

Strong Ground Motions

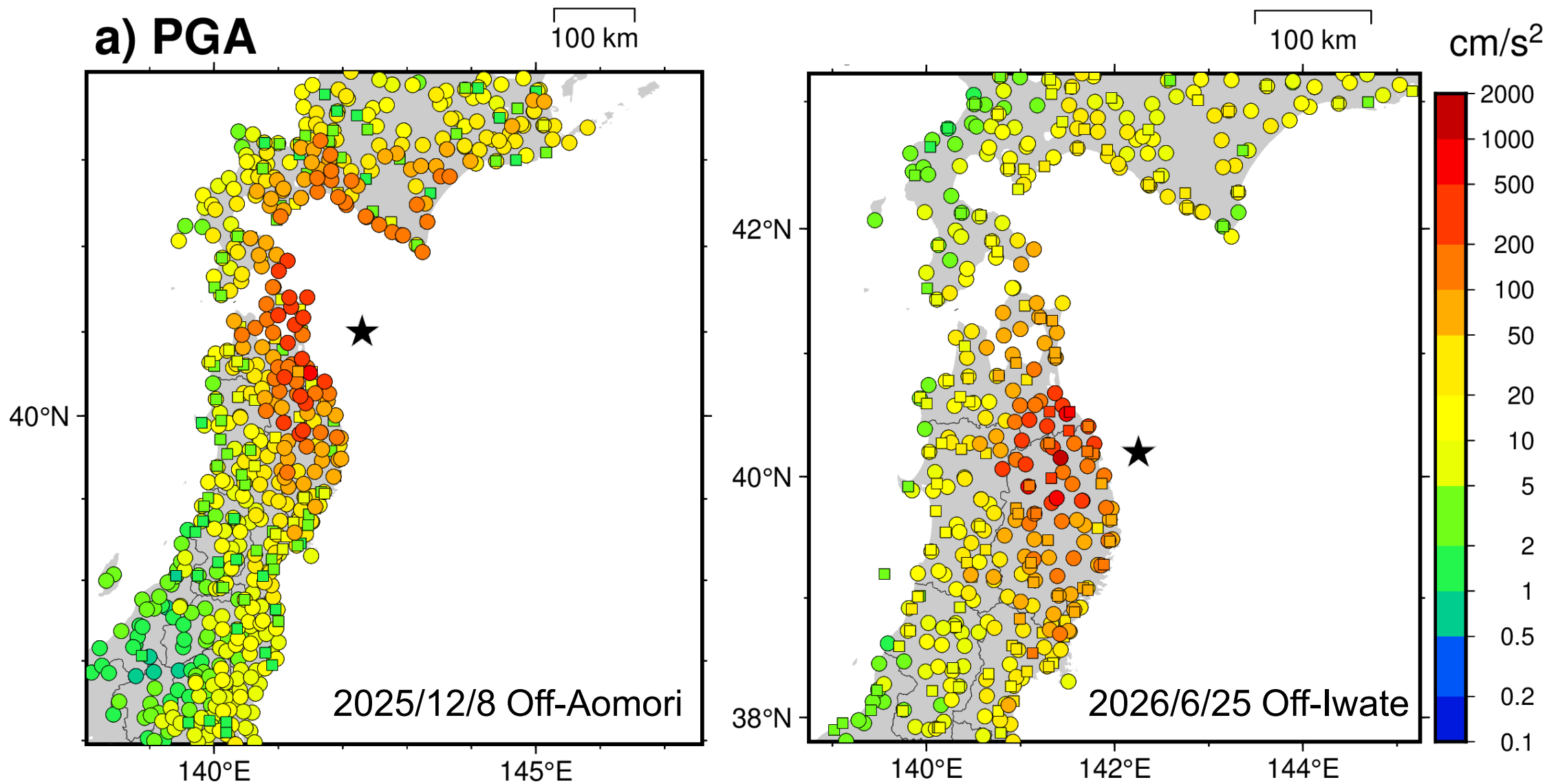
Earthquake in Iwate Pref. on June 25, 2026
(Mw6.9*, Mj6.9)

Comparison with the Earthquake in Aomori Pref. on December 8, 2025 (Mw7.4, Mj7.5)

IISEE, Building Research Institute

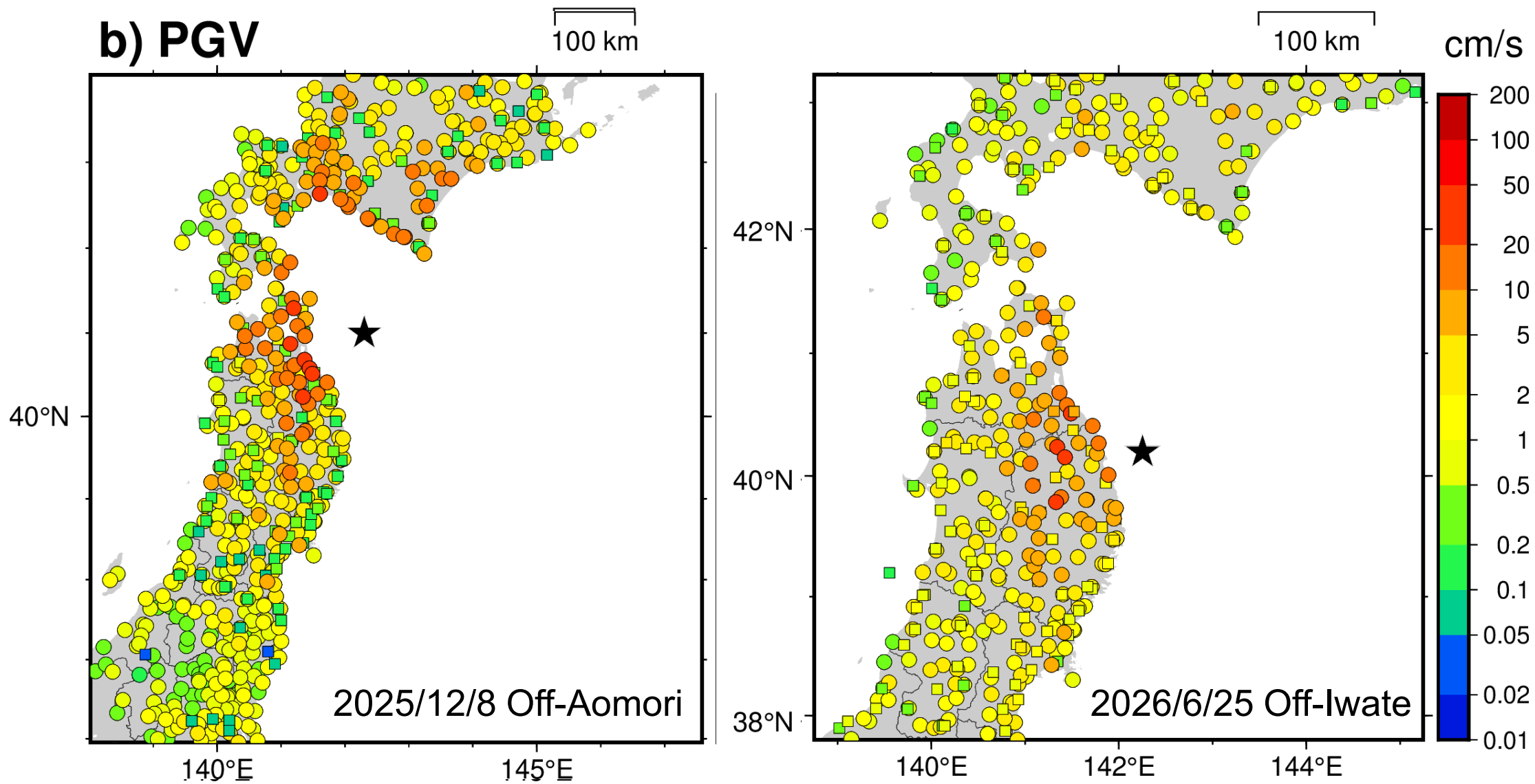
This report contains preliminary analysis results.

