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# An additional correction term of ground-motion prediction equation for intra-plate earthquakes

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Intra-slab earthquakes, which occur in a subducted ocean plate, radiates short-period seismic waves strongly compared with an inter-plate earthquakes with the same magnitude. It is pointed out that the strength of short-period seismic waves depends on the focal depth of the earthquake or has a difference by the plate. On the other hand, it is also pointed out that the radiation of short-period seismic waves from an outer-rise earthquake is as strong as that from an intra-slab earthquake whose focal depth is deep.

These things mean that it is important to model radiation characteristic of short-period seismic waves appropriately in the prediction of strong ground motions for intra-plate earthquakes. We propose a new ground-motion prediction equation (GMPE), but focal depth and/or plate dependence of the ground motion intensities are not considered. So we analyze strong ground motion records to investigate a new additional correction term of our GMPE for intra-plate earthquakes.

First we calculate the difference between observed amplitude and predicted one by using our GMPE for each records. And then we obtain ”the source value” by averaging the difference for each earthquake and ”the site value” by averaging the difference for each observation site. We examine the relation between ”the source value” and the focal depth or difference in plates.

The ”source value” of an intra-plate earthquake in the Pacific plate is large compared with an earthquake in the Philippine Sea plate. In addition, ”the source value” becomes larger so that the focal depth becomes deeper. However, it is difficult to distinguish the effects of focal depth and/or different plates, because focal depths of intra-plate earthquakes in the Pacific plate are deeper than those in Philippine Sea plate in general. Therefore we think that it is better to model only one of these as the additional correction term of our GMPE.

Keywords: intra-slab earthquakes, outer-rise earthquakes, ground-motion prediction equation