Crustal and Upper Mantle Structure across Eastern Tibet

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Extensive seismic data from eastern Tibet have been combined to investigate crustal and uppermost mantle structure that helps us to understand the geodynamics of the plateau at its margins. We use the neighborhood algorithm (NA) to invert receiver function data and surface wave dispersion. Our result shows significant variations in crustal and uppermost mantle structure within the Songpan-Ganzi terrane itself. The prominent low-velocity anomalies (Vs≤4.3 km/s) at depths of 20-40 km beneath the southern Songpan-Ganzi terranemay suggest that the crust of southern Songpan-Ganzi terrane is partially molten and is responding though the lateral mid-lower crust flow evacuated from beneath the central plateau. The crustal flow, however, does not extend to the Longmen Shan. Furthermore, the easternmost Songpan-Ganzi terrane is underlain by anomalously low velocities both in the mid-crust and uppermost mantle. This could be the consequence of a localized asthenospheric upwelling, possibly induced by removal of lithosphere.

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