海底地震観測から推定した琉球海溝北部の震源分布
Hypocenter distribution in northern Ryukyu Trench subduction zone, deduced from ocean bottom seismographic observation

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The Ryukyu Trench is a plate convergence zone whose total length of about 1,300 km, and its northern end borders on the western end of the Nankai Trough. Due to the subduction of Philippine Sea plate in northwest direction, not only active seismicity but also short-term slow slip events (SSEs) (Nishimura, 2014) were observed in the forearc region of Ryukyu arc. In addition, Yamashita et al. (2015) reported the existence of low frequency tremor (LFT) activity at from the northern end of Ryukyu forearc to Hyuga-nada. The precious locations of both seismicity and plate boundary are important to evaluate the seismic potential for interplate large earthquake. To know the seismicity, lithospheric structures and plate geometry, Japan Agency for Marine-Earth Science and Technology (JAMSTEC) launched a series of seismic observations and active-source seismic surveys at the Ryukyu arc from 2013, as a part of research project funded by Ministry of Education, Culture, Sports, Science and Technology, Japan. In FY2016, we have conducted a passive source observation in the northern Ryukyu forearc region. We have deployed 47 seismic stations including 43 ocean bottom seismographs (OBS) and 4 onshore stations at Tanegashima (two stations), Nakano-shima, and Akuseki-jima. The observation period of OBS is about 4 months, from September to December 2016.
Using continuous seismic records, we detected events and calculated their location by manual picking of first arrivals. Our preliminary result shows that there are few interplate earthquake activities near the trench axis, where LFT or SSE activities are observed. According to the plate geometry model of slab1.0 model (Hayes et al., 2012), the active region of interplate earthquake is mainly located between 20 and 30 km depth of plate boundary. We also found many deep intraslab earthquakes within slab mantle. Some of these intraslab seismicity are observed in the seaward of trench axis. In addition, the very active shallow earthquake cluster is found where clear fault image was obtained by reflection survey. We will show the result of updated hypocenter distribution and discuss the relationship among seismicity, LFT, SSE and geometry of plate boundary.

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