

## Characteristics of earthquake ground motions in the Kumamoto City, using the aftershock observation data of the 2016 Kumamoto Earthquake

\*Seiji Tsuno<sup>1</sup>, Masahiro Korenaga<sup>1</sup>, Kazunori Wada<sup>1</sup>, Kimitoshi Sakai<sup>1</sup>

### 1. Railway Technical Research Institute

During the 2016 Kumamoto earthquake occurred on 4/14 and 4/16, strong ground motions were observed in Kumamoto Prefecture, for examples, Mashiki recorded the Japanese seismic intensity scale of 7 and Kumamoto City recorded the scale of more than 6. The Kumamoto Plain spreading the northeastern area of Kumamoto Prefecture is consist of diluvial plateau in the west slope of the outer rim of Aso and alluvial lowland formed by Shirakawa and Midorikawa and therefore; it is pointed out that the earthquake ground motions are amplified largely in Kumamoto City due to the soft-soil sediments. To evaluate the characteristics of earthquake ground motions in the north-south cross-section in Kumamoto City, we performed the aftershock observation at 6 temporary stations (full length of 6km) along the railway line installed after the date of 4/15, 2016. We installed the accelerometer of JEP-6A3 (the sensitivity of 10V/G) by Mitutoyo Corp. and the data logger of LS8800 by Hakusan Corp. with the continuous recording at 2 stations on 4/15 and at 4 stations on 4/16, 2016.

Accelerations at 6 stations for an earthquake occurred at Aso were variety in the phase and the amplitude at the southern site was larger by a factor of 2 than one at the northern site. The earthquake ground motion at the southern site were amplified by a factor of 3 for a period of 0.5 second and by a factor of 2 for a period of 1 second, comparing to the earthquake ground motion at the northern site. The various levels of ground motions from small to large earthquakes, including the earthquake (Mj 7.3) occurred on 4/16/1:25, were recorded at 2 stations in the southern sites. In those velocity responses, the dominant period of 0.8 and 1.2 seconds were appeared at velocity response of 0.1 cm/s and 30 cm/s, respectively. In case of the large earthquake (Mj7.3), the nonlinearity of soft-soil was suggested by the dominant period of 2.2 seconds at velocity response of 120 cm/s. The earthquake records at 2 southern sites which are 600m far had a large difference for a period of 1 to 2 seconds. In the future, we will investigate the characteristics of earthquake ground motions at those 2 sites.

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