



Seismic Migration Imaging of the Crust and Upper Mantle Discontinuity Structure beneath Southern Taiwan

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Taiwan is located in the convergent plate boundary zone where the Philippine Sea plate has obliquely collided on the Asian continental margin, initiating the arc-continent collision and subsequent mountain-building in Taiwan. Receiver function has been a powerful tool to image seismic velocity discontinuity structure in the crust and upper mantle which can help illuminate the deep dynamic process of active Taiwan orogeny. In this study, we adopt backprojection migration processing of teleseismic receiver functions to investigate the crust and upper mantle discontinuities beneath southern Taiwan, using the data from Southern Taiwan Transect Seismic Array (STTA), broadband stations of Central Weather Bureau (CWB), Broadband Array in Taiwan for Seismology (BATS), and Taiwan Integrated Geodynamics Research (TAIGER). This composite east-west trending linear array has the aperture of about 150 km with the station spacing of ~ 5 -10 km. Superior to the common midpoint (CMP) stack approach, the migration can properly image the dipping, curved, or laterally-varying topography of discontinuous interfaces which very likely exist under the complicated tectonic setting of Taiwan. We first conduct synthetic experiments to test the depth and lateral resolution of migration images based on the WKBJ synthetic waveforms calculated from available source and receiver distributions. We will next construct the 2-D migration image under the array to reveal the topographic variation of the Moho and lithosphere discontinuities beneath southern Taiwan.