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Search

[ADVANCED](#)[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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BUTSURI-TANSA(Geophysical Exploration)

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[\[PDF \(1755K\)\]](#) [\[References\]](#)**Predominant period of the long-period ground motions in the Osaka basin**Ken Miyakoshi¹⁾ and Masanori Horike²⁾

1) Geo-Research Institute

2) Osaka Institute of Technology

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ABSTRACT We examined the average predominant period of seismograms observed at the strong ground motion observation stations, maintained by CEORKA (Committee of Earthquake Observation and Research in the Kansai Area), in the Osaka basin for 7 earthquakes (M_J 5.4-7.4), which occurred in Western Japan.

We also derived the predominant period of fundamental-mode Love and Rayleigh waves from their dispersion curves, calculated for the 1-D velocity structure models extracted from the Osaka basin model. The observed predominant periods show good agreement with the calculated predominant periods smoothed by spatial windows with radii of a wavelength for Love waves as well as Rayleigh waves. Based on this result, we made a predominant-period map of the Osaka basin. This map provides useful information about earthquake resistant of high-rise buildings.

We find simple linear relationships between the calculated predominant periods of the surface waves (Love and Rayleigh waves) and the sediment thickness beneath sites. Specifically, the predominant periods in unit of second for Love waves are 5 times the sediment thickness in unit of km and those for Rayleigh waves are 2 times. However, this relationship is bounded at periods of 6-8 s for Love waves.

Key words: Osaka basin, Love waves, Rayleigh waves, predominant period

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