

Microseismicity around the focal area of the 1978 Miyagi-Oki earthquake by OBS observation(2)

Yojiro Yamamoto[1]; Ryota Hino[1]; Minoru Nishino[1]; Asako Kuwano[2]; Yoshihiro Ito[3]; Tomoaki Yamada[4]; Kazuo Nakahigashi[5]; Toshihiko Kanazawa[6]; Kenji Ohta[7]; Tetsuo Hashimoto[8]

[1] AOB, Tohoku Univ.; [2] RCPEV, Tohoku Univ.; [3] NIED; [4] ERI, Univ. of Tokyo; [5] ERI; [6] ERI, Tokyo Univ; [7] Sendai, JMA; [8] Seismo. Volcano. Dep., JMA

In the subduction plate boundary off-Miyagi, middle part of the Japan Trench area, M 7 class interplate earthquakes occur repeatedly at intervals of about forty years. Twenty-six years has already passed since the occurrence of the most recent earthquake, the 1978 Miyagi-Oki earthquake (M 7.4), and the Japanese government evaluated that the next large earthquake may occur within 20 years from now with over 80 % possibility. We started a series of microearthquake ocean bottom seismographic (OBS) observations from September 2002 in order to clarify the spatio-temporal distribution of seismicity around the area where the next large earthquake is supposed to occur. The OBS network is composed of five stations where long-term recording OBSs are installed and ten stations with short-term recording OBSs. At the former five stations, the long-term OBSs are replaced every year to maintain continuous seismic observation until 2005, and at the rest ten stations are deployed during the summer of 2003 and 2004. By adding the arrival time data picked from the OBS records to the land seismic network data by Tohoku University, we relocated hypocenters of the earthquakes taking places in the off-Miyagi area. Owing to the OBS data, the accuracy of focal depths was greatly improved and the hypocenters were relocated along a landward dipping plane, the subducting plate interface. The shape of the plate boundary defined by the relocated hypocenter distribution shows significant change of the dip angle at about 130 km off the coast, where the depth to the plate boundary is about 20 km. Similar geometry of the plate boundary has been reported in the southern and northern part of the Japan Trench subduction zone.