

Strong Ground Motions

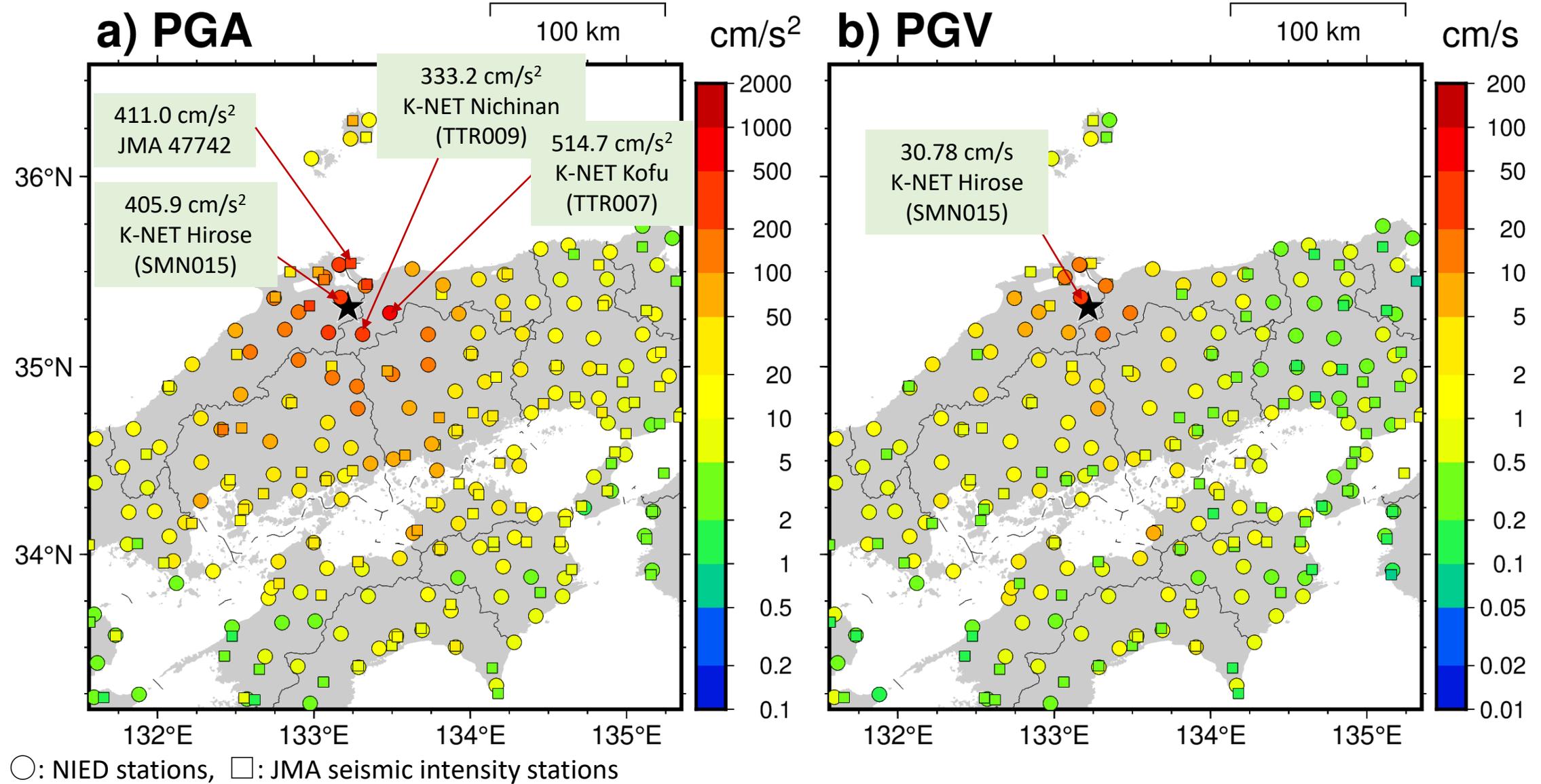
Earthquake in Eastern Shimane Pref. on January 6, 2026 (Mj6.4/Mw5.7*)

IISEE, Building Research Institute

This report contains preliminary analysis results.

