

Modeling of the subsurface structure from the seismic bedrock to the ground surface for a broadband strong motion evaluation in Kanto area

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Sophisticated predictions of strong ground motion are vital when constructing structure models that enable us to evaluate broadband ground motion features. Such models should integrate subsurface structure models for strata shallower than engineering bedrock and deep structure models for strata even deeper. Both such models used to be separately modeled separately so that observation data could be reproduced. In this study, we have created a subsurface structure model applicable from seismic bedrock to ground surface" for whole Kanto area, in attempts to sophisticate subsurface structure models.

We have ever collected bore-hole data and soil physical properties data, and then, by using them, have constructed initial geological models of subsurface structure from seismic bedrocks to ground surfaces in some areas of Japan, which have thicker sedimentary layers.

At present, we are constructing models of subsurface structure in wide area for Kanto and Tokai region of Japan as part of the national project, "Reinforcement of resilient function for disaster prevention and mitigation."

In this study, at first, we collected as many records as possible obtained by microtremor and earthquake observation in the whole Kanto area, including Tokyo. And then, using geological models based on the results of boring surveys as reference, subsurface structure model from seismic bedrock to ground surface was improved based on records of microtremor array and earthquake observation in those areas.

Keywords: strong ground motion evaluation, underground structure models, microtremor observation