

Strong motion characteristics observed at ISK005 (K-NET Anamizu) during the 2007 Noto Hanto earthquake

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During the 2007 Noto Hanto earthquake (MJ6.9), strong motion of horizontal PGA of 782 cm/s/s, horizontal PGV of 98 cm/s on EW component and seismic intensity of 6+ were observed at ISK005 (Anamizu) of K-NET. In Anamizu town, high percentage damage area of wooden houses was observed including this site. From the comparison of the empirical attenuation relationship for PGV (Si and Midorikawa, 1999), PGV of this site extremely exceeds the average value. We analyzed the strong motion data observed at this site and conducted temporal ground motion observations at high and low damage area.

1. Strong motion characteristics at Anamizu during the mainshock are quite similar to those at JMA Kobe during the 1995 Kobe earthquake. Predominant period of the horizontal ground motions is 1 s. EW/NS ratio of PGV is approximately 2 and this is caused by the source mechanism.

2. From the comparison between observed aftershock data at ISK005 and those at Anamizu town office. Anamizu town office is located approximately 1 km apart from ISK005, and this site is almost on the rock as a reference site. H/H spectral ratio has approximately 10 at the peak period of about 0.7s. Similar amplification was also observed at the damage area. Strong amplifications by the superficial layers are expected at ISK005 and damage area.

3. From the comparison of H/V spectral ratio at ISK005 during the mainshock and aftershocks, predominant period of H/V is about 0.7s during aftershocks whereas that is 1s during the mainshock. Similar tendency is observed during the events before the mainshock. Temporal change of H/V during the mainshock is observed. Although the predominant period of 1s on H/V occurred at S-wave part, H/V of coda part shows similar predominant period (0.7s) during the aftershocks. This could be occurred by non-linear soil response in the superficial layer during the strong shaking of the mainshock, and it generate ground motions of predominant period of 1s, that has stronger damage power for wooden houses.

We used K-NET data.