

Three year observations of ocean infragravity waves by broadband seismometers and pressure gauges of Japanese seafloor network

TONO, Yoko^{1*} ; NISHIDA, Kiwamu² ; FUKAO, Yoshio¹ ; TO, Akiko¹ ; TAKAHASHI, Narumi¹

¹JAMSTEC, ²ERI

Ocean infragravity (IG) waves are sea-surface gravity waves with periods of several minutes and wavelengths up to tens of kilometers. We used a slant-stack technique to detect IG waves from the three-year period records (2011-2013) of the vertical component broadband seismograms and pressure gauges of the seafloor network deployed in the Nankai Trough region (DONET). IG signals show good match in waveform between the seafloor displacement and pressure with propagation speeds consistent with the seafloor depths of 2000 m. The signal intensities are strongly azimuth-dependent. Except for the days with extreme weather, waves incoming from the SE direction (from the deep ocean to the coast across the Nankai Trough) are by far dominant. The incoming direction sharply splits into two, SSE and ESE. Waves from the deeper ocean in the SSE direction are more dominated in longer-period components than those from the shallower ocean in the ESE direction. Amplitudes of these waves clearly show a seasonal variation, high in winter and low in summer. The effect of typhoon is to generate IG waves incoming from the source direction and those incoming from the NE-ESE direction through the corridor between the coast and the Nankai trough. The latter is often stronger than the former.

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