

## The phase velocity and arrival direction of infragravity waves observed by DONET

Yoko Tono<sup>1\*</sup>, Kiwamu Nishida<sup>2</sup>, Yoshio Fukao<sup>1</sup>, Akiko To<sup>1</sup>, Narumi Takahashi<sup>1</sup>

<sup>1</sup>Institute for Reserch on Earth Evolution / Japan Agency for Marine-Earth Science & Technology, <sup>2</sup>Earthquake Research Institute, University of Tokyo

The Infragravity wave (IG wave) creates periodic, horizontally propagating pressure fields at the deep seafloor. The displacement to pressure transfer function, called as the compliance, provides information about elastic wave velocity of ocean crust (Crawford et al., 1991). We have tried to detect the IG wave from DONET data and to measure the compliance continuously which aims to monitor the stress and the distortion beneath the Nankai Trough. In this study, we report the phase velocity and arrival direction of IG wave detected from DONET data.

We use the data of vertical component of broadband seismometer and those of quartz pressure gauge recorded from January, 2011 to December, 2012. The IG waves are detected by a slant stack method. We stack the waveforms in a frequency domain between 0.005 and 0.025 Hz. The slowness and direction which give the maximum rms amplitude, are considered as the phase velocity and arrival direction of IG wave.

Since the phase velocity of IG wave changes with water depth, the phase velocity with same wavelength changes at the depths of 2000 and 4000 m. We use the data observed at the stations which are installed at about 2000 m depth. Although the estimated phase velocity and arrival direction are unstable till October, 2011, the stable results are shown after that. The 57% and 48% of results show the phase velocity of 123-127 m/s and arrival direction of 140 -160 deg from the north, respectively.

Although the origin of IG wave with stable arrival direction of 140-160 deg is one of the future subjects, we assume that the IG wave always comes from southeast with phase velocity of 125 m/s to the stations installed at about 2000 m depth. This stable IG wave would be detected by the stacked waveforms for a station or an array of 4 stations connected to each node and would provide us the localized compliance.

Keywords: Infragravity wave, DONET, compliance