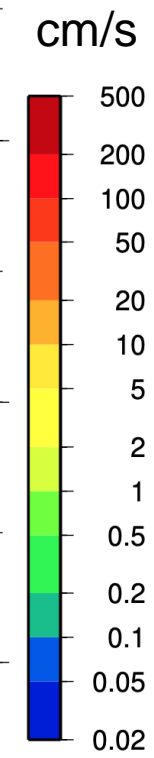
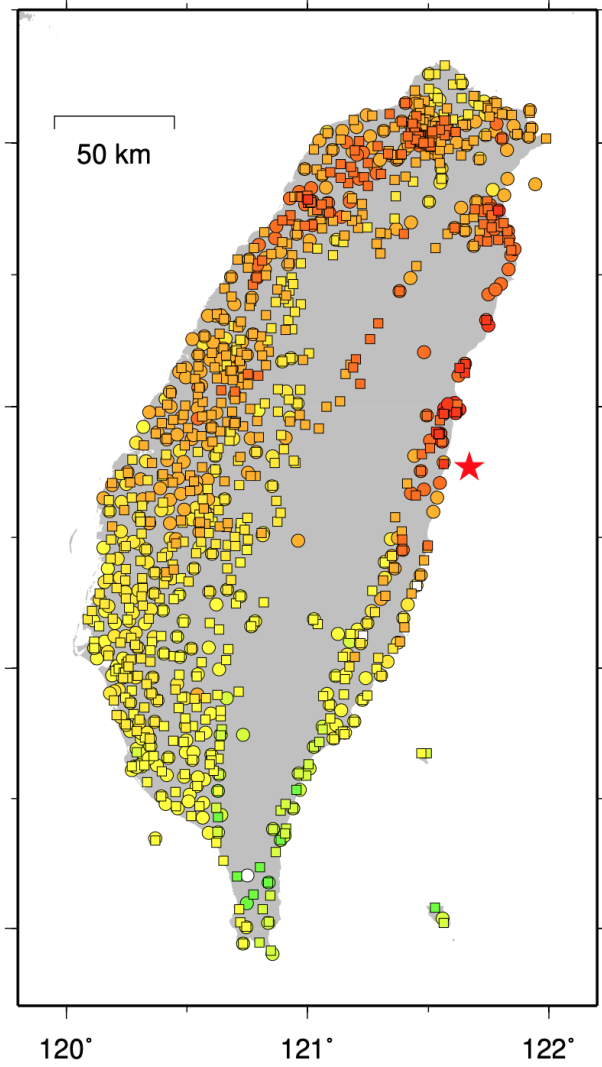
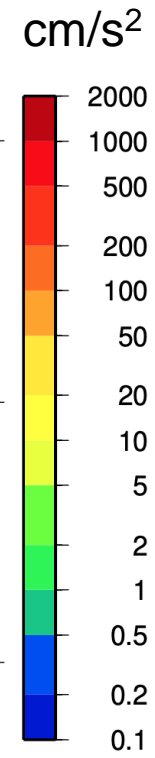
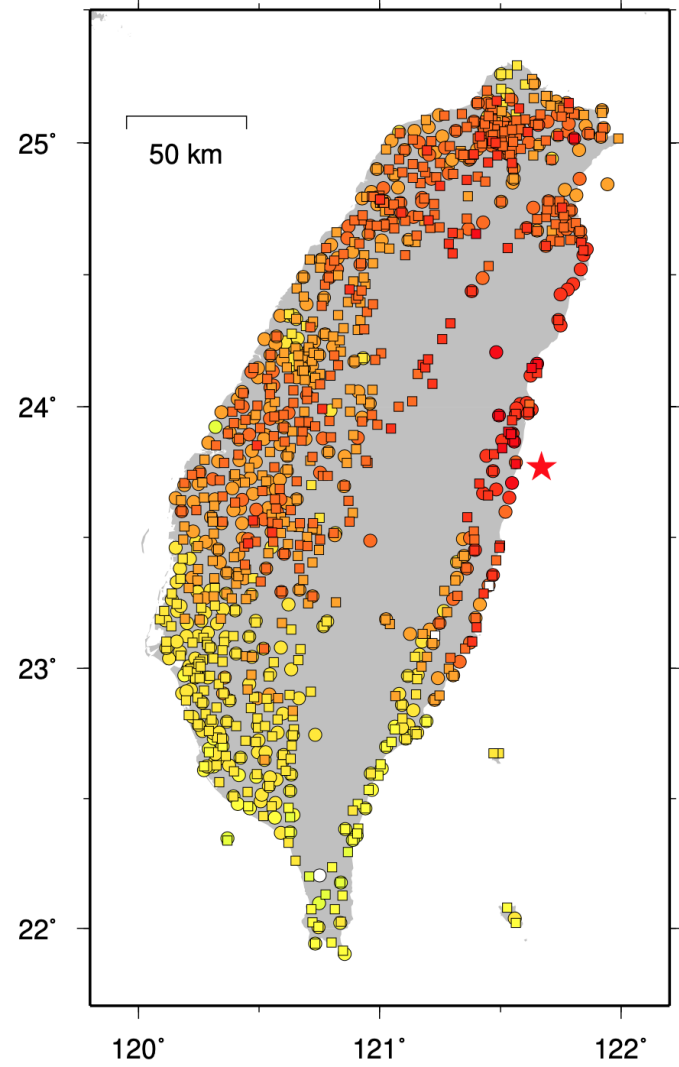


