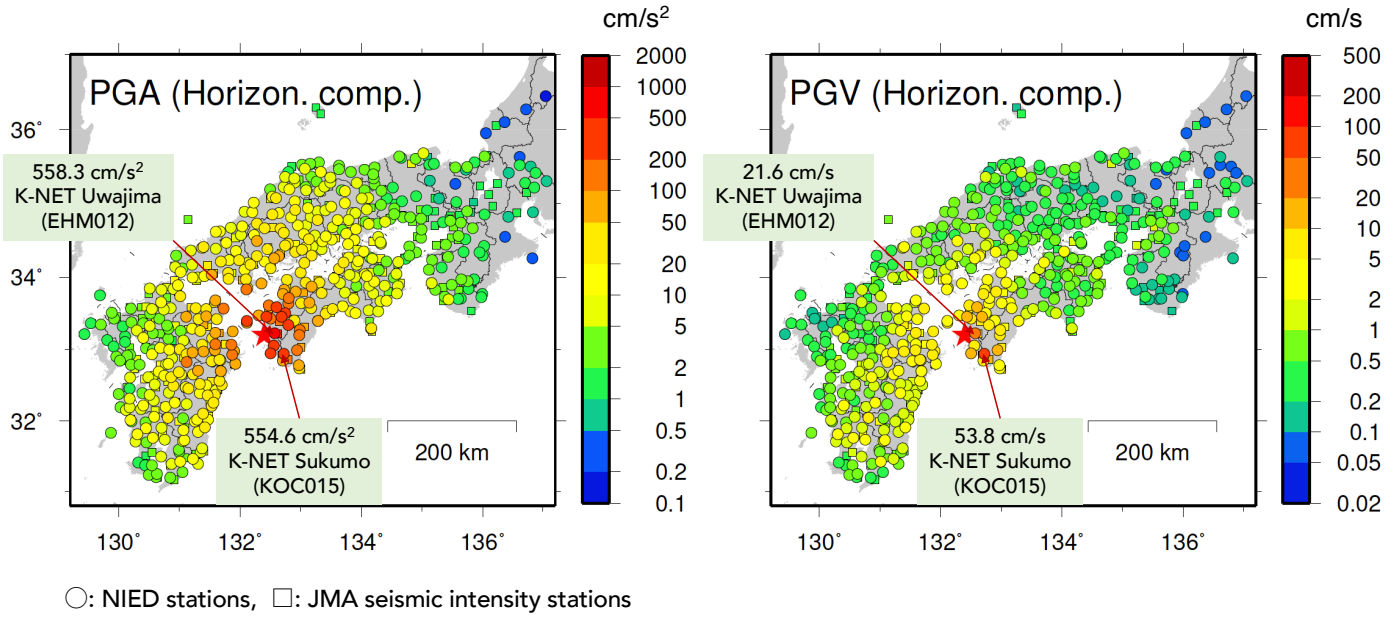
Strong Ground Motions

Earthquake in Bungo Channel on April 17, 2024 (Mw6.2)

IISEE, Building Research Institute

This report contains preliminary analysis results.

Observed PGAs/PGVs (Horizontal comp.)

