



## **Three dimensional P-wave velocity structure of crust beneath the southern of Sichuan-Yunnan region, China**

Xiangwei Yu, Shanquan Deng, and Wenbo Zhang

University of Chinese Academy of Sciences, College of Earth and Planetary Sciences, Beijing, China (yuxw@ucas.ac.cn)

The southern Sichuan-Yunnan region (SSY), located in the southeastern margin of the Tibetan Plateau, has been an important region to study the mechanism of continental collisions and the deformation model and geodynamic process of the Tibetan Plateau. Many researchers have investigated the SSY region with geological and geophysical approaches in the past 30 years. Compared with the previous tomographic studies, we have used a much more data set and updated tomographic method to determine a small scale three dimensional P wave velocity structure with spatial resolution less than 0.4 degree in regional scale.

The regional double-difference seismic tomography (tomoFDD) applied to 291871 P-wave absolute arrival times and 2430967 high quality relative P arrival times of 44754 earthquakes recorded by 90 seismic stations of Yunnan, Sichuan and Guizhou Seismic Network to simultaneously determine the detailed crustal 3D P wave velocity structure and the hypocenter parameters in SSY area. Our high-resolution tomographic model not only displays the general features contained in the previous models, but also reveals some new features. An obvious low-velocity anomaly is visible in the middle and lower crust beneath SSY area, which may reflect the weak material flow in the middle and lower crust in the southeastern margin of Tibetan Plateau. The results shows that the Honghe fault may be the southwestern boundary of Sichuan-Yunnan rhombic block existing obvious velocity anomalies among the segments of Honghe fault, which indicated the potential danger of strong earthquakes. The low-velocity anomalies in the west of the Tengchong volcanic area may represent the intra-crustal magmatic activity since the Pleistocene. The high-velocity anomaly in the east of the volcanic area reflects the condensed magmatic intrusions and volatile high-density residues in the Pliocene volcanic channel.