



Crustal Structure of Northeastern Tibetan Plateau from Joint Inversion of Receiver Function and Rayleigh Wave Phase Velocity Dispersion

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Northeastern Tibetan Plateau is the latest collision margin between the plateau and the Eurasian plate. The relations between the Songpan-Ganzi, Qilian block in the Tibetan Plateau, the Alax, Ordos and Western Qinling Orogen are very important to understand the process of the plateau building and northeastern extrusion. Whether the crustal flow model or the plateau growth-backstop model is feasible is still under debate in this area, and whether the deformation is limited in the crust or in the whole lithosphere is still not clear since the lack of high-resolution deep exploration. Dense seismic array of more than 670 stations with average spacing of about 30~35 km was deployed in the Northeastern Tibetan Plateau and adjacent area. Crust and upper mantle S-wave velocity structure and lithospheric discontinuity structure is obtained from the collected data by joint inversion of receiver function and Rayleigh wave phase velocity dispersion. Our results show clear low velocity anomaly and obviously thickened crust under the Qilian and the Songpan-Ganzi block. From the crustal structure, the northeastern border of the plateau growth is along the Altyn Tag fault, the Longshou Shan fault and the Wuwei-Tianzhu fault. Moho dislocation of more than 10 km under the Eastern Kunlun fault and south-dipping Moho and LAB under Western Qilian is found, which indicates the possibility of double-sided subduction under the Qilian Orogen.