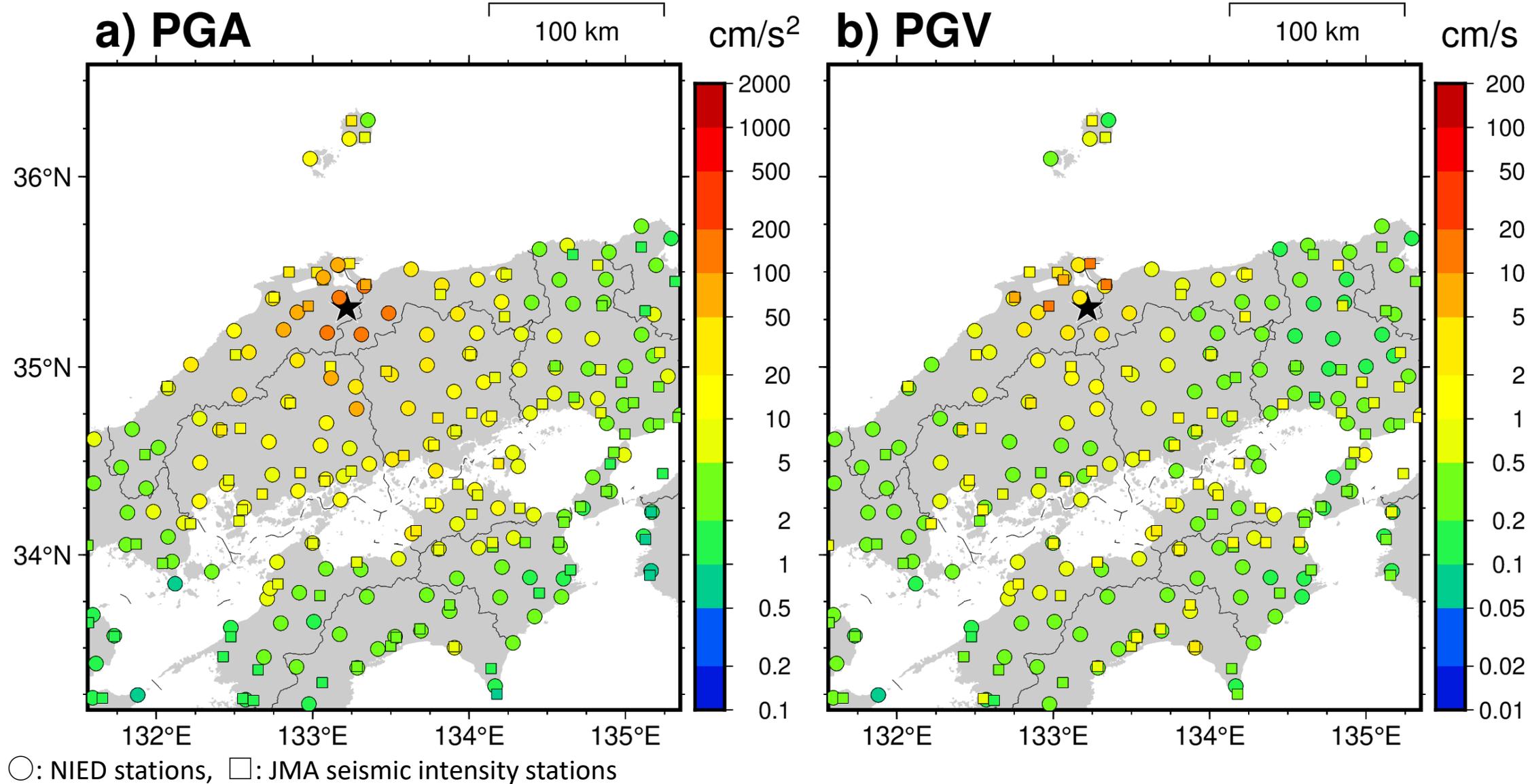
*The moment magnitude (Mw) was adopted from the estimate provided by NIED F-net.

Observed PGAs/PGVs (Horizontal comp.)

