

SSS027-02

Room: 303

Time: May 24 14:00-14:15

Ocean bottom earthquake observations in Hyuga-nada, western end of Nankai trough

Koichiro Obana^{1*}, Tsutomu Takahashi¹, Yojiro Yamamoto¹, Shuichi Kodaira¹,
Ayako Nakanishi¹, Gou Fujie¹, Kaoru Takizawa¹, 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. The crustal structure and the earthquake activity in Hyuga-nada region are important to understand segmentation and synchronization of seismic rupture of megathrust earthquakes along the Nankai trough.

In December 2008, active seismic structure surveys were conducted in Hyuga-nada region, western end of the Nankai trough. This survey was conducted as 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 this study, 160 ocean bottom seismographs (OBSs) were deployed with a spacing of 5 km along four seismic profiles by R/V Kairei of Japan Agency for Marine-Earth Science and Technology (JAMSTEC). Length of the profiles is 830 km in total. These OBSs were recovered in January 2009 by R/V Kaiyo of JAMSTEC, except for 28 OBSs recovered by R/V Kairei in December 2008 just after the airgun shootings. We used continuous seismic data recorded by these OBSs to investigate seismic activity and crustal structure in Hyuga-nada region.

Waveform data of the OBSs were prepared for earthquakes observed by the OBS network and listed in the Japan Meteorological Agency catalogue. In addition to the OBSs, we used Hi-net seismic stations on Kyushu and Shikoku islands operated by National Research Institute for Earth Science and Disaster Prevention. Hypocenter distribution based on manually picked arrival times of the earthquakes show relatively higher seismicity near Kyushu-Palau ridge in the southwestern part of the OBS network and along east coast of the Kyushu Island. On the other hand, seismicity is inactive off Shikoku Island in the northeastern part of the OBS network. At the eastern end of the subducted Kyushu-Palau ridge, which is imaged by the active seismic survey, a cluster of earthquakes in the subducted crust of the Philippine Sea plate was identified. The inhomogeneous distribution of the earthquakes could be related to the topography and structure of the subducted Philippine Sea plate, such as Kyushu-Palau ridge.

Keywords: Nankai trough, Hyuga-nada, ocean bottom seismograph, seismicity