

Estimation of subsurface structures from microtremor surveys in Kurokawa area, South Aso village, Kumamoto, Japan

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On April 16, 2016, an earthquake of Mw 7.0 occurred in the Kumamoto prefecture, which locates in the central Kyushu Island, Japan. Seismic intensity of 7 in Japan Meteorological Agency (JMA) scale were recorded at Mashiki town hall and Nishihara village hall sites during this event. The earthquake occurred along the Hinagu-Futagawa fault zone and caused widespread serious damage in Kumamoto prefecture. At Kurokawa area in South Aso village that was targeted in this study also was seriously damaged, such as collapses of buildings including student dormitories and overturning of cars during this event. In the area, surface fault ruptures also were confirmed.

To evaluate characteristics of local site amplification in the area and around the surface ruptures, we estimated spatial distribution of peak periods and S-wave velocity structures using microtremor single point survey and microtremor array survey. The surveys were carried out on October 13, 2017. The single point survey were carried out at 44 points at about 50m interval to obtain peak period distribution from H/V spectrum. The array survey were carried out at 4 points with various an array radius between 0.6m and 10m depending on the available observation space. These array records were used to obtain phase velocity dispersion curves that becomes information for estimating S-wave structure model. We will show on the result and make discussion.

Keywords: 2016 Kumamoto earthquake, South Aso village, Microtremor survey, H/V, S-wave velocity structure