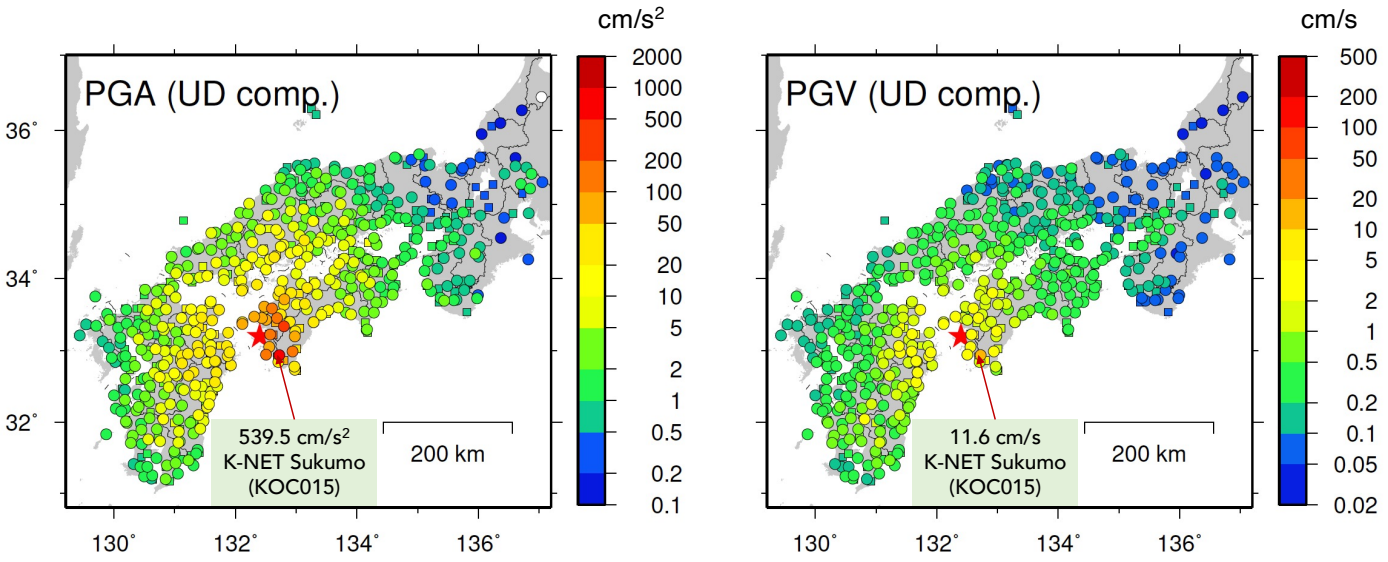


○: NIED stations, □: JMA seismic intensity stations

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

BRI

Observed PGAs/PGVs (UD comp.)



○: NIED stations, □: JMA seismic intensity stations

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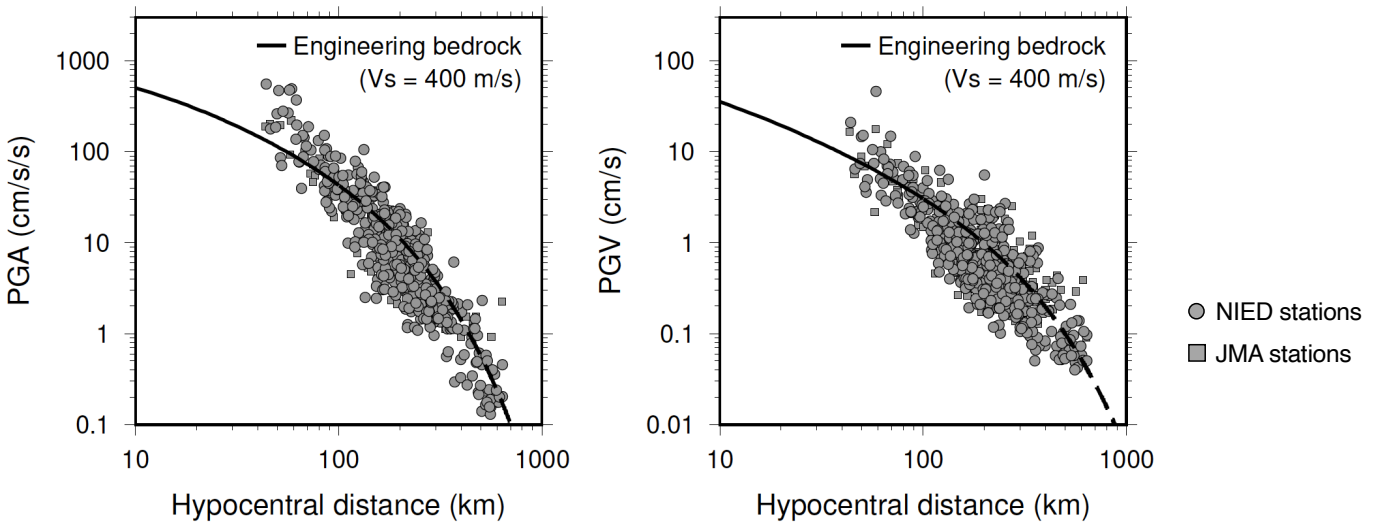
Observed PGAs/PGVs vs GMPE (Si & Midorikawa, 1999)



※ 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.
※ Intraplate earthquake (depth=50 km) is assumed for the estimation.
※ Estimated values beyond 100 km (dashed line) are shown as reference values.

