiative to image the deep structure of western Himalaya, Ladakh and Karakoram. In contrast with other similar efforts in Himalaya and Tibet this profile covers both the deformed and undeformed segments of the Indian plate. We have used receiver function and travel time modelling approach to study the lateral and vertical variability in the seismic wave speed. Important results are as follows. The Moho depth increases from 40 km at Delhi to 55 km beneath the MCT, 60km at STD. Further north beneath Indus suture and Ladakh it is observed at 70km depth. We do not observe any prominent low velocity in the crust. The upper mantle discontinuities (at 410 and 660 km) are almost flat along the profile in agreement with the global reference model.