

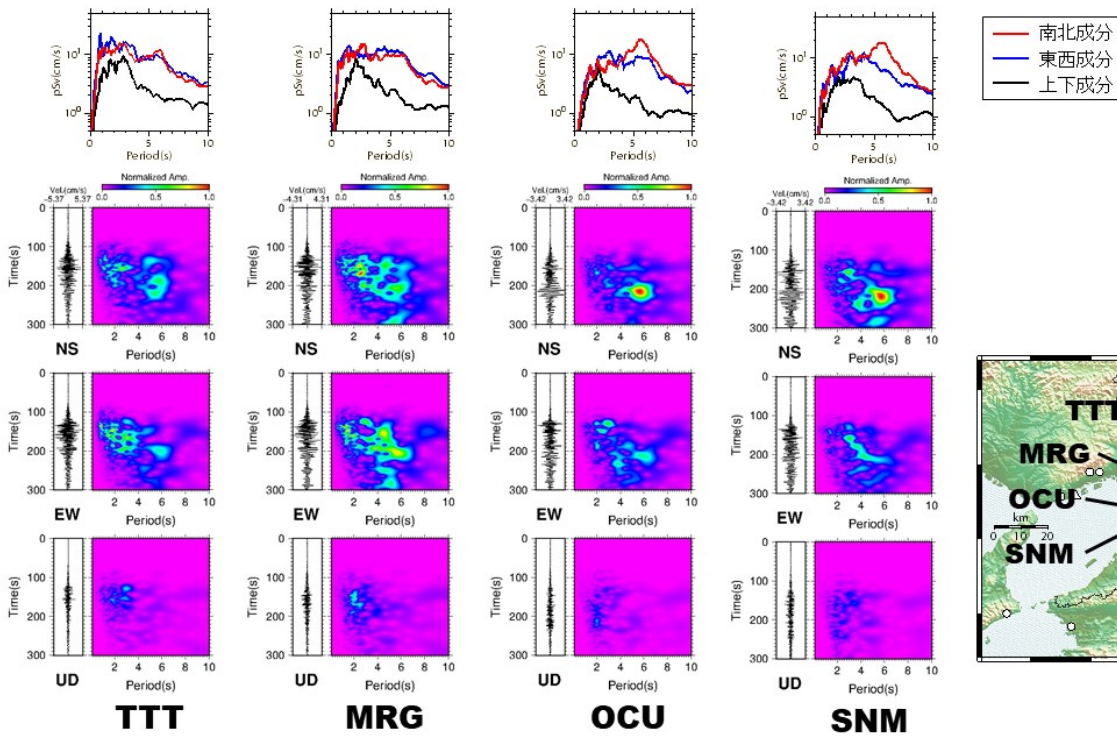
# Long-period ground motion characteristics of the 2024 Noto Peninsula Earthquake observed by CEORKA network

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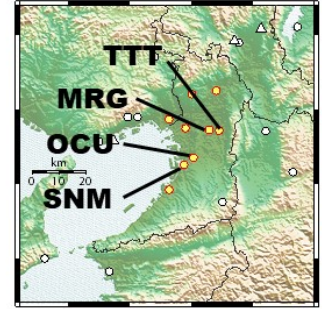
## 1. Geo-Research Institute

In the 2024 Noto Peninsula Earthquake (Mj7.6) that occurred on January 1, 2024, seismic motion was detected at all observation stations of the CEORKA, and equivalent to seismic intensity 4 were observed at two stations in the Osaka plains (FKS and TTT stations) and an station in Kusatsu City, Shiga Prefecture (YMD station). The observed velocity waveforms confirm that relatively large amplitude shaking continued for a long period of time within the Osaka Plain. Focusing on the predominant period characteristics of each stations using the pseudo-velocity response spectra, a predominant period is found around 1 to 3 seconds regardless of the ground hardness or softness. According to the non-stationary spectral characteristics, this predominance corresponds to the seismic motion in the S-wave section. No other notable predominance is observed at the stations on hard ground. Two stations in the Hokusetsu area (TYN and SRK stations) located in the northern part of Osaka Prefecture also show the same characteristics of the predominant period as the stations on hard ground. On the other hand, at the stations in the Osaka Plain, which extends to the southern part of the Hokusetsu area, a predominance is found with a period of 5 to 6 seconds, similar to past large earthquakes. According to the non-stationary spectral characteristic, this predominance corresponds to surface waves (Love waves) after the S-wave part. This suggests that (somewhat) long-period ground motion developed in the Osaka Plain due to this earthquake. By pasting up the non-stationary spectrum around the period of 5 to 6 seconds calculated from the seismic waveforms at each station with the epicenter distance, we can confirm that a wave group with this period propagated in the south direction. However, focusing on the pseudo-velocity response spectra around the predominant period, the two horizontal components have approximately the same amplitude at the two stations in Higashi Osaka City (TTT and MRG stations), while the north-south component tends to be larger than the east-west component at the OCU, SNM and TDO stations in its southern part. This suggests that the direction of propagation may have changed westward. During the earthquake (Mj6.1) that occurred in northern Osaka Prefecture on June 18, 2018, the occurrence of long-period ground motion was not confirmed at most of the Osaka plain observation stations, but the three observation points mentioned above (OCU, SNM, and TDO stations), it was confirmed that a group of following waves with a predominant period of around 5 seconds occurred. These results suggest that the development process of long-period seismic motions varies from place to place in the Osaka Plain.

Keywords: 2024 Noto Peninsula Earthquake, Strong motion observation, Long-period ground motion, Osaka Plain



疑似速度応答スペクトル(上)と非定常スペクトル(下)の例



観測点分布