

# Estimation of Site Amplification Characteristics in Kumamoto plain by Spectral Separation Analysis Using Aftershock Records of the 2016 Kumamoto Earthquake

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The 2016 Kumamoto earthquake contains a foreshock with an  $M_j$  of 6.5 on April 14 and the main shock with an  $M_j$  of 7.3 on April 16. The earthquakes generated ground motions with a seismic intensity of 7 on the Japan Meteorological Agency scale twice in Mashiki, Kumamoto, Japan and many wooden houses were collapsed. In this study we estimated site amplification characteristics in Kumamoto plain by using ground motion records at strong motion stations of K-NET, KiK-net, seismic intensity-meters stations by local governments and aftershock observation stations by Yamanaka et al. (2016) through a spectral inversion technique. We choose the OITH08 station as the referential site in the inversion. The estimated frequency dependent  $Q$  and the source characteristics by the spectral inversion technique show similar features to those from previous studies (e.g. Somei et al, 2018). The site amplifications in the alluvium plain show large values in a frequency range of 0.5-2.0Hz. At high frequency the site amplifications of the mountain are larger than those of the plain area. We estimated S-wave velocity structures in Kumamoto plain by an inverse analysis of the site amplifications. The sediments are large in central area of the Kumamoto plain.

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