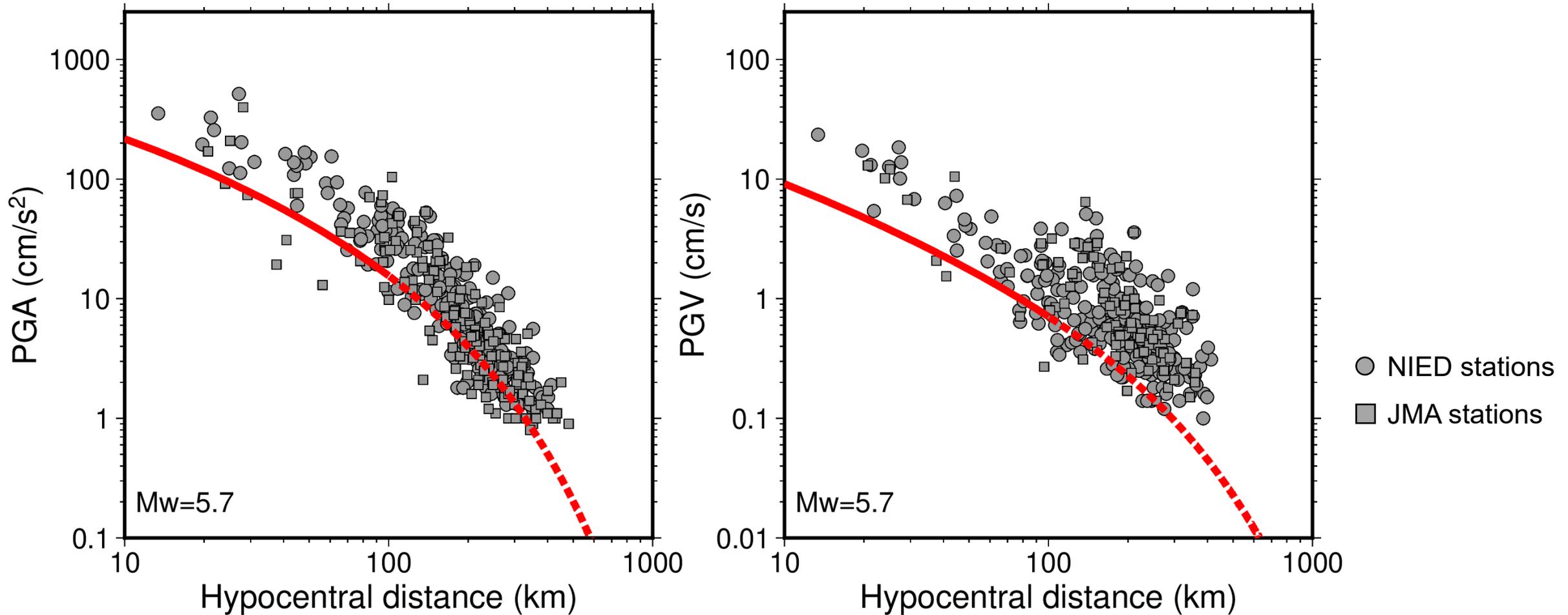


⊗ PGA and PGV are the maximum values of vector summation in the horizontal components.

Observed PGAs/PGVs (Vertical comp.)



