

Geologic Setting of Strong Earthquakes in the East-North China

¹SUN Ruomei and ¹LIU Futian. ¹Institute of Geophysics, Science Academy of China, 100101 Beijing, CHINA, email: sunrm@sun.ihep.ac.cn)

The east-north China is one of high seismicity areas in China. During the past 1000 years more than 200 earthquakes with magnitude $M > 5.0$, 58

with magnitude $M > 6.0$ and 15 with magnitude $M > 7.0$ occurred. The catalogues of last 1000 years are compared with tomographic P and S images. The results are:

- 1) Hypocenters of most of strong earthquakes distribute near the transitional zones from high to low velocity on the side of high velocity in the upper crust. Projected locations of strong shocks on the S image of the lower crust distribute in transitional zones from low to high velocity at the side of low velocity.
- 2) More deep geologic setting of strong earthquakes is as follows. thickness of lithosphere of the east-north China has thinned from 200km to 80 km since early Tertiary basalt eruptions occurred in several episodes.
- 3) The 1976 Tangshan earthquake is not located near any known large surface fault, but in sharp velocity gradient zones both in horizontal and vertical cross sections. It might be the result of expansion of covered fault.
- 4) Seismicity, focal depth and mechanism of the Buohai bay link with upwelling of hot material of mantle and extensional crust there.