

Source Azimuthal Dependence of Long-Period Ground Motions in the Kanto Basin and the transition of time-history

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During the 2011 off the Pacific coast of Tohoku Earthquake, long-period ground motions were observed in the Kanto basin; therefore, long-period structures located in the Kanto basin were largely shook. Some articles (e.g. Yuzawa and Nagumo, 2012; Tsuno et al., 2012) pointed out that amplifications of long-period ground motions observed in the Kanto basin have the source azimuthal dependence by the data analyses on the main shock and aftershocks. Tsuno et al. (2012) reported that long-period ground motions whose periods were larger than 3 seconds has the characteristics of source azimuthal dependence, using the ratio of the pseudo-velocity response spectrum on surface to that at borehole.

We have investigated the source azimuthal dependence in the Kanto Basin, by data of the observations and the simulations for 10 earthquakes occurred around the Kanto Basin (Noyori et al., 2015). As a result, we could confirmed the same tendency between the observations and the simulations that long-period ground motions larger than 3 seconds were largely amplified for earthquake located in in north-west (Niigata pref.) direction and south-west (Shizuoka pref.) direction. In this study, we investigated the transition of source azimuthal dependence in the time history, which are related to the propagation of seismic motions in the Kanto basin.

Keywords: Long-period ground motion, Source azimuth, Site effect, Kanto Basin