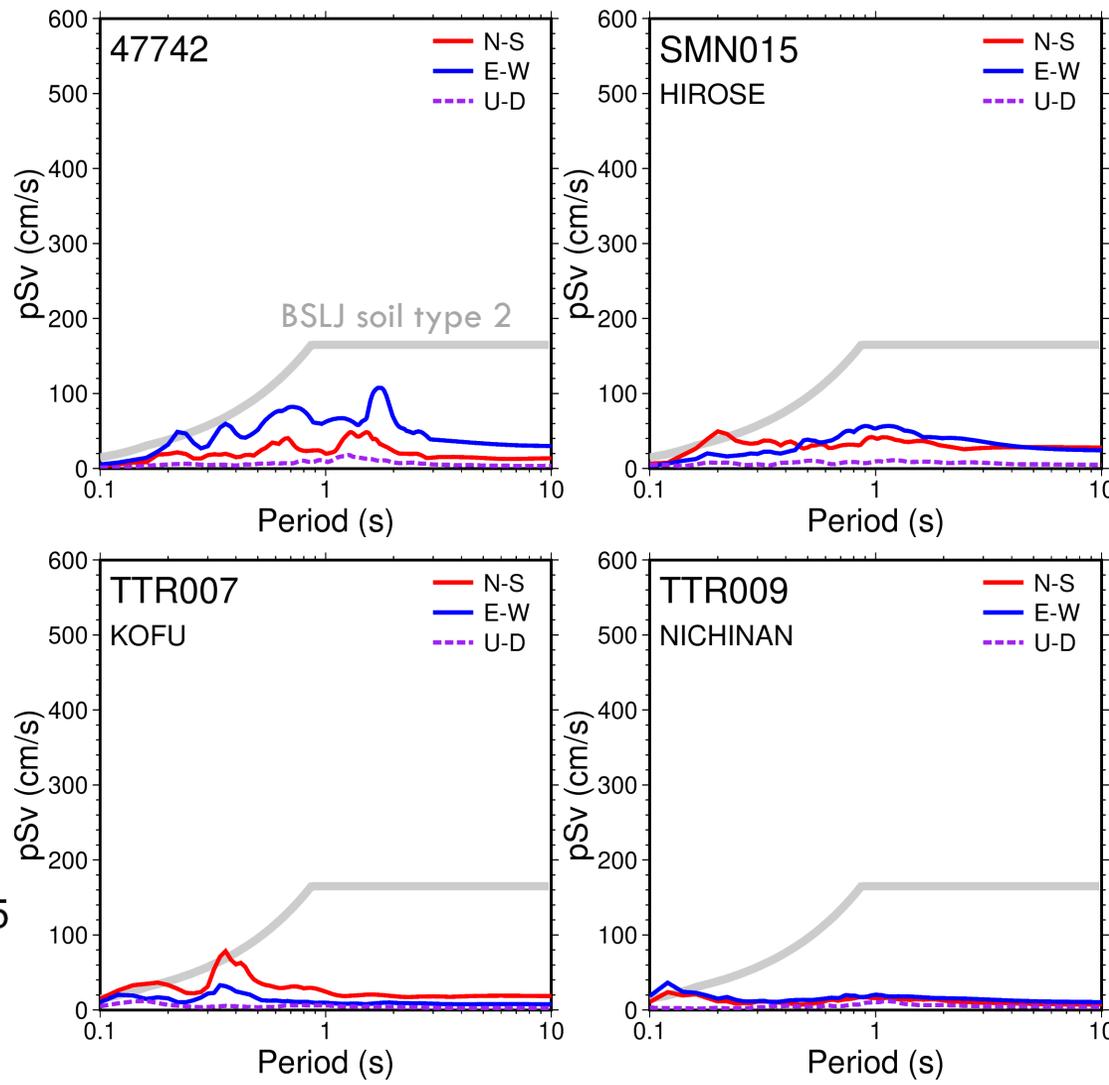
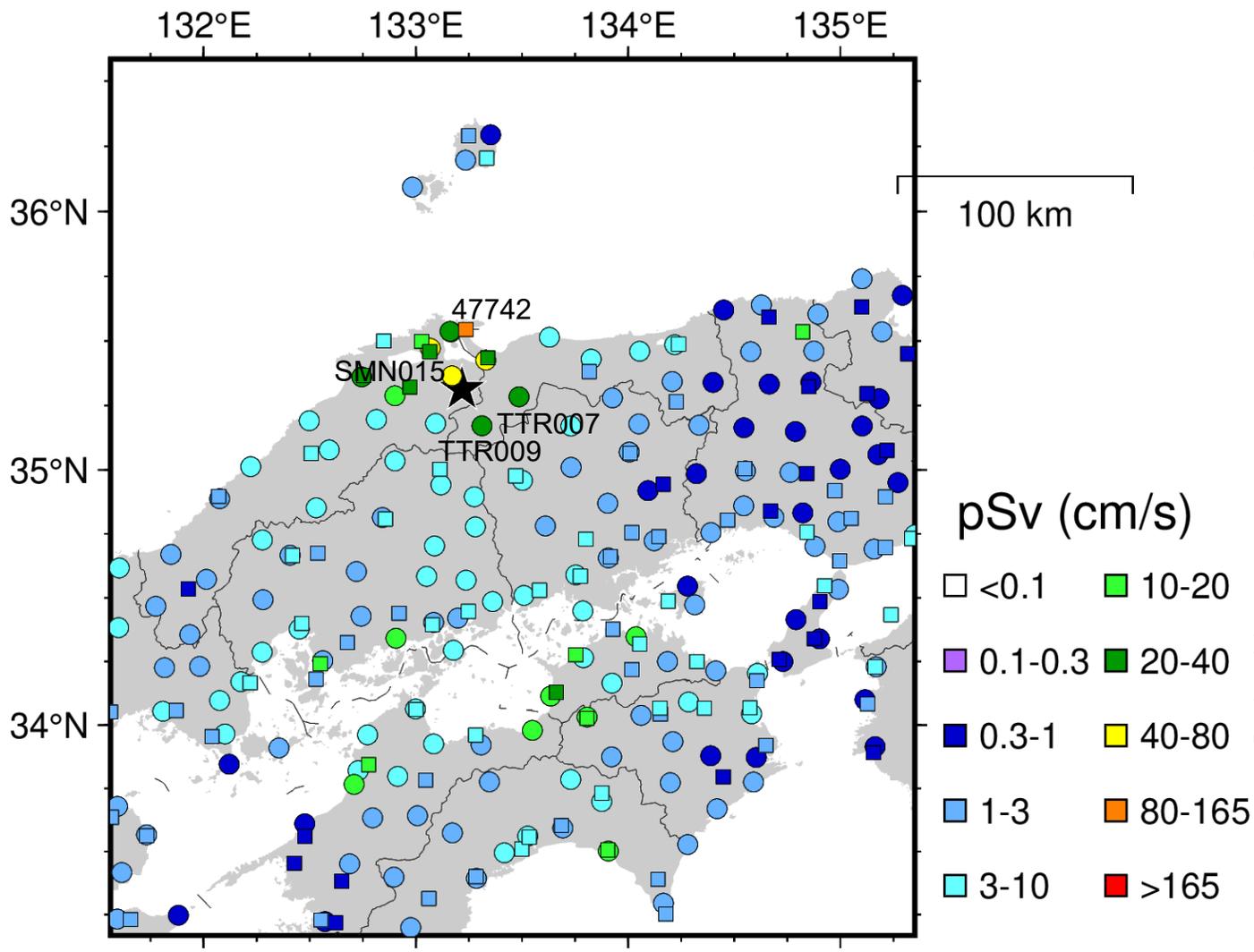
Observed PGAs/PGVs vs GMPE (Si & Midorikawa, 1999)



