Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

SSS26-P08 Room:Convention Hall Time:May 19 18:15-19:30

Basal boundary depth of the Kazusa Group and its equivalents in the Kanto Plain inferred from seismic interferometry

Kazuo Yoshimoto[1*], Naoshi Hirata[2], Keiji Kasahara[2], Kazushige Obara[2], Hiroshi Sato[2], Shin'ichi Sakai[2], Hiroshi Tsuruoka[2], Shigeki Nakagawa[2], Hisanori Kimura[3], Toshikazu Tanada[3], Kazuki Miyaoka[4], Hisashi Nakahara[5]

[1]Nanobioscience, Yokohama City Univ, Yokohama, Japan, [2]ERI, Univ. of Tokyo, Tokyo, Japan, [3]NIED, Tsukuba, Japan, [4]Hot Springs Res. Inst. of Kanagawa Pref, Odawara, Japan, [5]Geophysics, Science, Tohoku Univ, Sendai, Japan

Sedimentary structure in the Kanto Plain has been investigated by using many geophysical approaches (e.g. seismic reflection survey). However, mainly because of the insufficient investigation point in the target area, there is still ambiguity in the local variation of sedimentary structure. In this study, we investigated the depth distribution of the basal boundaries of the Kazusa Group and its equivalents from the seismic interferometry of strong motion records.

Seismic waveforms of 231 local earthquakes recorded by the local seismic networks (MeSO-net, SK-net, SUPREME, K-NET, etc) were analyzed in this study. The autocorrelation function of SH displacement waveform from a single event was stacked for all events available at each station to obtain the reflection response of S-waves for shallow underground structure. In many reflection responses, we observed clear S-wave reflections from the basal boundaries of the Kazusa Group and its equivalents. These reflection phases are observed most clearly in the reflection responses from MeSO-net stations where a borehole seismometer is deployed at the depth of about 20 m. This result shows that the seismic interferometry of local earthquake waveforms is quite effective for investigating the sedimentary structure even in the densely populated area with high ground noise.

The depth of the basal boundaries of the Kazusa Group and its equivalents shows large local variations. For instance, the depth is shallow ($<$ 1.5 km) in the Kanagawa area and increases up to about 1.5 km towards the Tokyo area along the Tsukuba-Fujisawa observation line of MeSO-net. In contrast to this, we may summarize by the data analysis over whole target area that the lowest level of the basal boundaries of the Kazusa Group and its equivalents in the Kanto Plain (about 2 km) is located around Chiba City in the Boso Peninsula. We plan to show several sheets of the pseudo seismic reflection profile from the seismic interferometry to discuss the depth of the basal boundaries of the Kazusa Group and its equivalents in detail at poster presentation.

ACKNOWLEDGMENTS

Data provided by MeSO-net and SK-net are gratefully acknowledged. We thank Tokyo metropolitan government, Chiba, Gunma, Ibaraki, Kanagawa, Saitama, and Tochigi Prefecture, and Yokohama City. We also thank Earthquake Research Institute,University of Tokyo, Japan Meteorological Agency, National Research Institute for Earth Science and Disaster Prevention, and Tokyo Gas Co., Ltd.

Keywords: seismic interferometry, Kanto Plain, sedimentary structure, Kazusa Group