Geophysical Research Abstracts
Vol. 15, EGU2013-4007, 2013
EGU General Assembly 2013


# Moho depth variations beneath China continent from deep seismic sounding profiling

Jiwen Teng (1), Zhongjie Zhang (1), Yongqian Zhang (1), Jiaolong Pi (1), Yangfan Deng (1), Xiankang Zhang (2), Chunyong Wang (3), Rui Gao (4), and Cai Liu (5)

(1) 1) Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China (jwteng@mail.iggcas.ac.cn), (2) Geophysical Exploration Center, China Earthquake Administration, Zhengzhou,450003, China, (3) Institute of Geophysics, China Earthquake Administration, Beijing 100081, China, (4) Institute of Geology, Chinese Academy of Geological Sciences, Beijing 100037, China, (5) College of Geo-Exploration Science and Technology, Jilin University, Changchun 130026, China

Knowledge of Moho depth and crustal structure are required to study and explore the deep process and coupling response of the formation of mountains, basins, rocks and disasters. In the past half century, the geophysicists in China have completed more than 130 seismic refraction and wide-angle reflection profiles with a total length of 60000km and 11 global geosciences transections (GGT) in China. In this study, we aim to make a systematic research into the Moho depth and crustal structure in China based on the data of velocity models of the crust and upper mantle derived from these more than 130 wide-angle seismic profiles acquired in the last 50 years in China and the surrounding areas. With advanced interpolation technique, we obtain Moho map and average P-wave velocity model, and then make the study on the variations in Moho depth and crustal structure in different tectonics in the East Asia.

According to our research results, the resultant Moho depth ranges within 10 and 80 km, and is featured with the deepest Moho discontinuity of about 70-85km beneath Tibetan plateau formed by ongoing continent-continent collision; and relatively constant 30-35 km beneath the eastern North China craton enduring destruction of Lithosphere destruction. Also, we analyzed the average crustal thickness of the consolidated crust beneath the three cratons in China, which is characterized by a gradual thickening from east to west with the values of 29$\sim$47 km beneath North-China craton (east), 30$\sim$56 km beneath Yangtze craton (south) and 42$\sim$59 km beneath Tarim craton (west). In addition, there are three major fold tectonic units in the continental domain and the adjacent oceanic areas, namely the Tethyan-Himalayan zone (south and west), the Paleo-Asian zone (northwest and northeast) and the Circum-Pacific zone (east), which in turn are subdivided into 15 orogenic zones. The Moho depth in these 15 orogenic zones is quite different, too.