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P-wave tomographic structure of NE Tibet

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We invert a data set of more than 26,000 teleseismic P-wave arrival times to determine the variation in compressional wave structure beneath NE Tibet. The seismograms from which the arrival times were read were recorded from 572 events at 80 stations from the ASCENT and INDEPTH IV experiments from 2007-2009. The motivation for the experiments was to extend earlier seismic surveys to the edge of the plateau, and consider an area which contains the Kunlun Fault, and the Jinsha and Bangong-Nujiang sutures. The experiments are intended to resolve issues such as how deep the fault zones extend, the variation in Moho depth across the region, and consider the viability of the crustal flow hypothesis.

The resulting tomographic models show a number of large scale features. There is a slow anomaly extending to 400km depth across the Kunlun Qaidam and Songpan Ganzi terranes, from approximately $91\,^{\circ}\mathrm{E}$ to $95\,^{\circ}\mathrm{E}$. There is an extensive fast region across the Qiantang from $31\,^{\circ}\mathrm{N}$ to $34\,^{\circ}\mathrm{N}$ and $90\,^{\circ}\mathrm{E}$ to $94\,^{\circ}\mathrm{E}$, which also appears to persist to 400km depth. There is a deep, fast anomaly across the Qaidam Basin, with a sharp transition to slower material to the south. The resolution tests suggest that resolution of features tens of kilometres wide is possible, but with significant smearing (particularly in the vertical direction).