

SSS035-P08

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Seismic structure survey and ocean bottom earthquake observations in western Nankai Trough, off Shikoku Island

Koichiro Obana^{1*}, Ayako Nakanishi¹, Tsutomu Takahashi¹, Yojiro Yamamoto¹, Shuichi Kodaira¹, Takeshi Sato¹, Hidetoshi Fujimori¹, Kazuhiko Kashiwase¹, Yoshiyuki Kaneda¹

¹JAMSTEC

Along the Nankai trough, southwestern Japan, large interplate thrust earthquakes, such as 1946 Nankai and 1944 Tonankai earthquakes, of magnitude 8 class have occurred repeatedly with recurrence intervals of 100-200 years [e.g., Ando, 1975]. Recently, possibility of simultaneous rupture from Tokai to Hyuga-nada along the Nankai trough is suggested. Comparison in the crustal structure and the earthquake activity between Hyuga-nada region and off Shikoku area is important to understand segmentation and synchronization of seismic rupture of megathrust earthquakes along the Nankai trough. The seismic structure survey and earthquake observations in Hyuga-nada were conducted from December 2008 to January 2009. We conducted seismic structure surveys and earthquake observation off Shikoku Island from October 2009 to June 2010. This experiment is a part of "Research concerning Interaction Between the Tokai, Tonankai and Nankai Earthquakes" funded by Ministry of Education, Culture, Sports, Science and Technology, Japan. In October 2009, 180 ocean bottom seismographs (OBSs) were deployed by R/V Kairei of Japan Agency for Marine-Earth Science and Technology (JAMSTEC) on three along-trough and four across-trough profiles with 5 km intervals. In addition to these OBSs, 21 OBSs for long-term observations were deployed on the profiles with about 20 km intervals. R/V Kairei conducted seismic surveys for crustal structure using the air gun array with a total volume of 7800 cubic inches. The OBSs except for 21 OBSs for long-term observations were recovered by R/V Kaiyo of JAMSTEC in January 2010. The OBSs for long-term observations were recovered in June 2010 by R/V Kaiyo. The data corrected by the OBSs were used for both seismic structure surveys and earthquake observations. The active seismic survey using the OBSs deployed with 5 km interval indicates spatial heterogeneity in crustal structures that could not be imaged by previous seismic surveys [e.g., Takahashi et al., 2002]. The OBSs for long-term observations observed about 120 earthquakes not included in Japan Meteorological Agency (JMA) Earthquake Catalogue during the 9-month observations. In addition to the active seismic surveys, the seismic records of the earthquakes obtained by the OBSs are used for crustal structure imaging.

Keywords: Nankai trough, seismic survey, ocean bottom seismograph, seismicity