

P-wave velocity structure in the southern Okinawa Trough

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The Okinawa Trough is a backarc basin under continental rifting tectonics by subduction of the Philippine Sea plate beneath the Eurasian plate at the Nansei-Shoto (Ryukyu) Trench. The rifting stage varies from north to south along the trough and the southern region is in most evolved stage. We carried out around ten seismic experiments in the southern Okinawa Trough to obtain detailed images of crustal thinning in this region. We shot six lines along several en echelon rifts that characterize the seafloor feature in the southern trough. Each seismic experiment consists of multichannel reflection seismic (MCS) profiling using 240 ch. and 3000 m long hydrophone streamer and wide-angle seismic refraction profiling using ocean bottom seismographs (OBSs) as receivers.

The crusts in the Okinawa Trough roughly have three layers of the upper, middle and lower crust, which is same as an island arc crust. P-wave velocity model beneath the Yaeyama Rift, the deepest rift in the Okinawa Trough, also consists of the three crustal layers. The crustal thickness is more than 10 km and significantly thicker than a standard oceanic crust. Many intrusion signals in MCS records characterize the crust below the rift.

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