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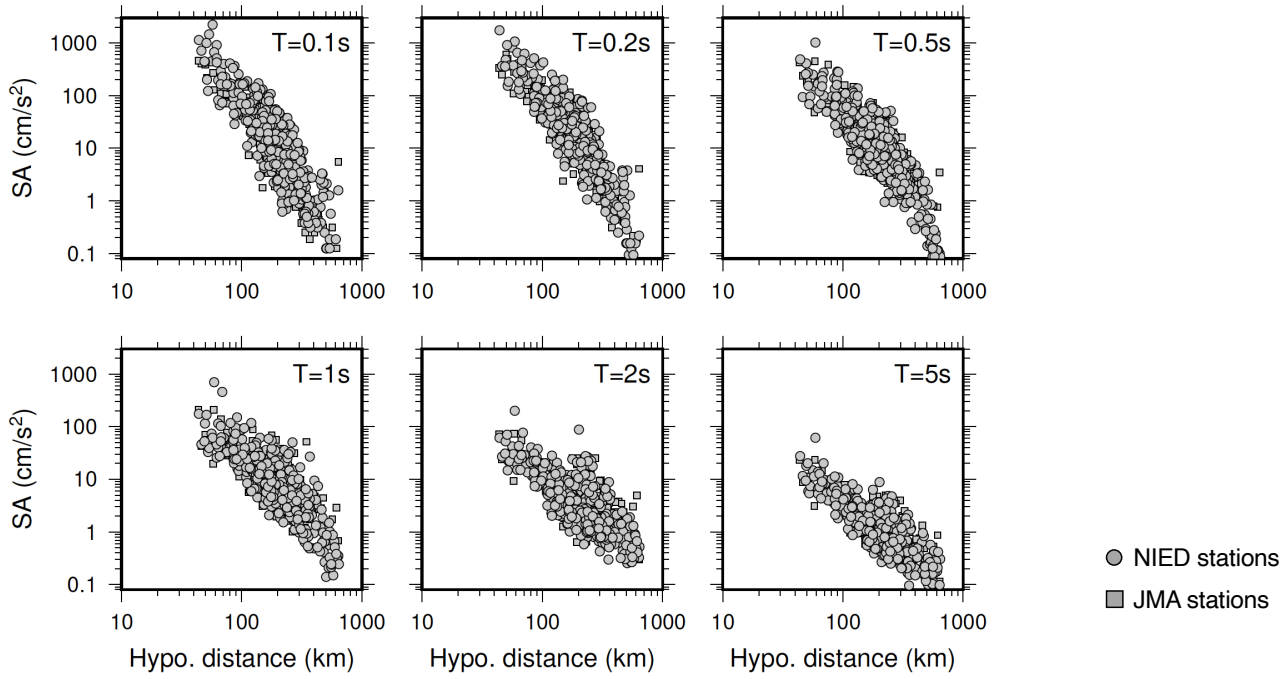
Attenuation characteristics of response spectra (h=5%)



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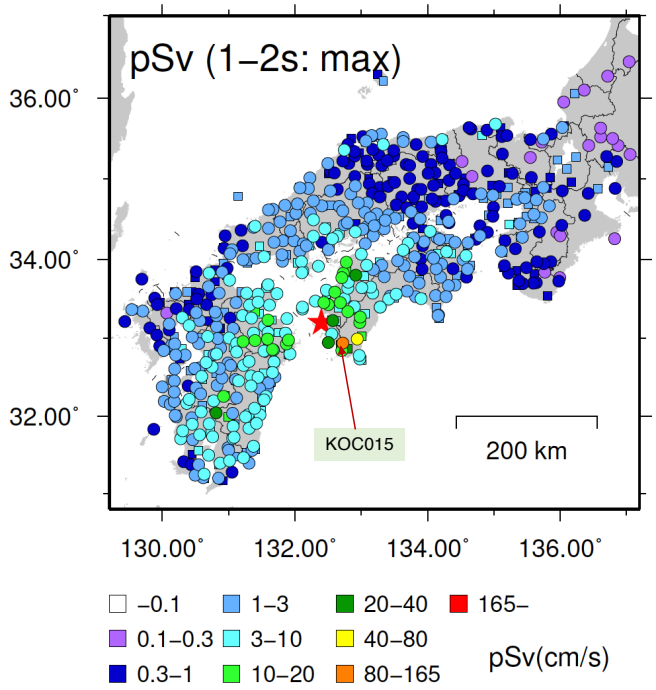
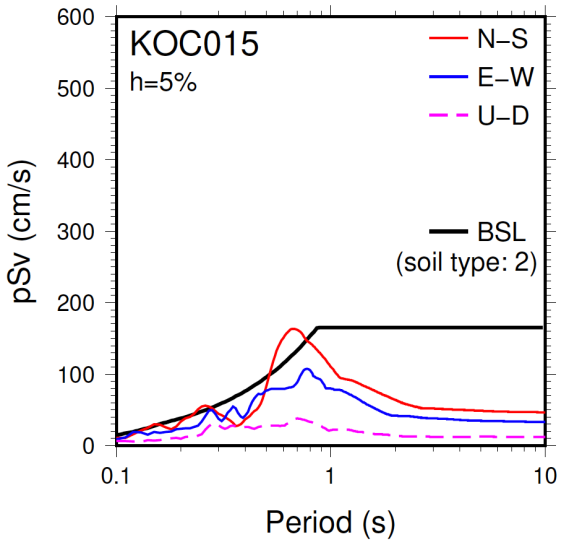
Pseudo-velocity response (pSv: 1–2 s, h=5%)





