

## Detection of Submarine Volcanic activities by OBS arrays

# Zhao Zhao[1], Hiroko Sugioka[2], Yoshio Fukao[3], Kenji Kanjo[4], Toshihiko Kanazawa[5]

[1] ERI, Univ. of Tokyo, [2] JAMSTEC, [3] Earthq. Res. Inst., Univ. of Tokyo, [4] MRI, [5] ERI, Tokyo Univ

From September to December 1999, swarms of T-phases were observed by two OBS arrays deployed off Boso(4 OBS) and Sannriku(3 OBS), Japan. We read the arrival times and envelope maximum of T-phase and solve a linearized equation for source location, origin time and sound velocity in the SOFAR channel. We found that these events occurred around Fukutokuoka-no-Ba, indicating high submarine volcanic activity there. We also showed the maximum amplitude of T-phases measured on the bandpass-filtered records (5-9 Hz) as a time function. The distribution indicates that 12 sequential submarine volcanic events occurred. Generally, the distributions showed a small gradient at the beginning but a sharp gradient at the end of each event, indicating a slow start and a sudden end of submarine volcanic activities.

The permanent ocean bottom seismographs (OBS) have been installed off the southeast of Boso Peninsula and the coast of Sannriku, Japan. We hereby report the use of these two submarine cable OBS arrays deployed 4 stations at Boso and 3 stations at Sannriku. From September to December, 1999, swarms of T-phases were observed by OBS networks off the Boso Peninsula and the coast of Sannriku, Japan.

The observed T-phases were accompanied by no P or S waves. They had shorter duration and higher prominent frequency than those of tectonic earthquakes, and their spectra showed striking peaks at about 6Hz. All these characteristics are similar to those of volcanic T-phases reported before, therefore we conclude that they were excited by submarine volcanic activities.

We read the times of arrival and envelope maximum of T-phase for each OBS record and solve a linearized equation of observation for source location, origin time and sound velocity in the SOFAR channel. We found that these events occurred around Fukutokuoka-no-Ba, indicating high submarine volcanic activity in this region. The mean interval time of these repeated T-wave packets was about 25 s. We also showed the maximum amplitude of T-phases, measured on the bandpass-filtered records (5-7 Hz) at BSO4 station located near the axial depth of the SOFAR channel, as a function of time. The distribution indicates that 12 sequential submarine volcanic events occurred in this period and each distribution function has a peak. In general, the distributions showed a relative small gradient at the beginning but a very sharp gradient at the end of each event, which suggests that a relative slow start and a sudden end of submarine volcanic activities.