

Investigation on the Applicability of V_{s30} Estimation Models for the Beijing Plain Area

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Using three models which respectively are bottom-layer constant velocity model, velocity gradient model and the extrapolation model with the travel-time averaged shear-wave velocities at two different depths, we investigate the data from 460 boreholes in Beijing plain area that the shear-wave velocity profile reaches at least 30 m. Through a detailed research, we found that the last method can estimate V_{s30} with high accuracy. It does not need any regression analysis to derive empirical relations from a large number of data. Meanwhile, this method is not regionally dependent, and has a remarkable improvement in the accuracy, therefore, it is potentially useful for many parts of the world including Beijing. It provides a basis for site classification, and then extends its application to evaluation of site effect in a rapid assessment of earthquake damage, thus being worth to be extensively applied.

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