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# Crustal structure of the southern Taiwan comprehended from wide-angle reflection/refraction seismic data

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Taiwan is located at the convergent boundary of the Eurasia Plate and the Philippine Sea Plate. Because of the arc-continent collision in the region, Taiwan is recognized as a complex and tectonically active area with thousands of earthquakes occurred annually. The most devastating earthquake occurred in Taiwan for the last decade is the 1999 Chi-Chi earthquake. This earthquake not merely inflicted heavy casualties but further exposed the complexity of tectonic structures in Taiwan. In order to understand the seismotectonic structures beneath Taiwan more precisely, a cooperated project supported by both Taiwan and USA called the Taiwan Integrated Geodynamic Research (TAIGER) has carried out beginning from the year of 2008 to comprehend the lithospheric structures beneath Taiwan through large-scale active seismological experiments across Taiwan and the surrounding oceans. The TAIGER project provides very high quality seismic data. We have applied the data set in different geophysical studies. We believe that the project will lead us to have better insight into the seismotectonic structures beneath Taiwan in different perspectives.

Four transects were set up in the TAIGER project, including two E-W direction transects and two N-S transects. For the E-W transects, one is from Taoyuan to Yilan, while the other is fom Chiayi to Taidong. Furthermore, we have also set up 9 ocean bottom seismometers (OBS) in the Taiwan Strait and 20 seismometers in the Mainland China to be the extensions of this two E-W transects. For the N-S transects: the eastern one is from Hualien to Taidong, and the western one is from Yilan to Kaohsiung. We have deployed 600 PASSCAL Texans and 40 R-130 seismometers to record the data generated by 10 artificial seismic sources in this experiment.

The main goal of this study is to use seismic waveform recorded by the southern array with 609 seismometers to investigate 3D velocity structure and the characteristics of the Moho discontinuity in southern Taiwan. We first obtain the travel times of different crustal phases after seismic signal processing. Thereafter, we will apply the superior inversion method to investigate the velocity structure and the Moho discontinuity as well. We expect that more detailed seismic structures can be obtained from this study. It will help us to understand the geologically and tectonically evolutions in southern Taiwan.