

A study on modeling Osaka shallow layered structure using 3-D spline functions

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This paper presents results of a study of the modeling Osaka basin shallow layered structure using multi-spline function technique. The aim is to build a general Osaka basin structure model that combines deep structure model with shallow structure model for the broad band ground motion simulation. The model space is from 34.926E to 35.708E, and from 34.3N to 34.9N. The shallow model was constructed by compilation of boring data depth of layers collected by Geo-Database information committee of Kansai. Proposed model has four-layered structure that include surface layer, alluvium layer, and, according to geological classification Dg1 layer and Ma12 layer respectively. We used about 12,180 boring data for upper interface of alluvium layer, 10,592 for upper interface of Dg1 layer, 5,520 for lower interface of Dg1 layer, and 3,083 for lower interface of Ma12 layer. Because the given data points are spread randomly and nonuniformly in the target area; in some mesh intervals the data are scarce and absent at all. We made an artificial data set based on the deep structure model (Zhao et al., 2002), and apply it in the no-data areas. By comparison of the model and data, we found that the model fit with the given boring data quite well.

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