琉球海溝北部における自然地震観測
Seismic observation on northern Ryukyu Trench subduction zone

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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, active seismicity was observed in the forearc region of Ryukyu arc. In addition, occurrence of large earthquakes was well known; for example, 1911 off-Amami (M8.0), 1923 near Tanegashima (M7.1), and 1774 Yaeyama (M7.4) earthquakes. On the other hand, both detection capacity and location accuracy of earthquakes in this region were not enough to discuss the detailed seismicity pattern and plate geometry, since the seismic network is limited on sparse-distributed islands. 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. All OBSs are equipped with short period (4.5 Hz) geophones. Onshore stations are deployed at Tanegashima (two stations), Nakanoshima, and Akuseki-Jima, composed of broadband and/or 2 Hz seismometers. The average separation of seismic network is about 30 km, and covered the area of 250 km and 160 km in trench parallel and normal directions, respectively. The observation period of OBS is about 4 months, from September to December 2016. From the continuous seismic record, we have detected more than three-times the number of events identified from Japan Meteorological Agency (JMA) catalogue. We also confirmed that almost all our seismic stations recorded the seismic signal when the JMA magnitude of event located within our network is larger than 2.5. In this presentation, we will show the preliminary result of hypocenter relocation analysis.

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