

A Study on the Long Period Ground Motions Observed in Osaka Bay Area

Takao Kagawa^{1*}

¹Tottori Univ. Graduate School of Eng.

The predominant period of ground motion in Osaka bay area is assumed about 6 seconds from deep sedimentary structure. The bedrock depth in the area is estimated around 1.6 km. Through the 2011 off the Pacific coast of Tohoku earthquake, large long period ground motion was observed and high rise building with natural period around 6 seconds suffered considerable damage. KiK-net observation site in Osaka bay area, OSKH02 observed the strong ground motion with accelerometers at ground surface and in bedrock, 2000m depth. The spectral amplitude ratio between the sensors at around 6 seconds was about 30 times. The same phenomena were observed in the site through the 2000 western Tottori earthquake and the 2004 off the Kii peninsula earthquake.

From the minute analysis of the data, it is found that the amplitude ratio is smaller in the beginning of the record, while the ratio grows larger with elapsed time. The ratio in the beginning is around ten times that can be explained from sedimentary response of vertical incident body waves. However, the ratio in the later part is around several tens and it might be caused by nodes and antinodes of surface waves at observed points. Further analyses and discussions will continue.

Keywords: long period ground motion, Osaka bay area, The 2011 off the Pacific coast of Tohoku earthquake, surface wave