



Probing the growing plateau: broadband experiments along the Northeast Tibetan margin

Frederik Tilmann (1), Hang-Tung Chow (1), Ceri Nunn (1), Keith Priestley (1), Wenjin Zhao (2), Eric Sandvol (3), James Ni (4), James Mechie (5), John Chen (6), and Zhenhan Wu (2)

(1) University of Cambridge, Earth Sciences, Cambridge, United Kingdom (tilmann@esc.cam.ac.uk), (2) Chinese Academy of Geological Sciences, Beijing, China, (3) University of Missouri, Kansas, MO, United States, (4) New Mexico State University, Albuquerque, NM, United States, (5) GeoForschungsZentrum Potsdam, Potsdam, Germany, (6) Institute for Theoretical and Applied Geophysics, Peking University, Beijing, China

The northeastern margin of Tibet is characterised, from south to north, by the high plateau of the Qiangtang and Songpan-Ganzi terranes, large strike-slip structures of the Kunlun fault, the Kunlun mountain range, which drops dramatically from elevations exceeding 5000 m into the Qaidam basin at 3500 m elevation, which is covered by thick sedimentary layers.

This area, crucial for our understanding of current plateau growth, has been surveyed by two broadband temporary seismic networks, the ASCENT and INDEPTH IV arrays. P wave travel times for 462 events were picked using multi-channel cross-correlation at up to 95 stations, resulting in nearly 30000 travel time measurements. Using a priori information about the crustal structure we compare different approaches of inverting these data, and also compare our results to those obtained using surface wave tomography.

The body wave tomographic results show very slow seismic velocities beneath the Kunlun range. Below the Qiangtang, slow velocities are found in the uppermost mantle, with faster velocities below. The fastest velocities within the upper mantle of the study region are found below the Qaidam basin, and at the southwestern margin (south of 32 N, and west of 92-93 E).