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Development of a new ground motion prediction equation applicable up to Mw9 -evaluation of additional correction terms-

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We have proposed a new ground motion equation in Japan directly applicable up to Mw=9 by using strong motion data of the 2011 Tohoku-oki earthquake. The equation is a simple base model using only two parameters, Mw and closest distance to the source fault. In this study, we obtain following three additional correction terms applied to the above basic equation. The first is the term for amplification due to deep sedimentary layers. We investigate the relation between the amplification and top depth of each layer using the deep subsurface structure model by Fujiwara et al. (2009). The second is the term for amplification due to shallow soil structures using the average S-wave velocity up to 30m depth as a parameter. The third is the term for anomalous seismic intensity distribution using the closest distance from the volcanic front to target site as a parameter.

Keywords: ground motion equation, strong motion, site amplification, anomalous seismic intensity distribution