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



○: NIED stations, □: JMA seismic intensity stations

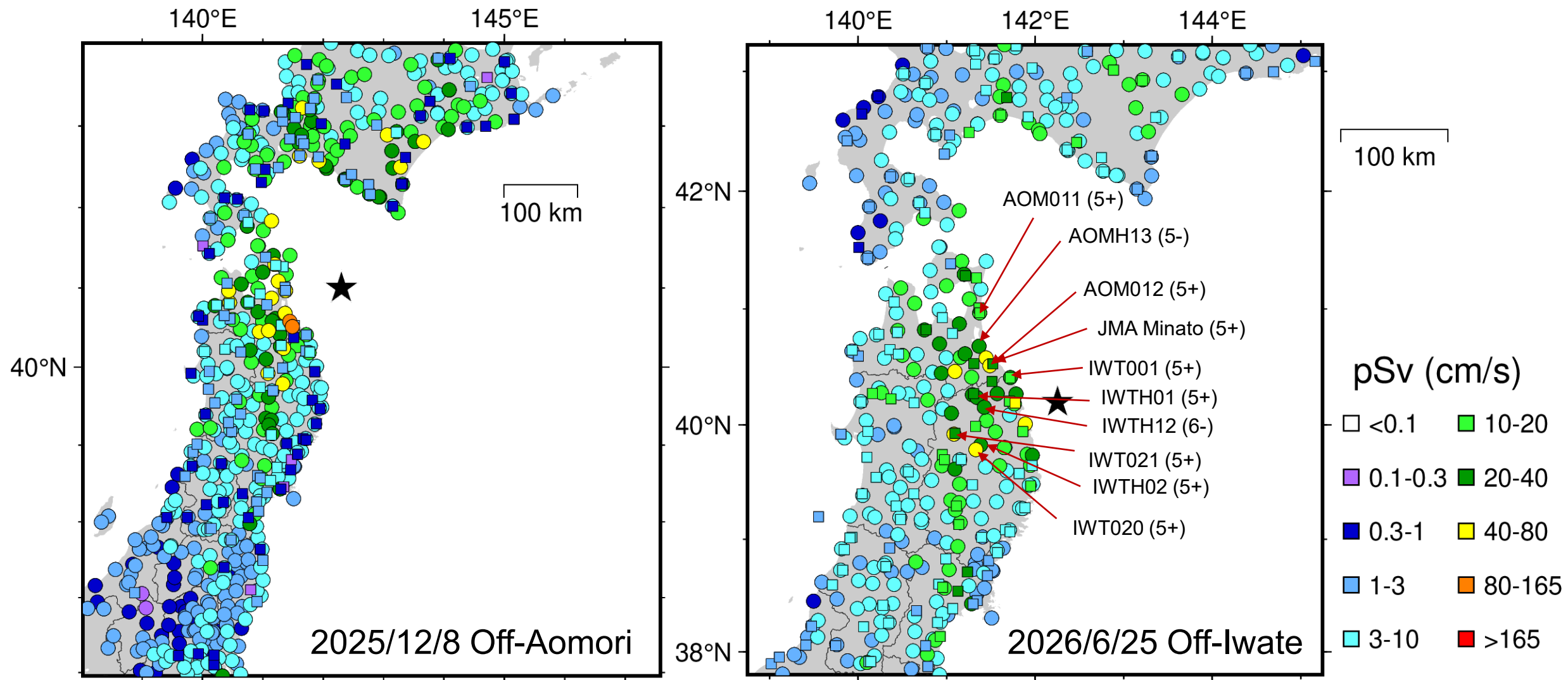
⊗ PGA and PGV are the maximum values of vector summation in the horizontal components.

