

## Development and extinction of long-period ground motion in thick sediments

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To obtain better insights of long-period ground motion in thick sediments, which often cause severe damage of large-scale man-made structures, we analyzed horizontal seismograms recorded by dense strong motion networks in the complex large Kanto basin. We found distinct large amplitude long-period ground motion around northern Kanto, which is caused by Love wave excited at the northwestern edge of Kanto basin. Amplitude of Love wave significantly developed during propagation in thick (>3 km) sediments and then suddenly weakened at region where significant change of basin structure exists.

To clarify causes of such observations, we conducted 3D finite difference method (FDM) simulation of seismic wave propagation. In simulation, we assumed plane SH-wave incident into a realistic basin structure model embedded in a homogeneous half-space background structure, to focus characteristics of Love wave excited at the basin edge. Simulation result in a realistic basin model referred from JIVSM (Koketsu et al., 2008) well reproduced observed Love wave development around the northern Kanto. Another simulation in the model, which is limited to maximum bedrock depth of 3 km, shows no significant difference of simulated waveforms compared with the previous model. Thus, development of surface waves in thick sediments is mainly caused by the deepening of shallower low-velocity layers, rather than the depth variation of bedrock.

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