



Crustal structure across Tancheng-Lujiang fault belt in East China

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Tancheng-Lujiang (T-L) fault extends more than 3,000km in the eastern China continent. T-L fault is closely related to strong earthquake occurrences such as Ms 7.8 Tangshan earthquake in 1976, basin development with rich oil/gas reserves and mineral resource concentration. The mechanism to form this fault is still in dispute. The proposed models include: post-collisional offset model (Okay and Sengor, 1992); indenter model (Yin and Nie, 1994); thrust model (Li, 1994); North China Craton penetration into South China model (Yokoyama et al., 2001) and Scissor collision model (Zhang et al., 2002, 2006). T-L fault is characterized with its segmentation, while the south segment is favored to understand the deep continental subduction and ultra-high pressure rocks extrusion from the collision between Yangtze and North China Craton. In order to provide constraints on the evaluation of the proposed tectonic models, we carried out a 400-km-long wide-angle seismic profiling across the southern segment of the T-L fault. Here we present seismic P-wave data and the interpretation results. Seismic events of reflection and refraction from Moho discontinuity and other intracrustal reflections are remarkably observed with high signal/noise ratio. Crustal P-wave velocity model was reconstructed with forward modelling inversion, and T-L fault penetrates the whole crust, with gentle penetration angle in the upper crust, but very steep angle in the lower crust, which are probably seismic indicators of two phases of lateral escaping to accommodate the collision and extrusion of continental crust of the Yangtze block.