

## The Surface Distributions of the Durations of the Low Frequency Seismic Waves

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If large earthquakes occurred, the 2011 off the Pacific coast of Tohoku Earthquake for instance, low frequency seismic waves with 2 second or longer periods were observed. These sometimes cause damages for high-rise buildings and other large structures. However JMA has no method to announce observed data about low frequency seismic waves. Therefore JMA has considered how to announce them from 2011 and will establish new information.

As for strong ground motion, seismic intensities are used generally. In addition, specialists use PGA and PGV. On the other hand, maximum amplitudes of velocity about various frequencies are important to grasp low frequency waves. Furthermore those time series are also important because those damping rate are smaller than those of strong motion.

In Japan, seismic intensities can be grasped in detail by about 4300 intensity-meters. However there are only about 1500 stations which can observe low frequency waves: that is K-NET, Kik-net, F-net of NIED and JMA strong motion observation network. We must estimate low frequency motion on each place by those limited data. Muto and Katsumata (2012) proposed spatial interpolation of maximum velocities using natural periods which calculated from the subsurface velocity structures. We considered the relation between natural periods of subsurface structures and time series of ground motions in this study.

We investigated 2 parameter: (1) the periods from the P-wave arriving times to the peak amplitudes appearance ones, and (2) the durations that large amplitude waves continued. On the second one, we can give some definitions. In this study, we calculated durations of time series of velocity response using a method by Izutani and Hirasawa (1987). It was ascertained that the ratios of the durations of S-wave calculated by 0.1-0.5 Hz velocity responses to those of P-wave calculated by 5Hz them were fixed generally regardless of locations. On the other hand, We found that there were correlations between durations whose amplitudes were above certain thresholds and subsurface structures. Using those two knowledges, it may be able to forecast the durations of low frequency seismic waves at any point by the durations of high frequency ones solved by actual records observed at nearby stations.

### Acknowledgements.

K-NET, KiK-net and F-net data of NIED were used in this study.

### References.

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