Station KOC015 shows the largest response at period 1–2 s.

Ground motion at KOC015

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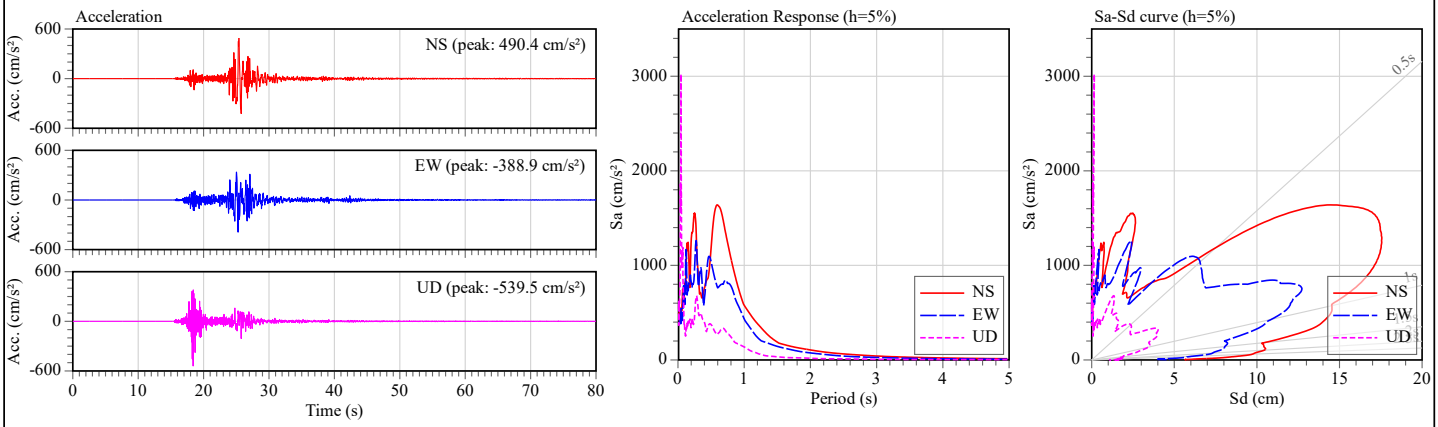
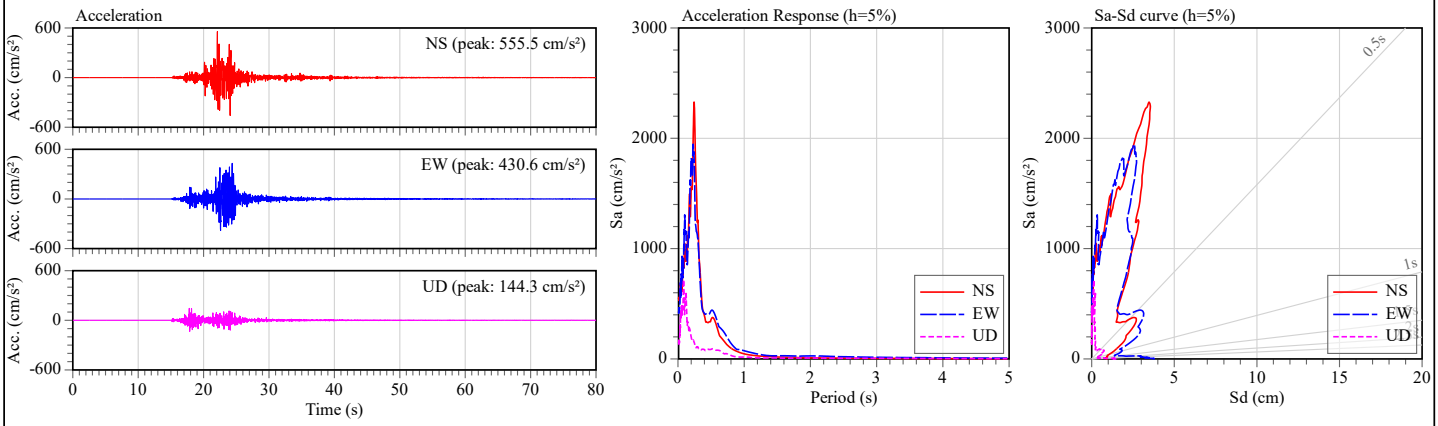