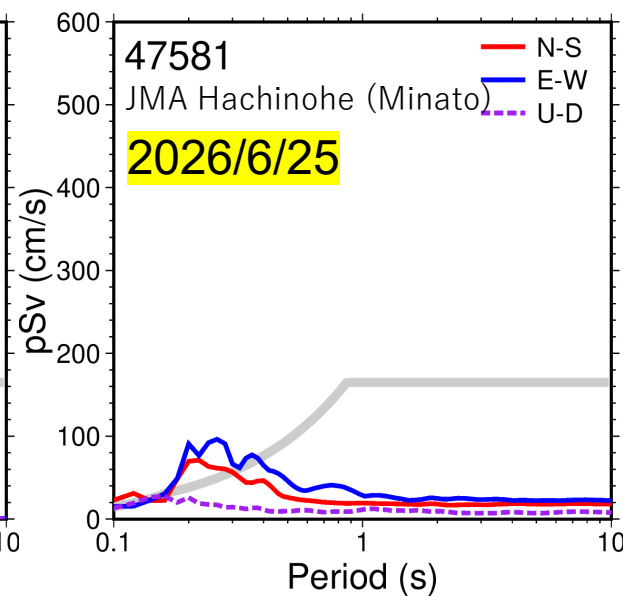
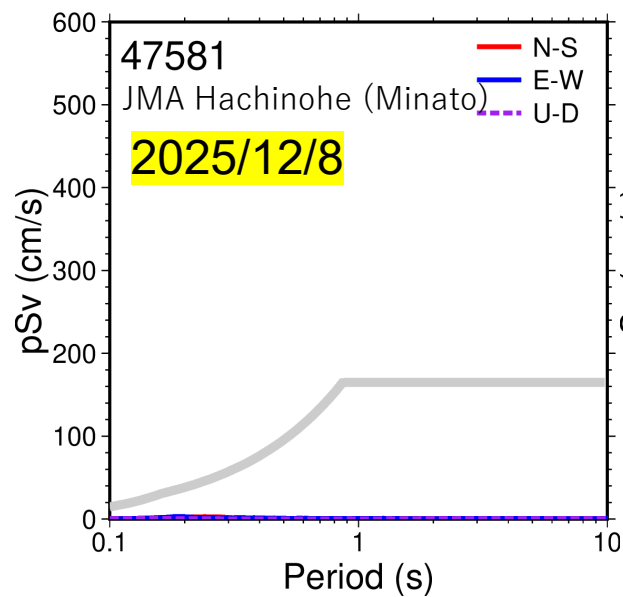
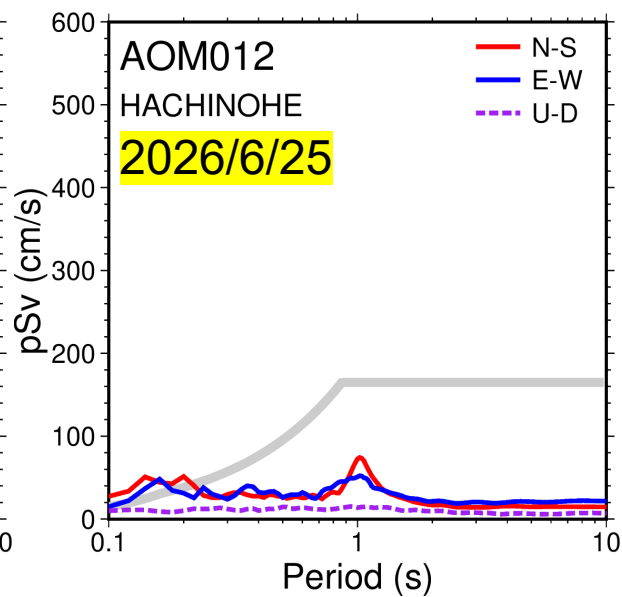
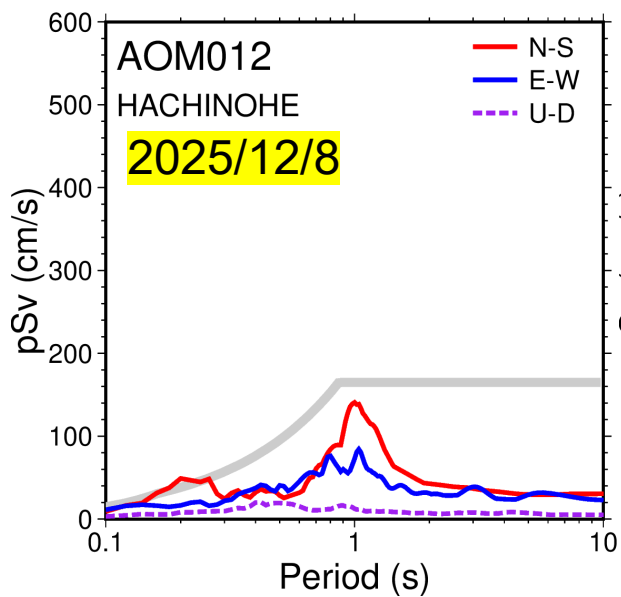