- ⊠ Horizontal axis is NOT the “shortest distance to the fault”.
- ⊠ PGA/PGV values are the larger of the maximum values of NS and EW components.
- ⊠ Crustal earthquake (depth=11 km) is assumed for the estimation.
- ⊠ Estimated values beyond 100 km (dashed line) are shown as reference values.

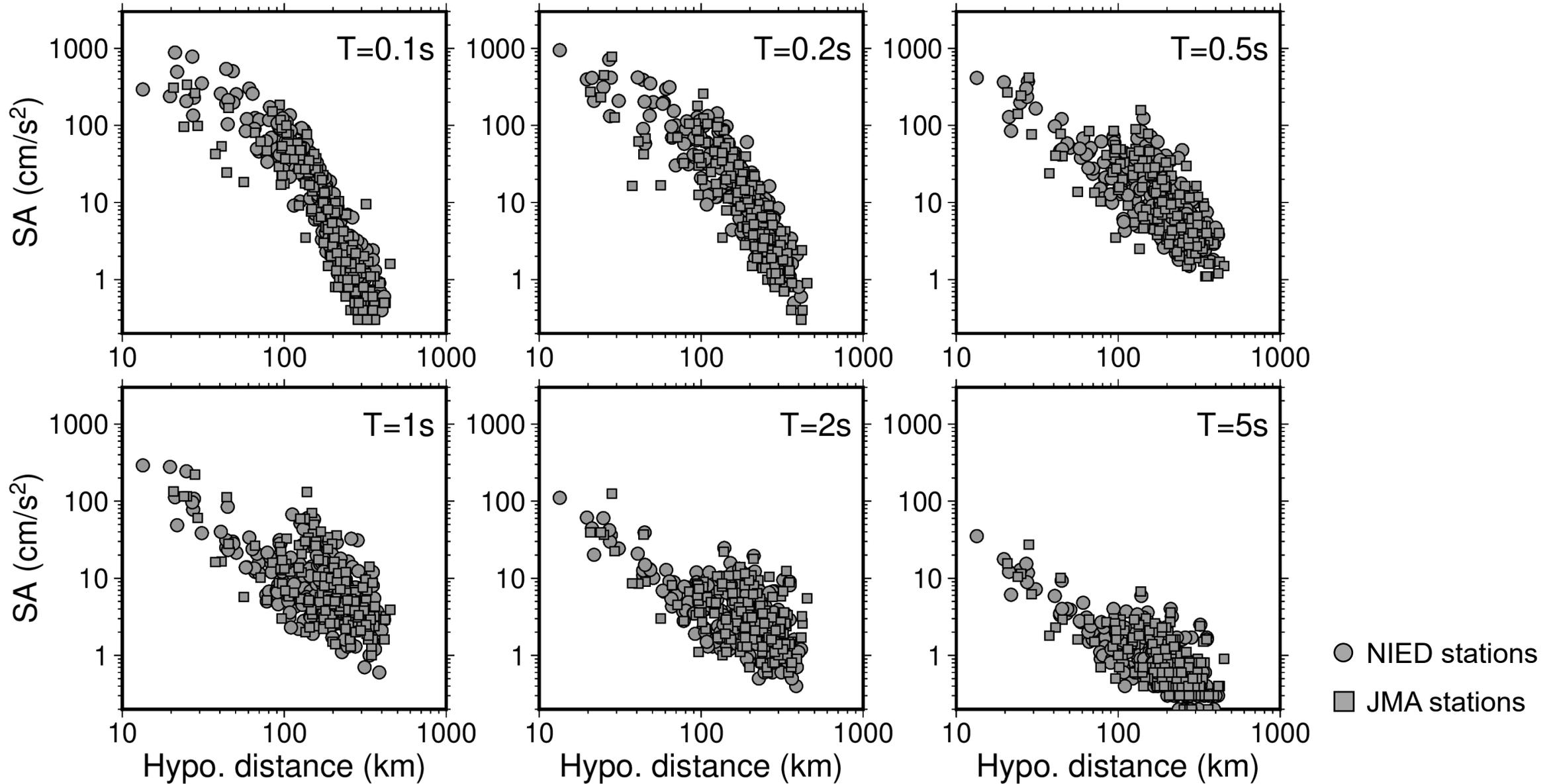
Pseudo-velocity response

(pSv: maximum value for periods of 1–2 s, 5% damping)



