

Super dense microtremor observation evaluating shallow ground structure in Furukawa area

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During 2011 Tohoku earthquake, structure damages due to ground motion occurred in inland of Tohoku area. In Furukawa area, residential structure and lifeline systems were severely damaged. The damaged area did not spread in whole the downtown of Furukawa area, but the damages were concentrated in a particular spot. In order to investigate the reason why the damage spot exists, we conduct dense observation of strong ground motions via seismometer network (Goto et al., 2012).

Ground motion records observed by the network investigate the shallow ground structure in the area. The structure implies deep deposit soil structure beneath the damage spot. However, more detailed spatial information is required to discuss the spatial distribution, because the structure is interpolated over the data at the seismic stations.

We performed denser survey of single station microtremor in the Furukawa area. The spatial interval in the downtown area is planed to about 50m. We totally collect microtremor records at 527 sites. H/V spectra ratio is calculated at each site, and the peak frequency is picked up. The distribution of peak frequency in the downtown, Furukawa area, is well correlated with the shallow ground structure based on the ground motion records.

Reference

Goto et al.,: Very dense seismic array observations in Furukawa district, Japan, Seism. Res. Lett., 83(5), pp.765-774, 2012.

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