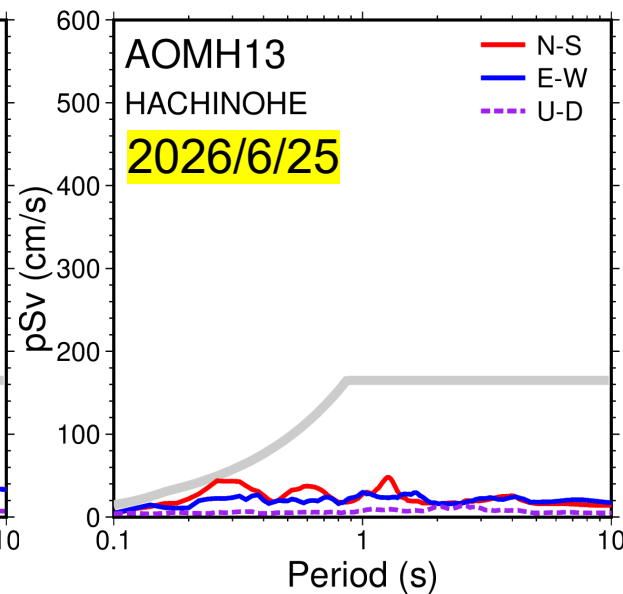
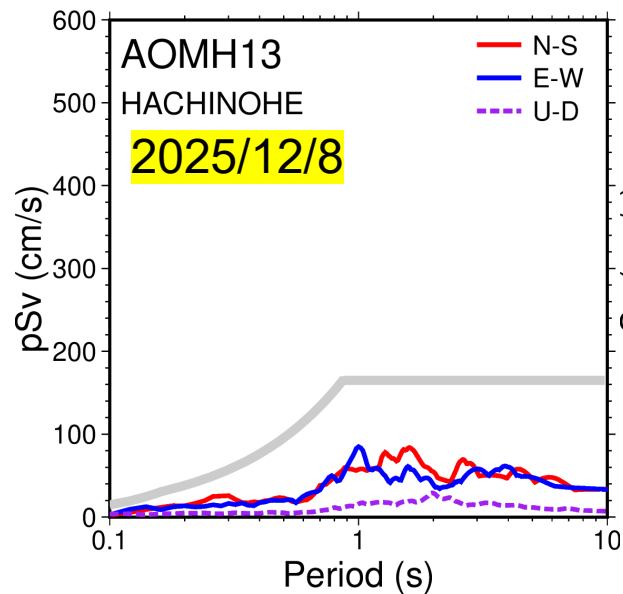
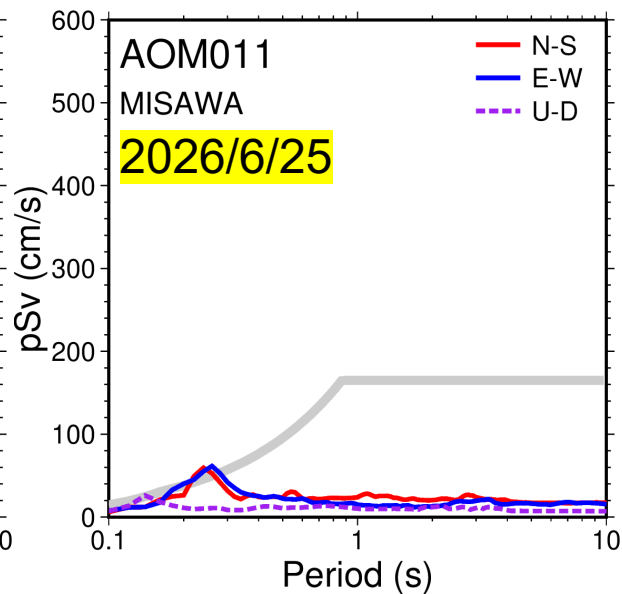
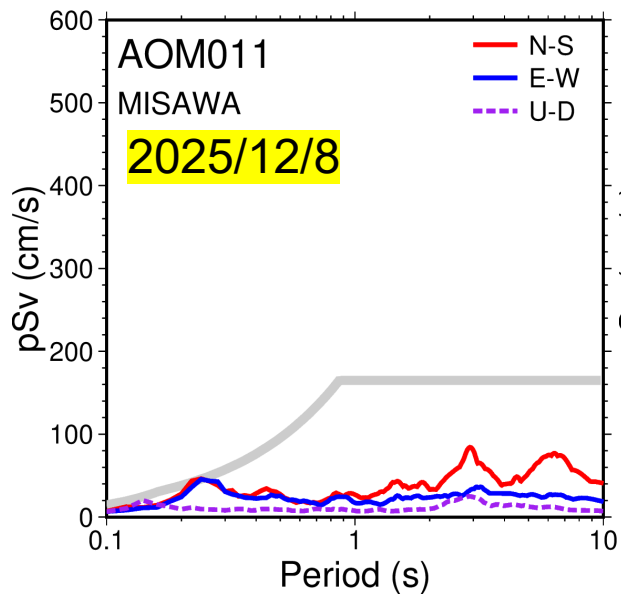


