

Variation in Mantle Transition Zone beneath the Central-Tibet Region

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Topography of the 410 and 660 discontinuities bordering the Mantle Transition Zone provides information on the thickness of the Mantle Transition Zone. This information can help address several geological properties like water content and thermal status of the Mantle transition zone and geodynamic questions like genesis of mantle plumes and fate of subducting slabs. To address questions regarding the northern limit of the northward advancement of the Indian slab and as to whether the slab extends to the Bangong–Nujiang suture (BNS) present in Central Tibet, this work has been carried out.

The image of Mantle Transition Zone (MTZ) structure beneath the Central-Tibet region by applying three-dimensional Common Depth Point (CDP) stacking technique of receiver function for 120 broadband stations of two profiles located in my study area. From this data set, 1614 high-quality receiver functions are generated which are of teleseismic events that have an epicentral distance of 30° to 90° and magnitude greater than 4.5 Mb. Common Depth Point (CDP) stacking of all receiver functions resolves Mantle Transition Zone (MTZ), which appears thicker in Southern Tibet region from 28.5° to 31°, mainly due to subduction of Indian Plate beneath the Tibetan plate. A slight thickening of Mantle Transition Zone is also observed in Central-Tibet from 32.5°N to 33.5°N mainly due to depression of 660 discontinuity which in turn may be attributed to the presence of mantle lithosphere of the Eurasian plate.

Biography:

Krishn Kant Sharma pursuing BS-MS dual degree at Department of Earth Sciences (DES) in Indian Institute of Science Education and Research (IISER) Kolkata. He is recipient of the Innovation in Science Pursuit for Inspired Research (INSPIRE) fellowship from 2014-2019 funded by the Department of Science and Technology (DST), India. He is a Physics and Computer programming enthusiast since his school days and after getting introduced to earth sciences, he was fascinated by Geophysics and its applications. Therefore, currently, he is working on upper mantle discontinuities beneath the Tibet at Seismic Tomography Lab, IISER Kolkata.