

P-wave velocity structure in the forearc region of the southwestern Nansei-Shoto (Ryukyu) Trench subduction zone

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We carried out five seismic lines across the southwestern Nansei-Shoto (Ryukyu) forearc region to elucidate variation in crustal structures along the trench. The 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. We present the seismic structure related to the Philippine Sea plate subduction in the forearc region of the Nansei-Shoto island arc.

Thick materials with V_p less than 4 km/s characterize the accretionary wedge at the front of the forearc basin in the oblique subduction area to the southwest of 126 E. On the other hand, P-wave velocity structure beneath the high free-air gravity region in the forearc at 126-128 E reveals that materials with a high velocity of around 4.5 km/s ascend to 2-3 km beneath the seafloor. The subducting Okinawa-Luzon fracture zone was able to be clearly imaged not only in MCS profiles but also in the P-wave velocity distribution to the northeast of 126 E. We will discuss the relationship between the variation in the seismic structure and the characteristic of the regional seismicity.

Many OBSs on the forearc region recorded several reflection signals from the subducting Philippine Sea plate. We tried mapping these signals to estimate the position of the subducting plate.