Seismic experiment in the region of Off-Sanriku earthquake

Seiichi Miura[1]; Shuichi Kodaira[2]; Alex Smith[3]; Takeshi Sato[4]; Narumi Takahashi[5]; Tetsuro Tsuru[2]; Aki Ito[2]; Gou Fujie[3]; Kiyoshi Suyehiro[3]; Yoshiyuki Kaneda[6]; Toshinori Sato[7]; Ryota Hino[8]; Kimihiro Mochizuki[9]; Junzo Kasahara[10]; Toshihiko Kanazawa[11]

[1] JAMSTEC, IFREE; [2] IFREE, JAMSTEC; [3] JAMSTEC; [4] Deep Sea Research Dep., JAMSTEC; [5] DSR, JAMSTEC; [6] JAMSTEC,Frontier,IFREE; [7] Chiba Univ.; [8] AOB, Tohoku Univ.; [9] EOC, ERI, Univ. of Tokyo; [10] Earthq. Res. Inst., Univ.Tokyo; [11] ERI, Tokyo Univ

The Japan Trench is a plate convergent zone subducting the Pacific Plate beneath the NE Japan. Anumber of earthquakes occurred around the Japan Trench associated with the plate convergence (e.g. Yoshii, 1979). Great or large earthquakes of M7-8 such as the 1968 Tokachi or the 1994 Off-Sanriku earthquakes occurred Off Aomori, northern Japan Trench. Many studies revealed the details of rupture process or asperity areas of the great earthquakes (e.g. Yamanaka and Kikuchi, 2001). According to Nagai et al. (2001), the epicenters of great or large interpolate tend to initiate at the eastern edge of the asperities of the great earthquakes and the aftershocks occurred around the asperities. To reveal the relationship between the seismicity pattern and crustal structure, a seismic survey off-Sanriku earthquake region was conducted by the Japan Marine Science and Technology Center (JAMSTEC) collaborating with the Earthquake Research Institute, University of Tokyo and universities (Kodaira et al., 2003). The seismic lines were one EW line (EW1) and five NS lines (NS1-NS5) covering the whole of asperity. We will present the preliminary results of NS1 and NS2 in the asperities, and Dr. Sato will present those of NS3-NS5 in the vicinity of epicenters.

The OBS data is good enough to pick the first arrival signals almost of all offset distance. Several clear later phases can be interpreted to be reflection phases of deep interfaces. However, the first arrival signals are obscure in the northern portion of the NS1. There is a resemble characteristic west of the survey area (Hayakawa et al., 2002). According to Hayakawa et al. (2002), the amplitudes on OBS-explosion records are low in the northern portion where the P-wave velocity is lower than that of surrounding. We will reveal the detailed crustal structure around the great earthquakes using OBS data with MCS profiles and discuss the relationship between the structure and the seismicity.