

SSS016-P16

Room: Convention Hall

Time: May 24 17:15-18:45

Estimation of S-wave velocity structure of deep sedimentary layer around Lake Biwa using earthquake ground motion record

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We construct the 3D subsurface structural model using the data of geophysical and geological surveys in and around Lake Biwa. And we have modified the model using the S-wave parts of earthquake records, H/V spectral ratio of S-coda and phase velocity of microtremor. In the waveform inversion of S-wave, we assume a simple source time function and plane wave incident to a layered model from the basement.

Using 3D subsurface structural models, we simulate ground motions for moderate earthquakes. The first model is the model using only boring and reflection survey data; the second one is the model by adjusting the peak period of theoretical H/V spectral ratio to observed one; the last one is the model by joint inversion of S-wave, H/V spectra and phase velocity of microtremor. As the results, simulated waveforms of ground velocity by using joint inversion model agree with observed ones better. It is possible to construct 3D subsurface structural model which is applicable to strong motion simulation by using earthquake ground motion records, even though there are few data of geophysical surveys.

Keywords: S-wave structure, Microtremor Survey, Earthquake records, Joint inversion