



Upper Mantel Velocity and its Dynamic Significance in the Middle-Southern Segment of Tan-Lu Fault Zone

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Abstract: The 490 teleseismic events recorded by 154 seismic stations were used to study the upper mantle velocity structure of the middle-southern segment of Tan-Lu fault zone (TLF). The result show that: (1). the upper mantle velocity presents strong lateral heterogeneity. The TLF is a velocity gradient zone in the depth of 40–120 km, with a high-velocity anomaly is on its west and a low-velocity anomaly on its east (Fig.1a). However, in the depth of 300–400 km, the velocity anomalies on both side of TLF have changed, with a low-velocity anomaly on its west and a high-velocity anomaly on its east (Fig.1b). In the depth of 500–600 km, high-velocity anomalies are on both sides of TLF (Fig.1c). (2). the high velocity anomalies H1, H2, and H3 are located beneath the Luxi block (LXB), the Sulublock (SLB), and the Yellow sea (YS) respectively. The H1 and H2 are cut off by the TLF and the H2 may be the delaminated lithosphere, while the H3 may represent the subduction of the Paleo Pacific plate (Fig. 2). The upper mantle velocity anomalies on both sides of TLF may reveal the subduction of the paleo-pacific plate and the backarc retreat movements.

Key words: Tan-Lu fault zone, teleseismic tomography, upper mantle velocity

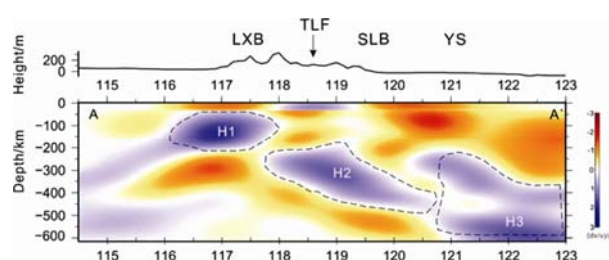


Fig. 2. the vertical sections of P velocity image (Profile along 35.5°N)

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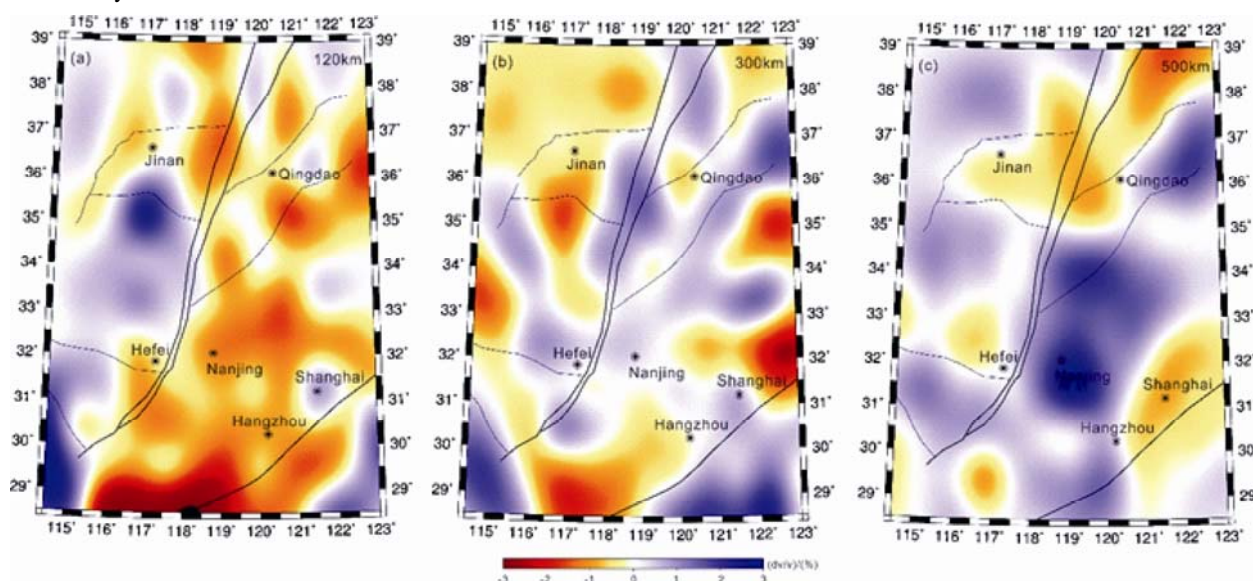


Fig. 1. P velocity image of TLF and its adjacent zone in the upper mantle (a: 120km, b: 300km, c: 500km)

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