

Estimation of site amplification in Monzen-machi, Wajima city, using aftershock records of the 2007 Noto-Hanto earthquake

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Heavy damage was experienced in Monzen-machi, Wajima city during the 2007 Noto-Hanto earthquake with a M_j of 6.9. Many old wooden houses are heavy collapsed in the village in Monzen-machi. The area is located along the river sandwiched by mountains in the northern and southern ends with a width of 1 to 2 km. The village is developed in plain and slope parts of the area. An accelerometer has been operated at the city office in the damaged area. According to the JMA, the seismic intensity at the station is 6 upper during the main shock. In this study, we conducted aftershock observation at Monzen-machi to estimate the site amplification for providing basic material to understand damage distribution.

The aftershock was conducted in three areas, Hashiride, Touge, and Kuroshima in the Monzen-machi. We installed 11 accelerometers in the areas. 3 to 4 stations are chosen in each area in an array in north-south direction across the heavy damage zone. One of the stations is located at the foot of the mountains in the southern end of the village. This site is served as reference station in the following analysis. The observations were started in the afternoon on the 28, March, 2007. The observations at the 4 stations in Kuroshima area was terminated at the 31, March. The other 7 stations are still in operation now and will be finished in middle of April, 2007.

The preliminary analysis was done using aftershock records observed during events with M_j of 2.3 to 3.7. The spectral ratio to the reference station indicates that the dominant peak can be found at a period of 1 second at strong motion station of the city office. We also find distinct peaks at 0.4 to 0.7 seconds in the spectral ratios at sites in heavy damage zones. On the other hand, no dominant peaks were identified at a station near the mountains. This clearly indicates that the site amplification effects play an important role in defining the damage distribution in the area.