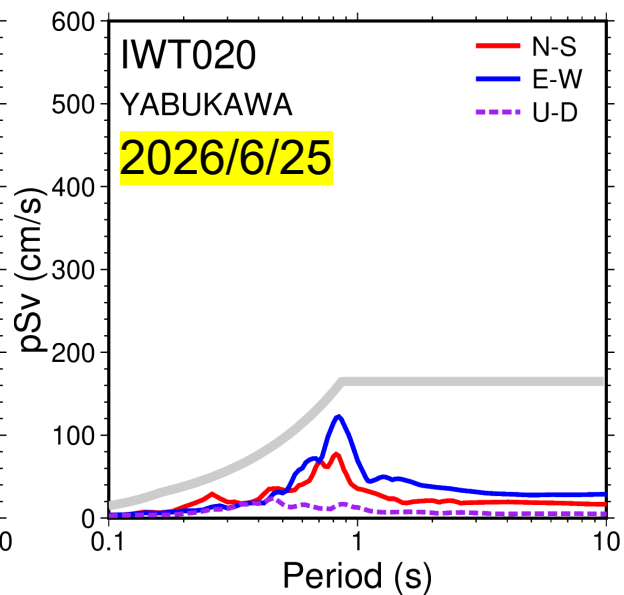
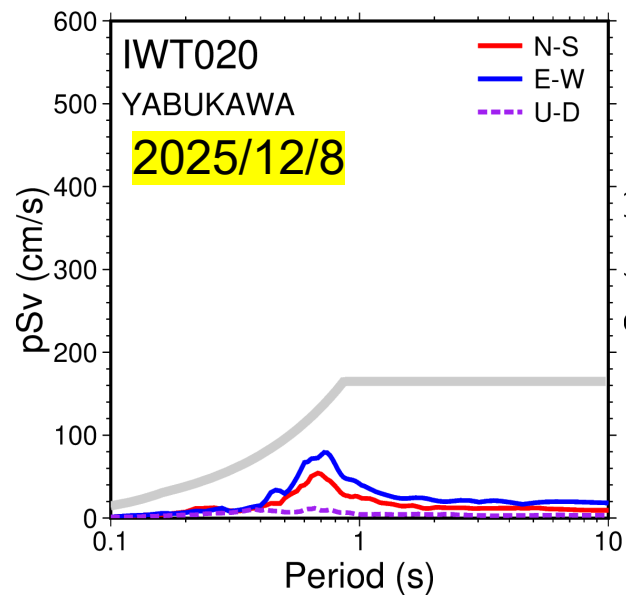
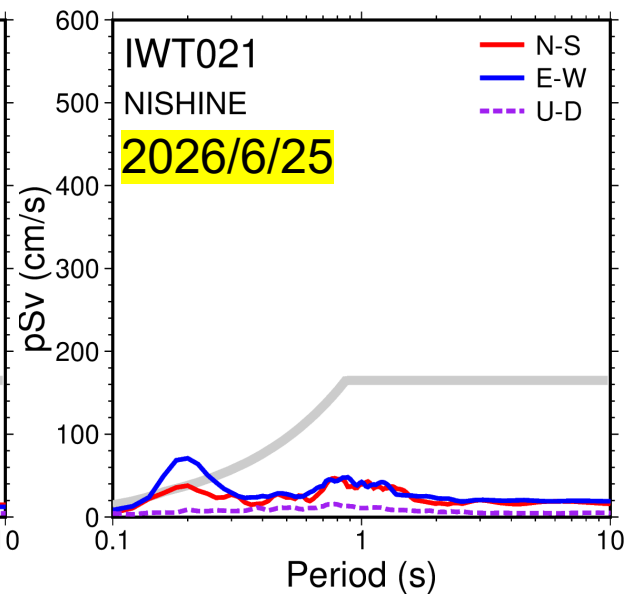
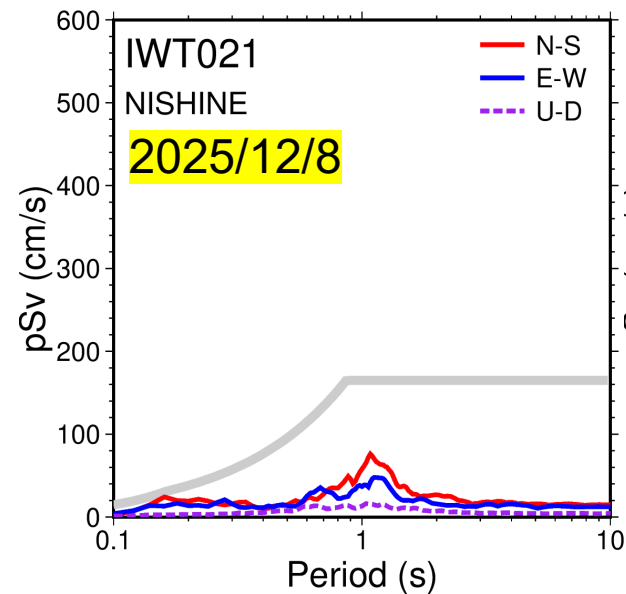
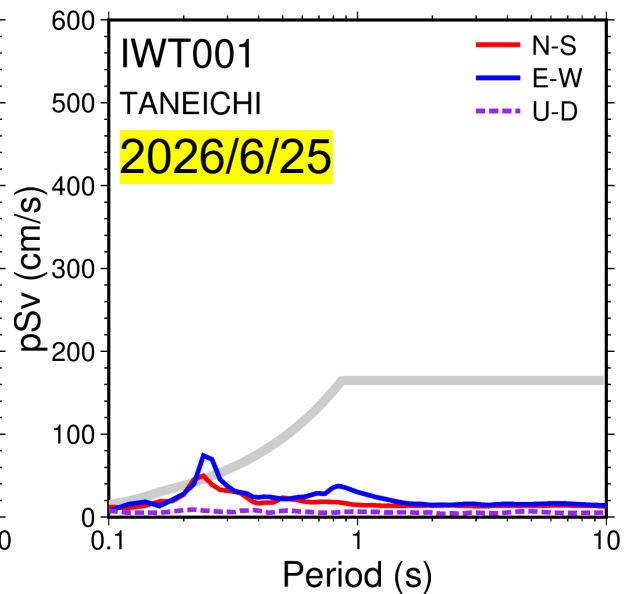
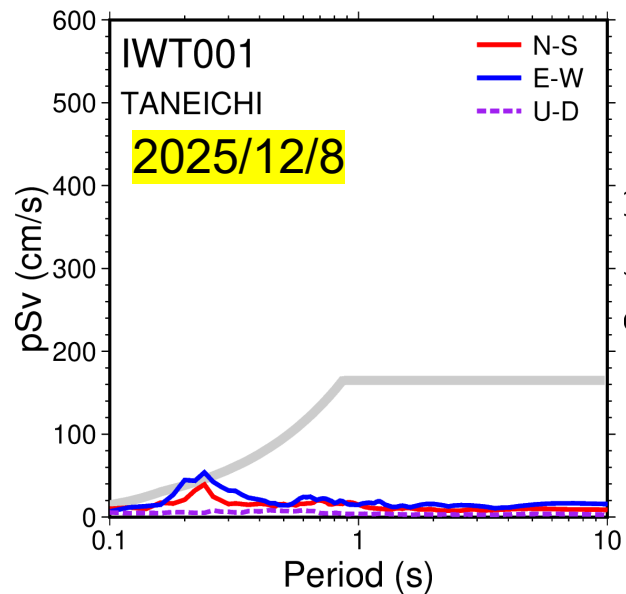
○: NIED stations, □: JMA seismic intensity stations

