Low frequency earthquakes near western margin of the Ryukyu trench axis

Low frequency earthquakes near western margin of the Ryukyu trench axis

Tu Yoko[1]; 安藤 雅孝 [2]; 熊谷 博之 [3]; 山中 佳子 [4]
Yoko Tu[1]; Masataka Ando[2]; Hiroyuki Kumagai[3]; Yoshiko Yamanaka[4]

[1] 中央研究院地球科学研究所; [2] 中央研究院地球科学研究所（台湾）; [3] 防災科研; [4] 名大・環境
[1] Institute of Earth Sciences, Academia Sinica; [2] Inst. Earth Sci., Academia Sinica (Taiwan); [3] NIED; [4] Environmental Studies, Nagoya Univ.

yoko@earth.sinica.edu.tw

Seismograms from BATS (Broadband Network in Taiwan) and F-Net (NIED's broadband network in Japan) were analyzed to find low frequency earthquakes (LFE's) along the Ryukyu trench. All seismograms in the year of 2007 were band-path-filtered (0.02-0.05 Hz) to pick-up LFE's. Several clusters of LFE's were found near 1) the westernmost islands of Yonaguni, Ishigaki, Miyako and 2) Okinawa. In this study LEF's in the former areas are focused. First, high signal-to-noise-level events were selected out the broadband seismograms. Then, local and teleseismic earthquakes were removed from these events using the hypocenter catalogs of the PDE, the Central Weather Bureau (CWB) and the Japan Meteorological Agency (JMA). Moreover, these events were cross-correlated with typical low-frequency events with size of about Mw4.0. Through the procedure, about 900 events were identified as LFE's in 2007. Spectra of three typical events show peak frequencies between 0.1 to 0.05 Hz. The CMT solutions were obtained for the LFE's using the inversion technique by Nakano and Kumagai (2008). LFE's were determined by a grid-search finding a minimum residual within an area of latitude range 5 degrees and longitude range 2 degrees and a depth range 0 to 100 km. The best-fit model is a revise fault located east of Miyako Island near the trench axis. The distribution of location and depth suggests that LEF's occurred in the accretionary prism along the Ryukyu trench similar to those found off Central Honshu.