2024/04/17 23:14:41 at KOC015: K-NET station, Intensity: 6.0

Ground motion at EHM012

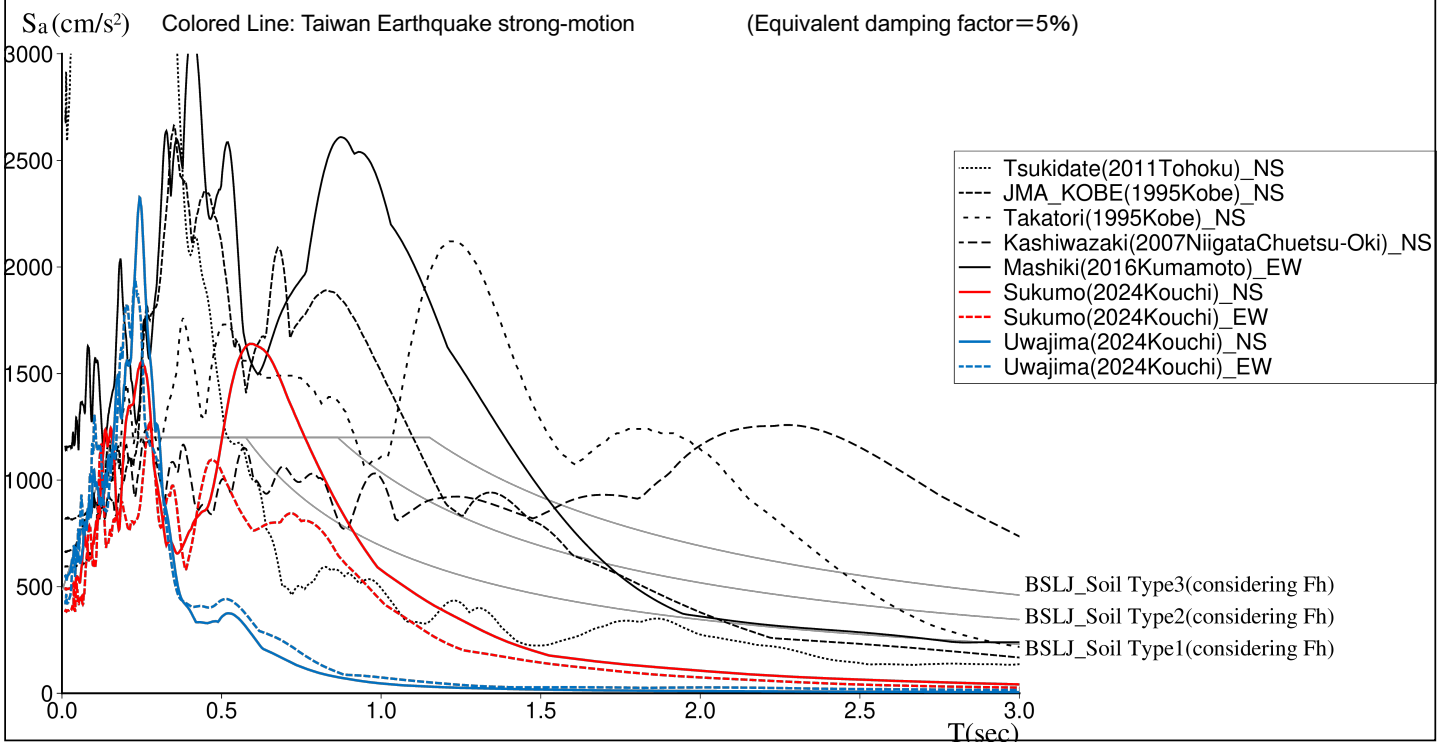
BRI



2024/04/17 23:14:39 at EHM012: K-NET station, Intensity: 5.4

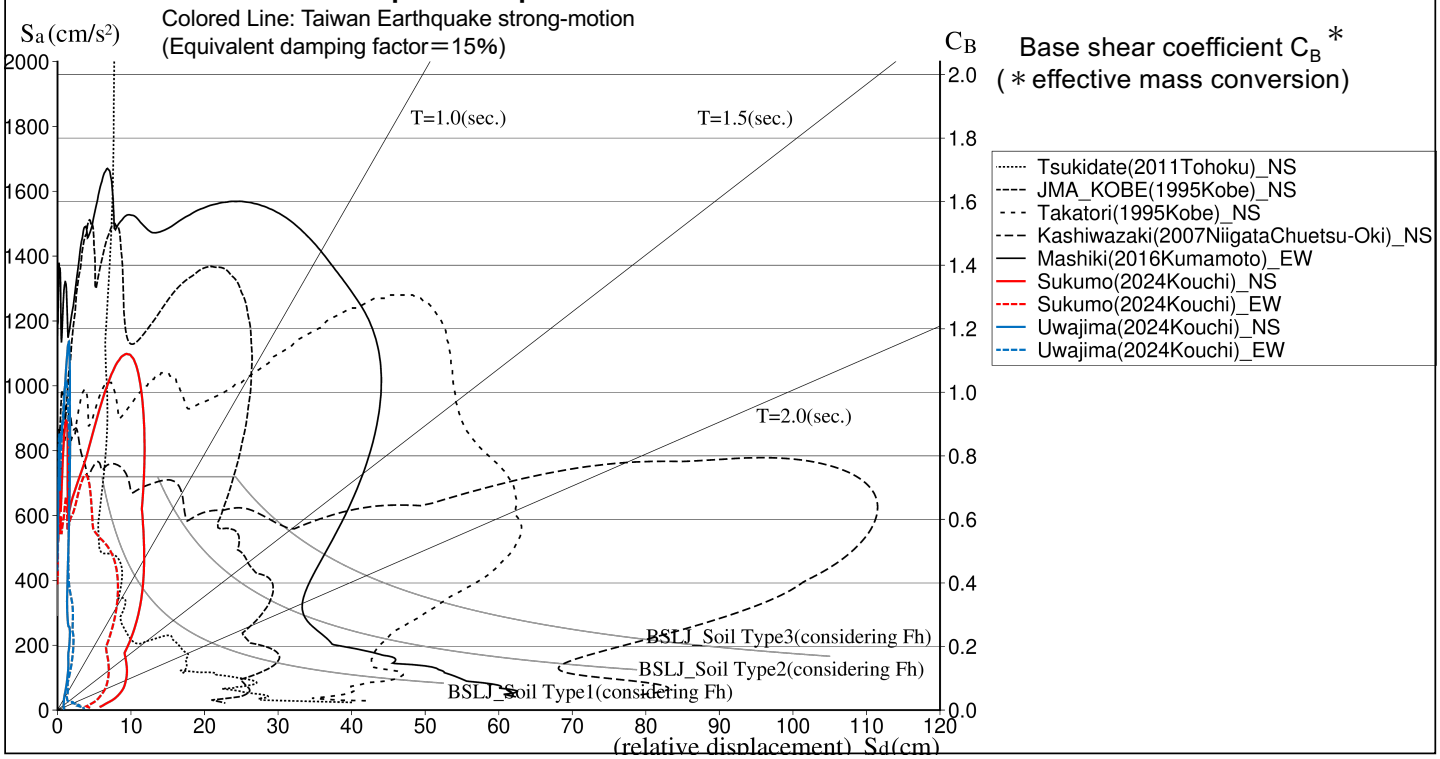
Response acceleration spectrum S_a and response periods

BRI



S_a - S_d curve and response periods

BRI



Summary

- K-NET station KOC015 (Sukumo) showed larger PGA and PGV.
- The response acceleration (Sa) of the North-South (NS) components of KOC015 (Sukumo) showed large values at around the period of 0.5 s.
- From the Sa-Sd curve assuming a 15% equivalent damping ratio, the Sa-Sd shapes of this earthquake were smaller than past major earthquakes in Japan.

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)
We also used strong-motion data from the Japan Meteorological Agency (JMA) seismic intensity stations.

We used hypocenter information determined by NIED Hi-net.
Response spectra were calculated using the subroutine program developed by Osaki (1994).
Figures were prepared using Generic Mapping Tools (GMT: Wessel and Smith, 1998).

We used strong motion data provided by NIED (K-NET and KiK-net), JMA, and RTRI for past strong motion in Japan.
Sa-T and Sa-Sd were calculated using the View Wave by Kashima, BRI.