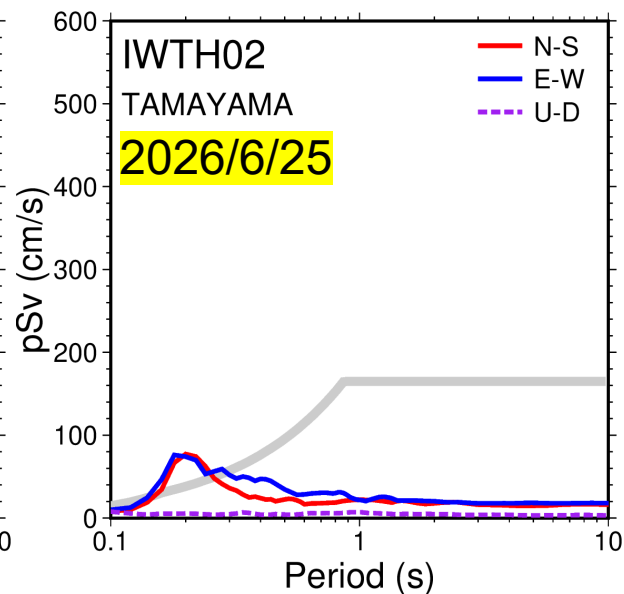
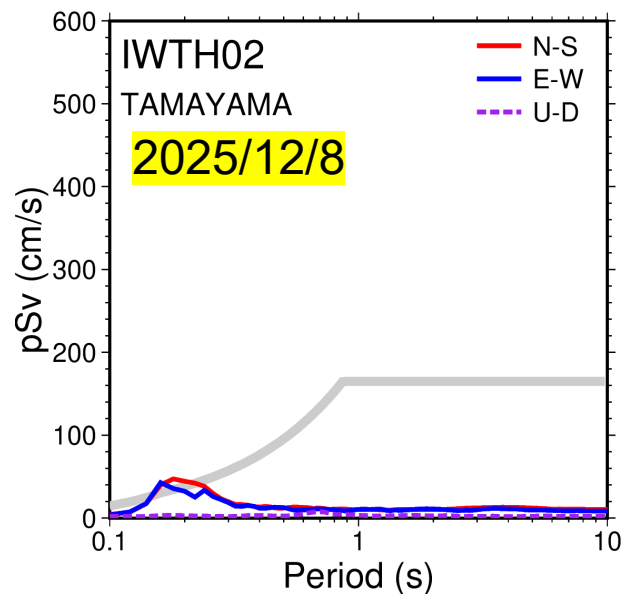
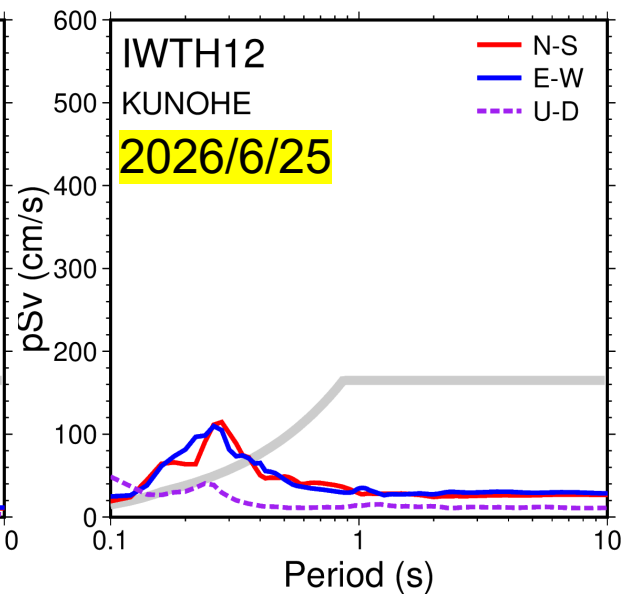
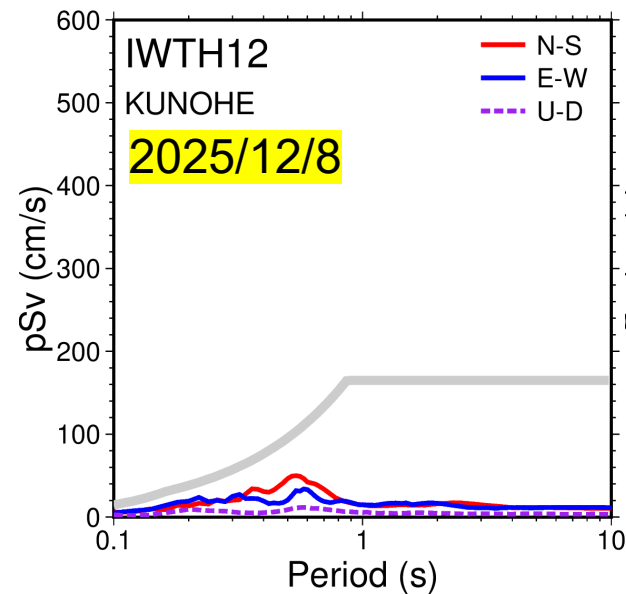
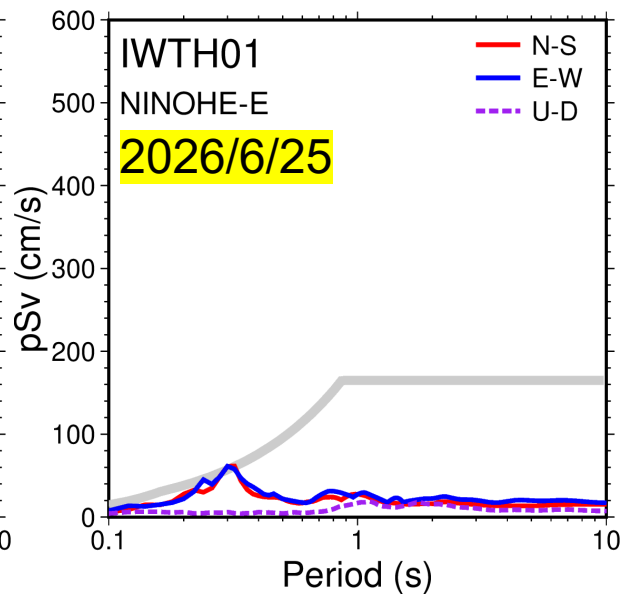
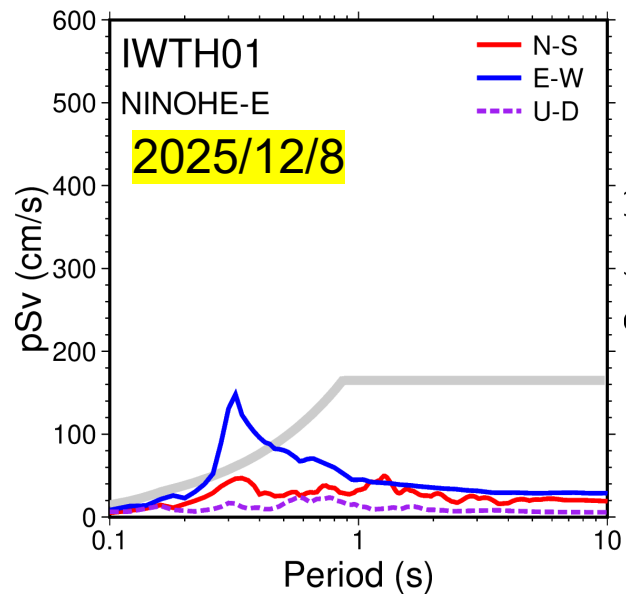
⊗ PGA and PGV are the maximum values of vector summation in the horizontal components.

