

Estimation of subsurface structure by high density microtremor observations in Kochi Plain

OISHI, Yusuke^{1*} ; KUBO, Atsuki² ; TAKAHASHI, Hirokazu³ ; YAMASHINA, Tadashi²

¹Studies in Science, Graduate School of Integrated Arts and Sciences, Kochi University, ²Kochi Earthquake Observatory, Faculty of Science, Kochi University, ³Faculty of Science, Kochi University

Kochi Plain is located around source region of the great Nankai Earthquake. Strong ground motion is expected in this area, because soft subsoil is widely deposited in Kochi Plain. In this study, we investigate H/V spectra of microtremor in the Kochi Plain. Microtremor study with single station is cheaper, quick and easier way than sampling boring core. It is convenient to reveal horizontal variation of soil/basement structure. We append 213 measurements in addition to previous reported 1041 measurements (Oishi et al., JpGU 2013, SSS35-P02). In total 1254 measurements are used to H/V spectral analysis. Figure shows distribution map of dominant periods by H/V spectral analysis based on microtremor observations in Kochi Plain. In perspective, dominant periods of H/V spectra around northern Urado-Bay region are longer than other regions. According to soil/basement model using boring data, the bedrock depth at this region is especially deep but boring which reaches the bedrock is limited. In contrast, H/V spectral analysis is useful to grasp the extent of region with deep soil/basement boundary. Dominant periods of H/V spectra around western part of Kochi Plain are relatively shorter than Urado region. The damaged areas of the past 2 (1854 and 1946) Nankai Earthquakes match with areas where the dominant period is long and/or the amplification factor is large. High density observations in this region show clear local variations. These are not reflected on current hazard maps or seismic intensity estimation maps. Using H/V spectral analysis based on high density microtremor observation, we are detecting patterns of soil/basement structure which has not be grasped using only boring core data.

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Keywords: microtremor, H/V spectral ratio, subsurface structure, Kochi Plain