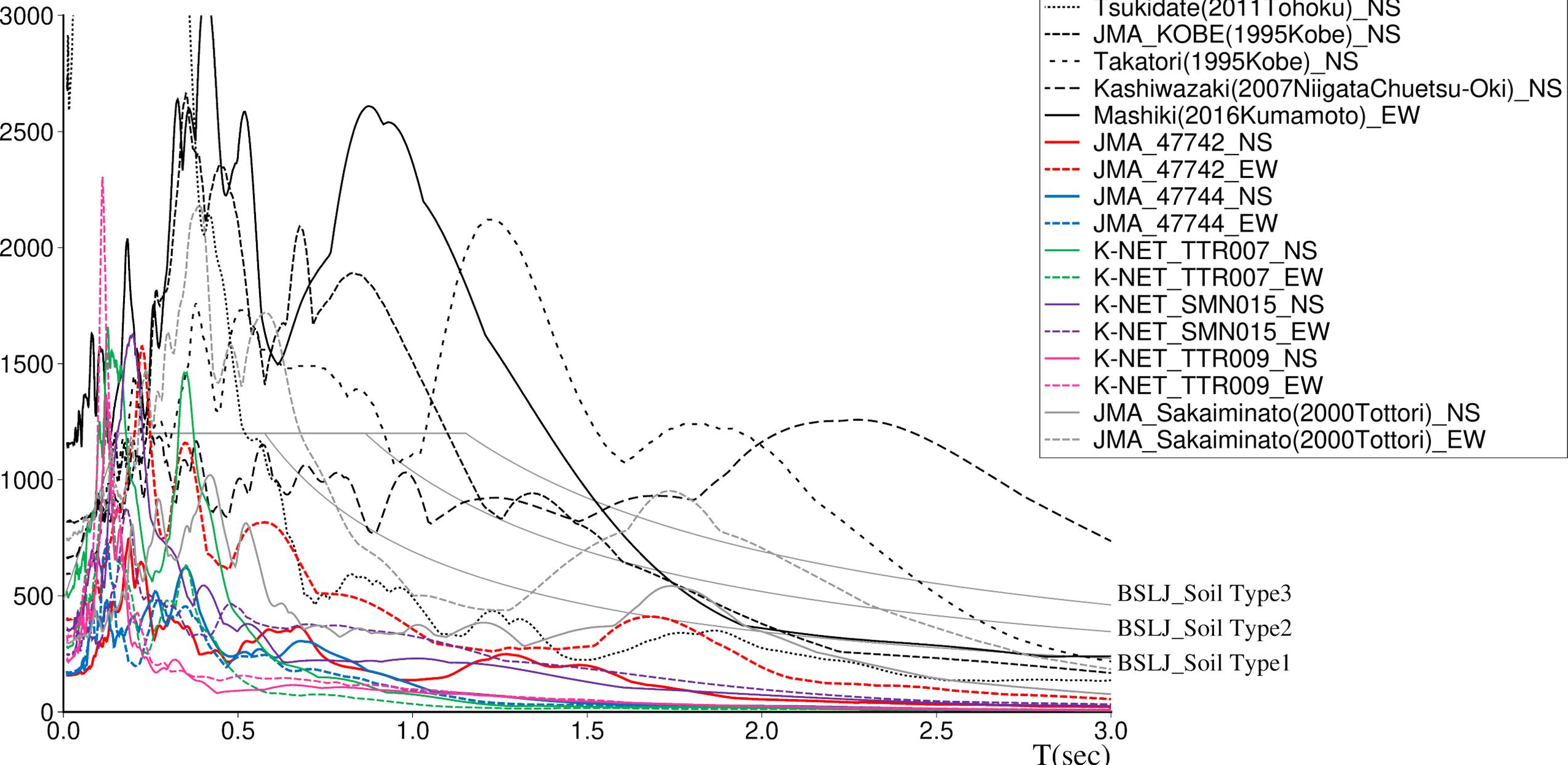
Attenuation characteristics of response spectra (Sa)

