

Core-mantle boundary structure beneath the Tibetan Plateau and adjacent regions

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We use waveforms from the Chinese Digital Seismic Network and 3-D synthetics to study the structure of D'' beneath the Tibetan Plateau and adjacent regions. The synthetics are calculated using `specfem3d_globe` and based on `crust1.0` for the crust, `S40RTS` for the mantle, and `ak135` for the lowermost 300 km above the CMB. We use waveform cross correlation between observed and synthetic waveforms to obtain differential travel-time residuals of S and ScS phases.

The corrected ScS-S differential travel time residuals indicate that a high shear velocity anomaly beneath the Tibetan plateau is adjacent to a low shear velocity anomaly to the west of Tibetan plateau. Slant stacks of Scd signals show that a discontinuity on top of D'' exists near the boundary of high and low velocity anomalies. Precursors of ScP to the south of this boundary suggest the existence of ultralow velocity zone (ULVZ).

Keywords: core-mantle boundary, Tibetan Plateau, slant stack