

Overview of seismic reflection characterization of subduction zone around 39N at the Japan Trench

Junzo Kasahara[1], Mikako Nakamura[2], Tomoaki Yamada[3], Kimihiro Mochizuki[4], Toshihiko Kanazawa[5], Ryota Hino[6], Minoru Nishino[6], Tomoharu Kuno[6], Asako Kuwano[7], Toshinori Sato[8], Yasuyuki Nakamura[9]

[1] Earthq. Res. Inst., Univ.Tokyo, [2] ERI, Univ of Tokyo, [3] ERI, Univ. of Tokyo, [4] EOC, ERI, Univ. of Tokyo, [5] ERI, Tokyo Univ, [6] RCPEV, Tohoku Univ., [7] RCPEV,Tohoku Univ., [8] Chiba Univ., [9] Ocean Res. Inst., Univ. Tokyo

A low seismicity zone between 38deg-40 min N and 39deg-00 min N on the forearc slope of the Japan Trench has been recognized for several decades. In order to estimate future potentials for large earthquakes generation, It is very important to characterize the seismic nature of the plate boundary for this region. The controlled source-OBS study in 1996 showed inhomogeneous distribution of seismic reflection intensities along subducting plate boundary at this region (Fujie et al., 2000). They suggested the possibility of fluid or mechanically weak material at the plate boundary to reduce strength of plate coupling. The study of the 3D distribution of seismic reflection intensity for this region may lead a quantitative estimation of the potential to generate large earthquakes.

For this purpose, we carried out a controlled source-OBS seismic experiment off Kamaishi in the forearc slope of the Japan Trench using R/V Hakuho-maru and a chartered ship in August-October, 2001. Forty OBSs were placed on 30 km x 50 km on seven seismic lines. 57 litter airguns were used as seismic source. The present report describes the outline of experiment and preliminary results obtained by this experiment. OBS records along the N-S lines and off the lines showed a large spatial variation of reflection intensities.