

## Characteristics of Microtremors on Strong Motion Observation Stations in The 2007 Noto-Hanto Earthquake

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In the Noto-hanto earthquake in March 25, 2007 (M6.9), the seismic intensities of 6 upper are observed and a lot of houses are severely damaged in Wajima-city and Anamizu-town of Ishikawa Prefecture. In this study, local site effects at the strong motion stations are examined from the microtremor measurements.

The microtremors are measured at the strong motion stations in Wajima-city, Anamizu-town, Noto-town, Shika-town, Nanao-city and Suzu-city. The horizontal-to-vertical (H/V) spectral ratio of microtremors at each site is computed from the average of three records whose sampling interval is 100Hz and duration is about 20 seconds. Firstly, we confirm that the shapes and predominant periods of the H/V spectral ratios of the microtremors in the 6 K-NET stations almost agree with the theoretical amplification calculated from the PS logging data.

In the Monzen-town and K-NET Anamizu where the severely damage is observed, the H/V spectral ratios have significant peaks around 1.0 and 0.7s, respectively. It indicates that soft soils whose shear wave velocities are in sharp contrast with that of the bedrock are deposited beneath the stations. The site conditions between JMA Wajima and K-NET Wajima are different because the sharp peak of the H/V spectral ratio at the JMA Wajima is observed in 0.9s, while the clear peak is not found at the K-NET Wajima, located about 1km west from the JMA Wajima. The sharp peaks in 1-2s are observed in Tatsuruhama, K-NET Nanao, JMA Nanao and JMA Ushitsu. It indicates that thick soft soils are deposited beneath the stations. The site conditions are rather fine in JMA Togi, K-NET Togi and K-NET Ushitsu because the predominant periods are from 0.15 to 0.5s.

The predominant period observed during the earthquake at JMA Wajima and K-NET Anamizu whose peak ground velocities are almost 100cm/s are 1.8 and 1.0s, respectively. The periods are about 1.3 to twice as long as those of the microtremors. At K-NET Wajima, K-NET Nanao, JMA Nanao, K-NET Togi, JMA Ushitsu, and K-NET Ushitsu whose peak ground velocities during the earthquake is from 30 to 50 cm/s, the predominant periods in the strong motion records are from 1.1 to 1.5 or twice as long as those of the microtremors. These results suggest that the nonlinearity of the surface soil during the strong ground shaking. The nonlinear behavior in K-NET Anamizu is analyzed using the ground motion records observed before and after the earthquake. The result shows that the predominant periods both in before and after the earthquake are about 0.8s that almost agree with that of microtremors while the period during the main shock is 1.0s. It indicates that the shear stiffness of the ground is almost recovered after the earthquake.