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



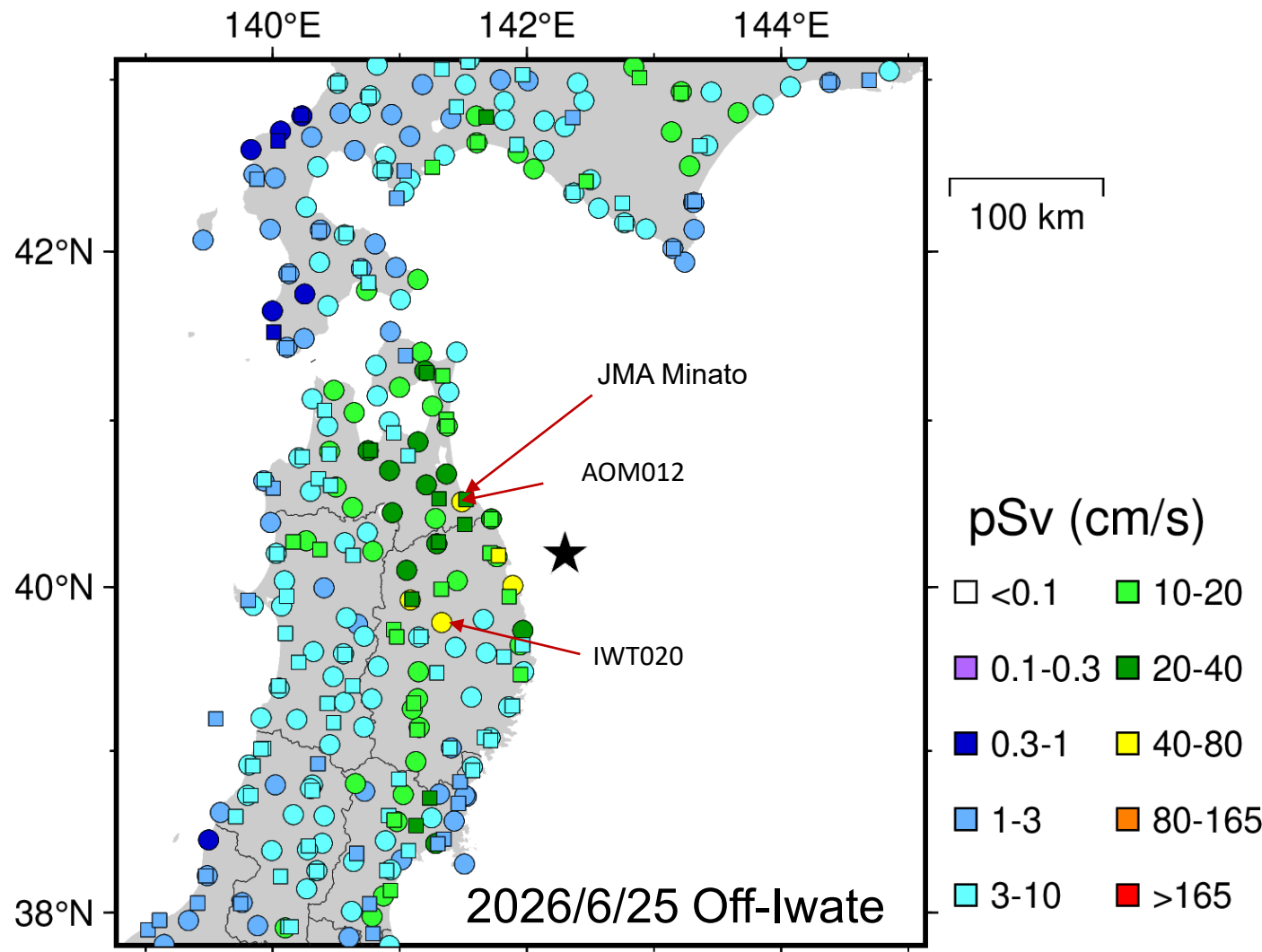
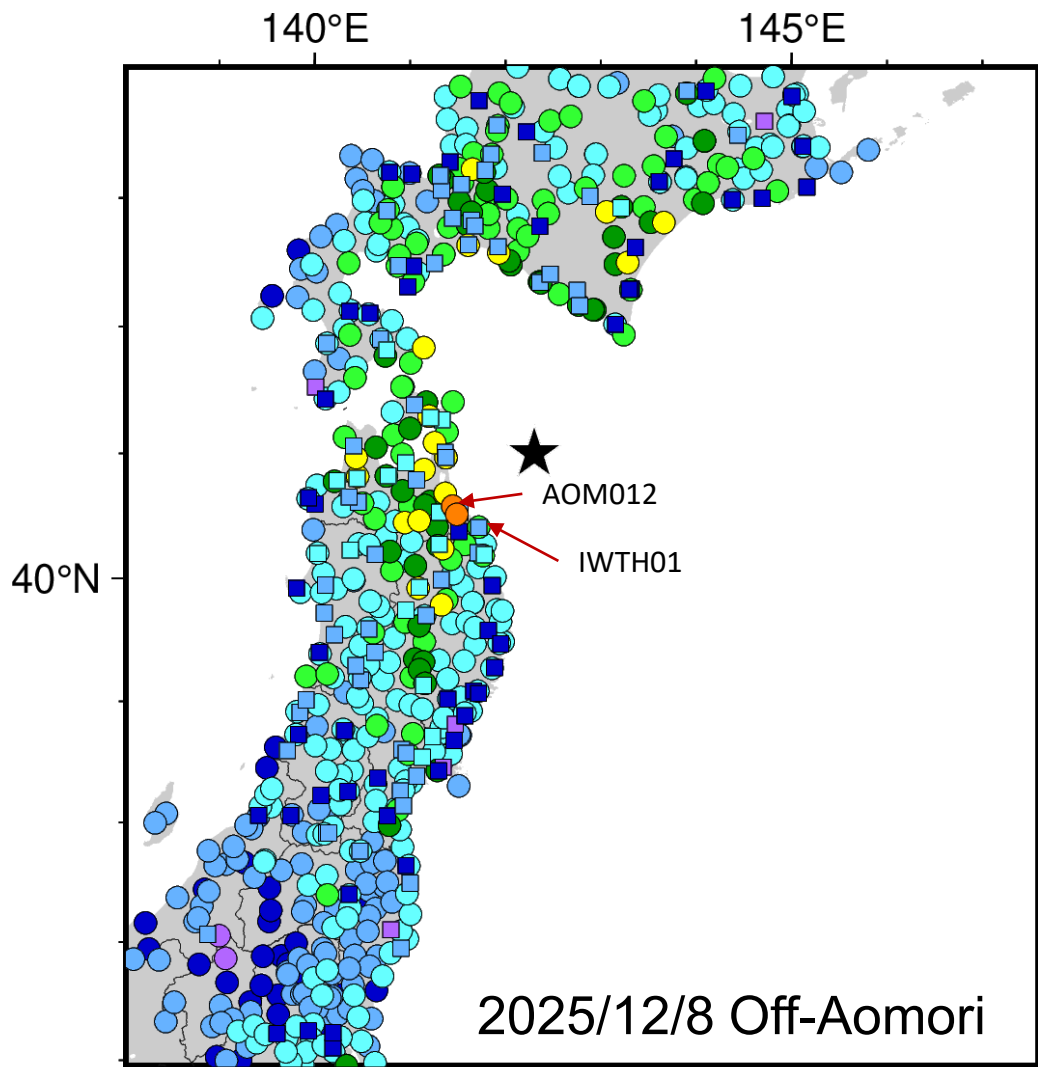






