

Spatial distribution of earthquakes off the coast of Fukushima deduced from a one-year OBS observation in 2013

YAMADA, Tomoaki^{1*} ; NAKAHIGASHI, Kazuo² ; SHINOHARA, Masanao¹ ; MOCHIZUKI, Kimihiro¹ ; SHIOBARA, Hajime¹

¹Earthquake Research Institute, Univ. of Tokyo, ²Kobe Univ.

The 2011 Tohoku earthquake (M9.0) vastly changes stress field around the rupture zone, and many aftershocks and other related geophysical phenomenon such as geodetic movements have been observed. The seismicity not only keeps still high rate compared with that before the 2011 earthquake but is important to figure out the time-spacious distribution during the relaxation process for understanding the giant earthquake cycle. Many studies using ocean bottom seismometers (OBSs) [e.g. Shinohara et al., 2011, Nakahigashi et al., this meeting] have been doing since soon after the 2011 Tohoku earthquake in order to obtain aftershock activity precisely. Here we show one of the studies at off the coast of Fukushima which is located on the southern edge of the rupture zone of the 2011 Tohoku earthquake. 12 short-period type [Lennartz 3Dlite] OBSs (SOBS) and 4 broadband type [Guralp CMG 3T] OBSs (BBOBSs) in August 2012 were installed. 20 SOBSs and 4 BBOBSs attached with absolute pressure gauge [Paroscientific Model 8B] were added in November 2012. After one year continuous recording, 36 OBSs were recovered in November 2013. We selected characteristic 1,000 events in the vicinity of the OBS network based on a hypocenter catalog publish by the Japan Meteorological Agency, and extracted the events' data from all available OBS data after time corrections caused by each internal clock. Each P and S wave arrival times, P wave polarity and maximum amplitude were picked manually on a computer display using the WIN system [Urabe and Tsukuda, 1991]. We assumed one dimensional velocity structure that is modification of the result from an active source experiment close to our network, and applied time corrections every station which were estimated from differences from theoretical and observational travel times for removing ambiguity of the assumed structure. Then we adopted the maximum-likelihood estimation technique [Hirata and Matsu'ura, 1987] and calculated the hypocenters. Preliminary results show that intensive activity near the Japan trench can be seen while there was a quiet seismic zone between the trench zone and landward high activity zone.

Keywords: off Fukushima, Aftershock activity, Long-term OBS