

## Spatial and temporal distribution of very low-frequency earthquakes activity in the central Ryukyu Trench using ocean-bottom seismometers

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We investigated the spreading process of the slow earthquake induced by regular earthquakes using the spatio-temporal variation of the very low-frequency earthquakes (VLFEs) swarm in the central Ryukyu Trench. We used the waveforms of the ocean bottom broadband seismometers (OBSs) in the central Okinawa Trough and central Ryukyu Trench and F-net broadband seismometers. We bandpass-filtered at 0.05-0.1 Hz for the vertical component waveforms and analyzed using cross-correlation with template events to determine their relative positions. The analysis period was from September 2018 to June 2019. During this period three major VLFE swarms (November 2018, January 2019, and March 2019) occurred in and near the OBS network. Among them, November 2018 VLFE swarm, which occurred in the northeast of Amami Island, accompanied the migration of the VLFE activity. The detailed distribution of the VLFE swarm and regular earthquakes showed that the cluster of the VLFE swarm was distributed west and south of the cluster of regular earthquakes. The VLFE swarm started in the west of the cluster of regular earthquakes after the swarm-like earthquake activity (maximum magnitude of 4.9) occurred on November 5-7, 2018 in the cluster of regular earthquakes. The area of the VLFE swarm spread northeast and southwest direction, which is along the strike of the subducting plate. After November 14, the VLFE swarm migrated to the shallower part. On the other hand, in the case of March 2019 swarm in the south of Amami Island, the VLFEs were concentrated in several very small patches. From the spatio-temporal distribution of the low-frequency earthquakes, the slow earthquakes did not migrate south of Amami Island and that they occur in isolation (Nakamura, 2017). These suggest that the condition of the interplate coupling on the subducted plate interface or the connectivity of the region which can cause slow earthquakes differs between the north and south of the region.