

SEISMIC REFLECTION IMAGE OF LITHOSPHERIC STRUCTURE BENEATH SHIKOKU, SW JAPAN : PRELIMINARY RESULT OF SHIKOKU 2002

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Shikoku Island lies above an active subduction zone where the Philippine Sea Plate is being subducted beneath the Eurasian plate. Shikoku Island was formed by accretionary processes since late Mesozoic. A better understanding of the lithospheric structure of the region is important for assessing the risk of large mega-thrust earthquake such as Nankai earthquake of 1946 (M 8.0) and also for understanding processes of continental growth. In order to define the deep geometry of major structure within the crust as well as the down-going slab, a deep seismic reflection profile was collected across Shikoku Island, south western Japan. This experiment was performed as a part of a larger scale seismic experiment (2002 Deep Seismic Profiling across SW Japan) conducted by the Japan Marine Science and Technology Center and Joint Japanese University teams in late August. In Shikoku Island, a 110-km seismic line was deployed perpendicular to the trench axis and major geologic boundaries. In the northern part of the seismic line, 10-Hz vertical geophones, connected by a digital telemetry cables, were deployed over 12 km at a 50 m spacing. At the main part of the seismic line, 805 TEXAN (Reftex 125) recorders with 4.5 Hz geophones were deployed at ca. 120 m-intervals for 98 km. A total of 10 shots with a maximum offset of 160 km, were clearly recorded by this dense array. Near-vertical incidence data were obtained with recordings of a total of 5 shots (50-500 kg). The shots were recorded for 64 sec at 4 ms sampling rate by digital telemetry cable recorders. The shots and earthquakes were recorded for ca. 21 hours (semi-continuous mode) at 8 ms sampling rate by TEXAN recorders. Records from these shots exhibit strong, layered reflections from 3 to 12 sec., which we interpret as being derived from the middle to lower crust and down-going slab.