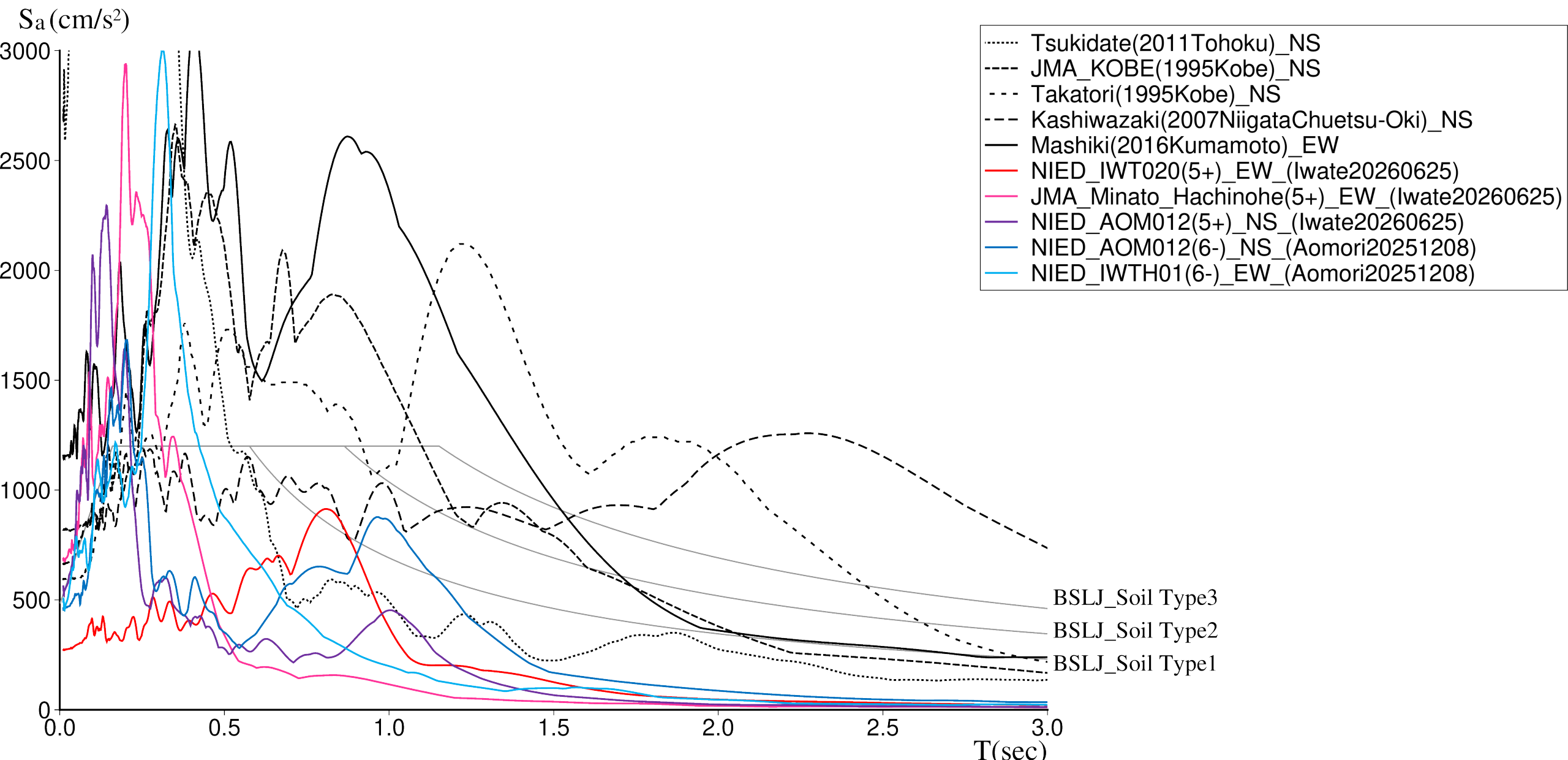
Pseudo-velocity response

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



Response acceleration spectrum S_a and response periods

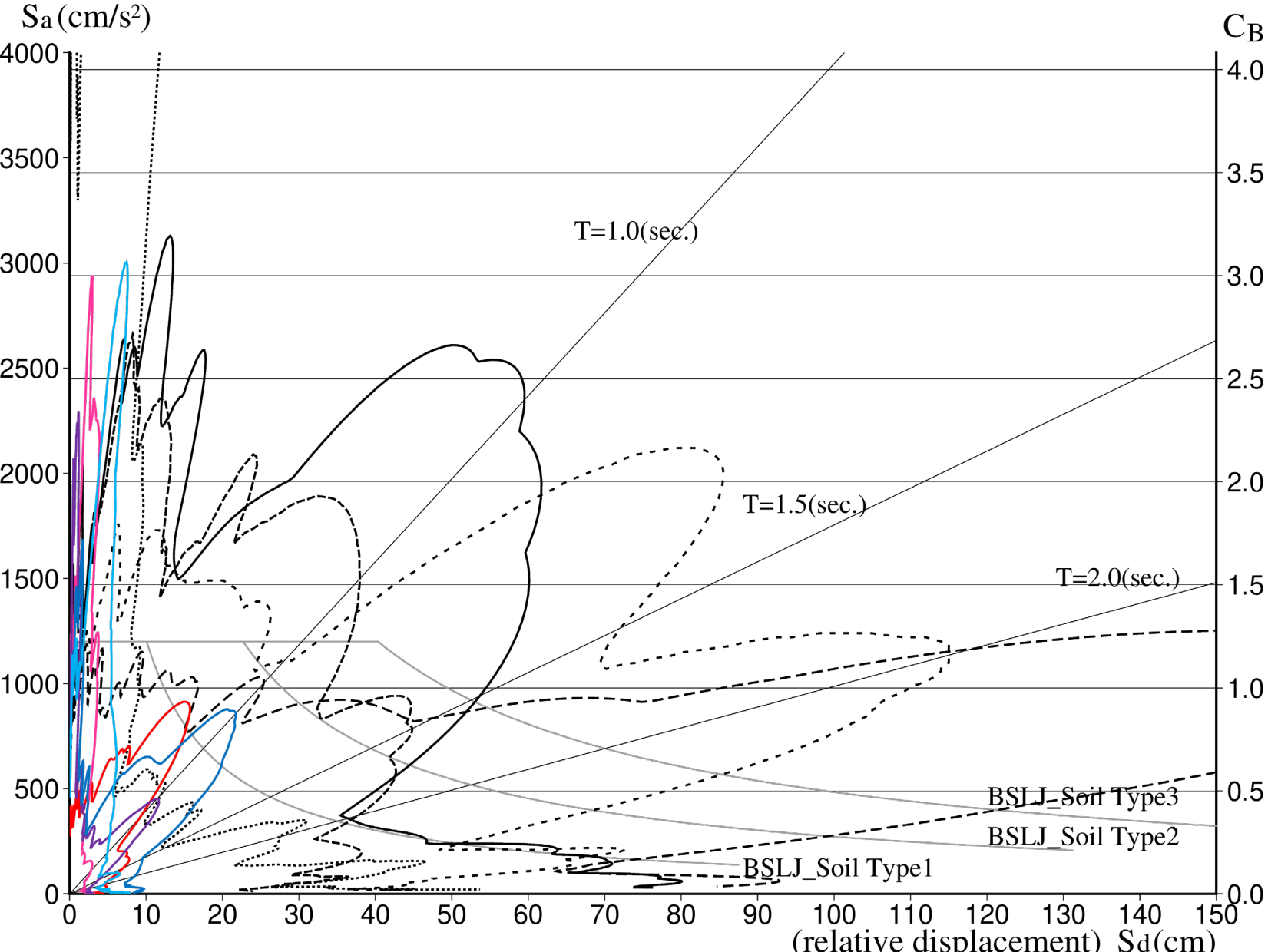
Colored Line: strong motion observation (Equivalent damping factor=5%)



$S_a - S_d$ curve and response periods

Colored Line: strong motion observation
(Equivalent damping factor=5%)

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
- NIED_IWT020(5+)_EW_(Iwate20260625)
- JMA_Minato_Hachinohe(5+)_EW_(Iwate20260625)
- NIED_AOM012(5+)_NS_(Iwate20260625)
- NIED_AOM012(6-)_NS_(Aomori20251208)
- NIED_IWTH01(6-)_EW_(Aomori20251208)

Summary

- In the 1–2 s period range, the pseudo-velocity response exceeded 80 cm/s during the December 2025 earthquake, whereas none of the observation stations exceeded 80 cm/s during the present earthquake.
- From the response acceleration (S_a) spectrum and the S_a – S_d curve, assuming an equivalent damping ratio of 5%, the observation site with the largest response differs from that of the December 2025 earthquake.
- At NIED_AOM012 of the North-South (NS) components, the S_a – S_d curve protruded with a period of 1 second, similar to that observed during the December 2025 earthquake. However, the shape of the S_a – S_d curve was smaller than that of the December 2025 earthquake.

Acknowledgments

We used K-NET and KiK-net strong-motion data provided by the National Research Institute for Earth Science and Disaster Resilience, NIED, Japan (<https://www.doi.org/10.17598/NIED.0004>)

The moment magnitude (M_w) was obtained from the NIED F-net solution.

The hypocenter location is based on the automatically determined hypocenter from NIED Hi-net.

We used strong-motion data from NIED (K-NET and KiK-net), JMA, and RTRI for past strong motion in Japan.

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

Figures were prepared using Generic Mapping Tools (GMT: Wessel and Smith, 1998 and 2019).