

Site effects separated from strong-motion records in Okayama Prefecture

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We extracted site amplifications at 110 strong-motion stations in Okayama Prefecture, southwest Japan. The stations belong to the K-NET or KiK-net of the NIED, or the seismic intensity network of Okayama Prefecture. We employed 7 records of crustal and intra-slab earthquakes: the Awaji-shima-April-13-2013 (M_{JMA} 6.3), the Iyonada-March-14-2014 (M_{JMA} 6.2), the northern-Tokushima-February-14-2015 (M_{JMA} 4.0), the central-Tottori-October-21-2016-14:07PM (M_{JMA} 6.6) and -14:53PM (M_{JMA} 5.0), the central-Kochi-June-14-2017 (M_{JMA} 4.5) events, and the mainshock of the 2016 Kumamoto earthquake on April 16, 2016 (M_{JMA} 7.3). For extracting site amplifications, we applied the spectral inversion technique developed by Kawase and Matsuo (2004). We analyzed RMS of the Fourier spectra calculated from two horizontal components of strong-motion records. In the spectral inversion, we selected OKYH02 (Seto city) as the referential station where the site characteristics have been estimated by Nozu and Nagao (2005). In the inversion results it is found that at Urayasu and Agasaki, plain field in southern part of Okayama, there are peak frequencies under 1 Hz with their relatively large level, which might be attributed to drained land and coastal lowland over this area. At Kamifukuda and Shimofukuda, northern stations of Okayama, low peak frequencies also exist, which might be caused by the diatomaceous soft layer in Hiruzen plateau. At some stations in mountainous area in central and northern part of Okayama (Niimi city, Takahashi city, and Kibichuo town), the dominant frequencies are not clear and the amplification factors are small. We also found peaks ranging from 1.0 to 2.0 Hz at the other stations in this area, which might be affected by the sediments located in the bottoms of valleys. We compared these site amplifications to the H/V spectral ratios calculated from the strong motion records of the 2016 Kumamoto earthquakes (Uneoka *et al.*, 2017, JPGU). The peak frequencies at most stations are nearly identical each other.

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