5% damping

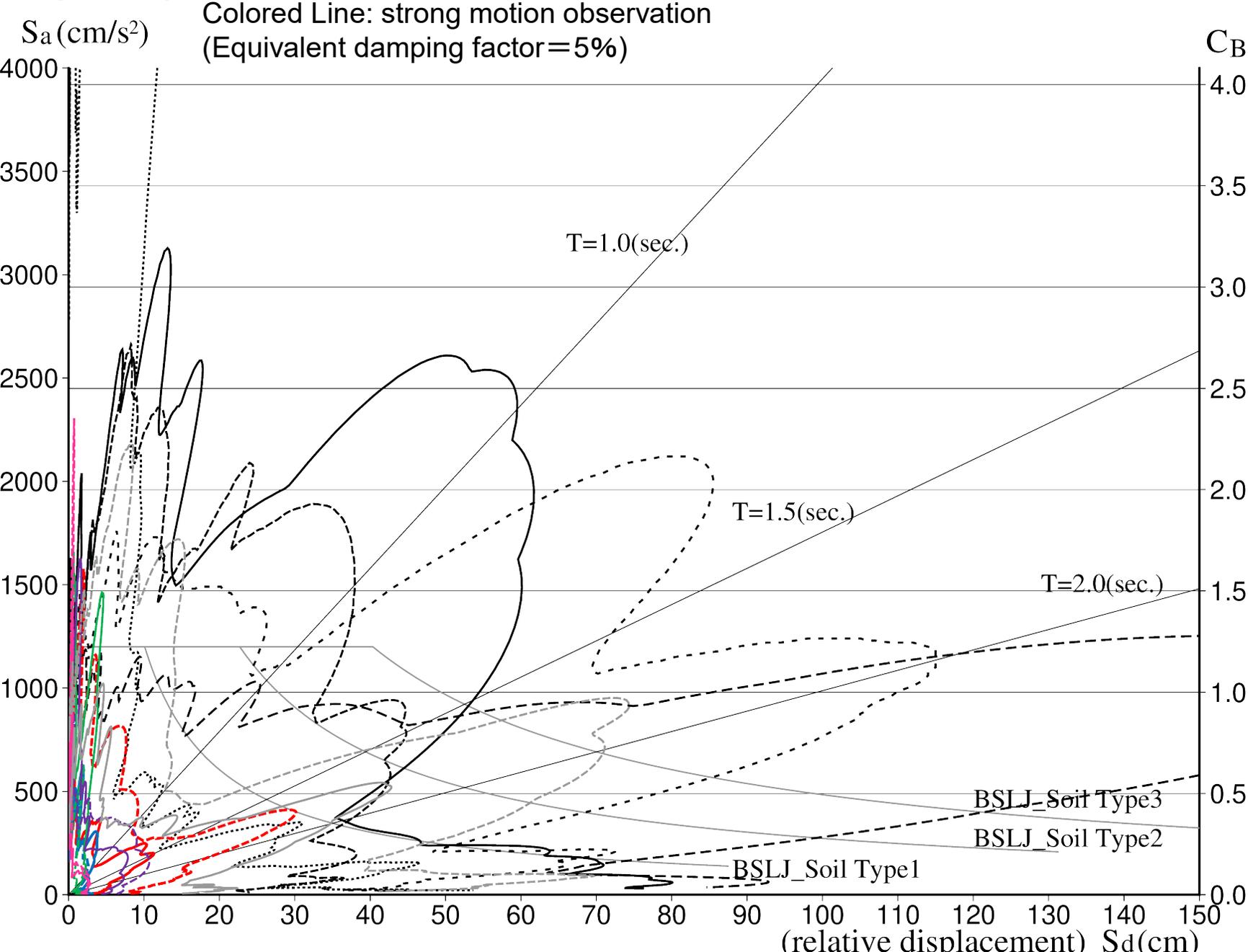


Response acceleration spectrum S_a and response periods

S_a (cm/s²) Colored Line: strong motion observation (Equivalent damping factor=5%)



$S_a - S_d$ curve and response periods



C_B Base shear coefficient C_B *
(* effective mass conversion)

- Tsukidate(2011Tohoku)_NS
- JMA_KOBE(1995Kobe)_NS
- Takatori(1995Kobe)_NS
- Kashiwazaki(2007NiigataChuetsu-Oki)_NS
- Mashiki(2016Kumamoto)_EW
- JMA_47742_NS
- JMA_47742_EW
- JMA_47744_NS
- JMA_47744_EW
- K-NET_TTR007_NS
- K-NET_TTR007_EW
- K-NET_SMN015_NS
- K-NET_SMN015_EW
- K-NET_TTR009_NS
- K-NET_TTR009_EW
- JMA_Sakaiminato(2000Tottori)_NS
- JMA_Sakaiminato(2000Tottori)_EW

Summary

- The response acceleration (S_a) of K-NET_TTR009 (Nichinan) and the North-South (NS) components of K-NET_TTR007 (Kofu), K-NET_SMN015 (Hirose) showed large values in the period of 0.5 s or less.
- The response acceleration (S_a) of the East-West (EW) components of JMA_47742 (Sakaiminato) showed large values in the period of 0.5 s or less and 1.5 to 2 seconds.
- From the S_a - S_d curve assuming a 5% equivalent damping ratio, the S_a - S_d shapes of the East-West (EW) components of JMA_47742 were protruded with a period of 1.5 to 2 seconds.
- From the S_a - S_d curve, assuming a 5% equivalent damping ratio, the S_a - S_d shapes of this earthquake were smaller than those of past major earthquakes in Japan, including the 2000 Tottori Earthquake observed in Sakaiminato.

Acknowledgments

We utilized K-NET and KiK-net strong-motion data, provided by the National Research Institute for Earth Science and Disaster Resilience (NIED)

(<https://www.doi.org/10.17598/NIED.0004>), as well as strong-motion data from the Japan Meteorological Agency (JMA) seismic intensity stations.

We also used past records from the Railway Technical Research Institute (RTRI).

We used hypocenter information (location, moment magnitude) determined by NIED.

Response spectra were calculated using the subroutine program developed by Ohsaki (1994).

Figures were prepared using Generic Mapping Tools (GMT: Wessel et al, 2019).

S_a -T and S_a - S_d were calculated using the View Wave by Kashima, BRI.