

## Simulation of Long-Period Ground Motion in Damaged Areas during the 2016 Kumamoto Earthquake

\*Kengo Muroi<sup>1</sup>, Hiroaki Yamanaka<sup>1</sup>, Kosuke Chimoto<sup>1</sup>, Seiji Tsuno<sup>2</sup>, Hiroe Miyake<sup>3</sup>, Nobuyuki Yamada<sup>4</sup>

1. Tokyo Institute of Technology Department of Environmental Science and Technology, 2. Railway Technical Research Institute, 3. Earthquake Research Institute, University of Tokyo, 4. University of Teacher Education Fukuoka

The 2016 Kumamoto earthquake contains a foreshock with a Mj of 6.5 on April 14 and the main shock with a Mj of 7.3 on April 16. The earthquakes generated ground motions with a seismic intensity of 7 on the Japan Meteorological Agency twice in Mashiki, Kumamoto, Japan and many wooden houses were collapsed. In this study we conducted a simulation of strong ground motion during aftershocks of the 2016 Kumamoto earthquake, using subsurface structural model by Headquarters for Earthquake Research Promotion and GMS, and evaluated earthquake ground motion in the damaged areas. We assumed homogeneous fault model from a group of point sources. We used the aftershock with a Mj of 5.5 and a depth of 10km on April 19. First, we compare the waveform of rock site (KMM014). The calculated waveform has similar characteristics of the observed waveforms. Then, we compare observed ground motion records by Yamanaka et al. (2016) in the damaged areas with the calculated waveforms. The calculated waveforms in the damaged areas have similar characteristics of the observed waveforms which are characterized by long-period S-wave after initial S-wave in about 5 seconds. We also found high correlation between the amplitude of the ground motion and the damages at some observation points.

Keywords: Kumamoto Earthquake, Simulation of ground motion, Strong ground motion