Strong Ground Motions of the 2024 Taiwan Earthquake

IISEE, Building Research Institute

Apr. 8, 2024

Observed PGAs/PGVs (3 comp.)

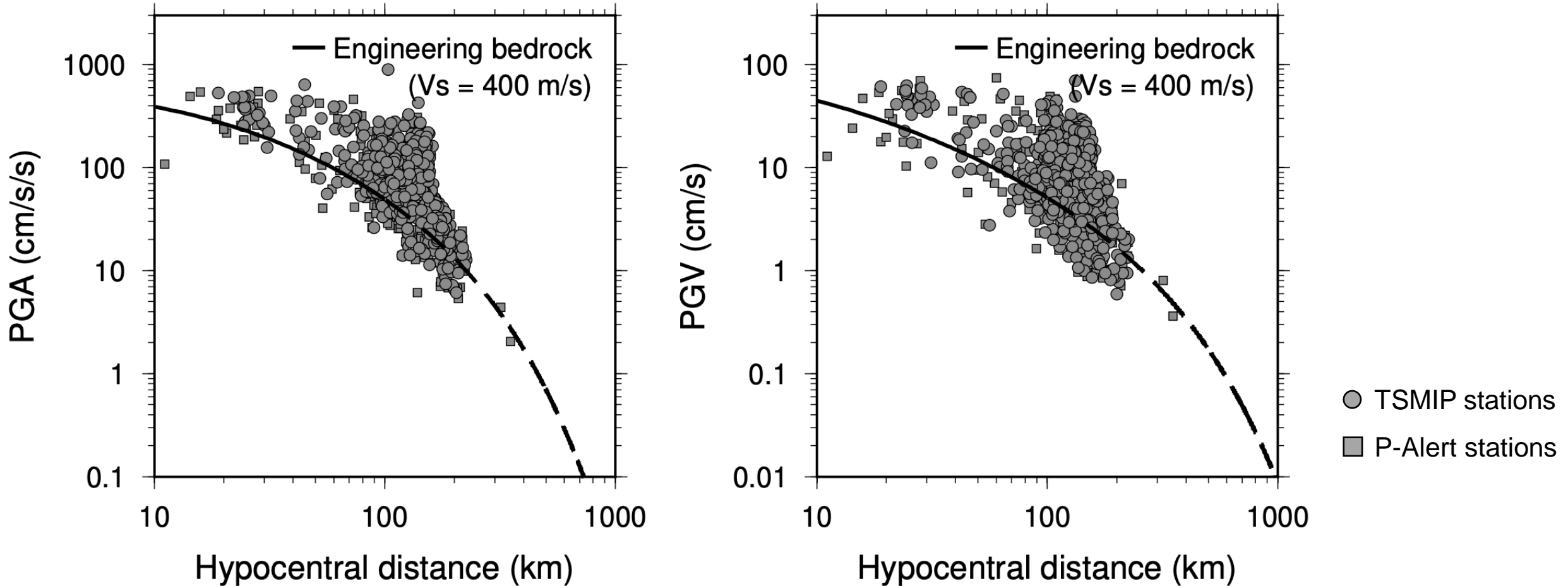


★ Epicenter

2024/04/02 23:58(UTC)
Mw: 7.4 (USGS)
Depth: 34.8km (USGS)

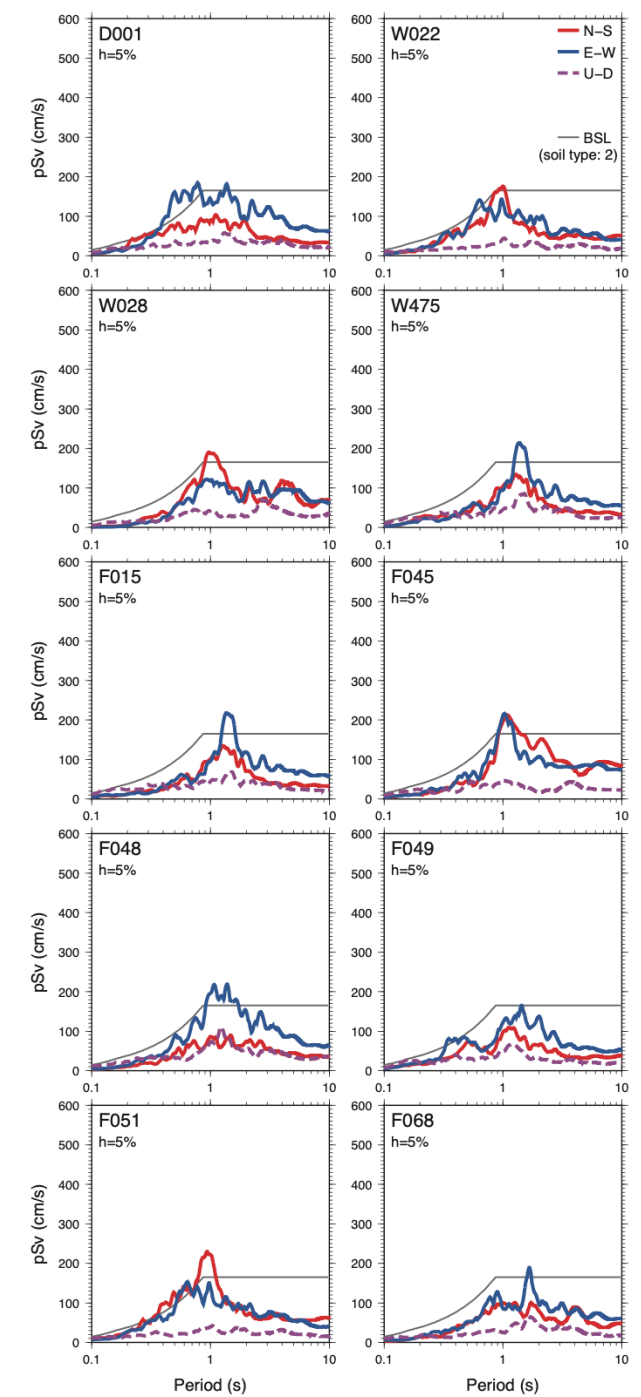
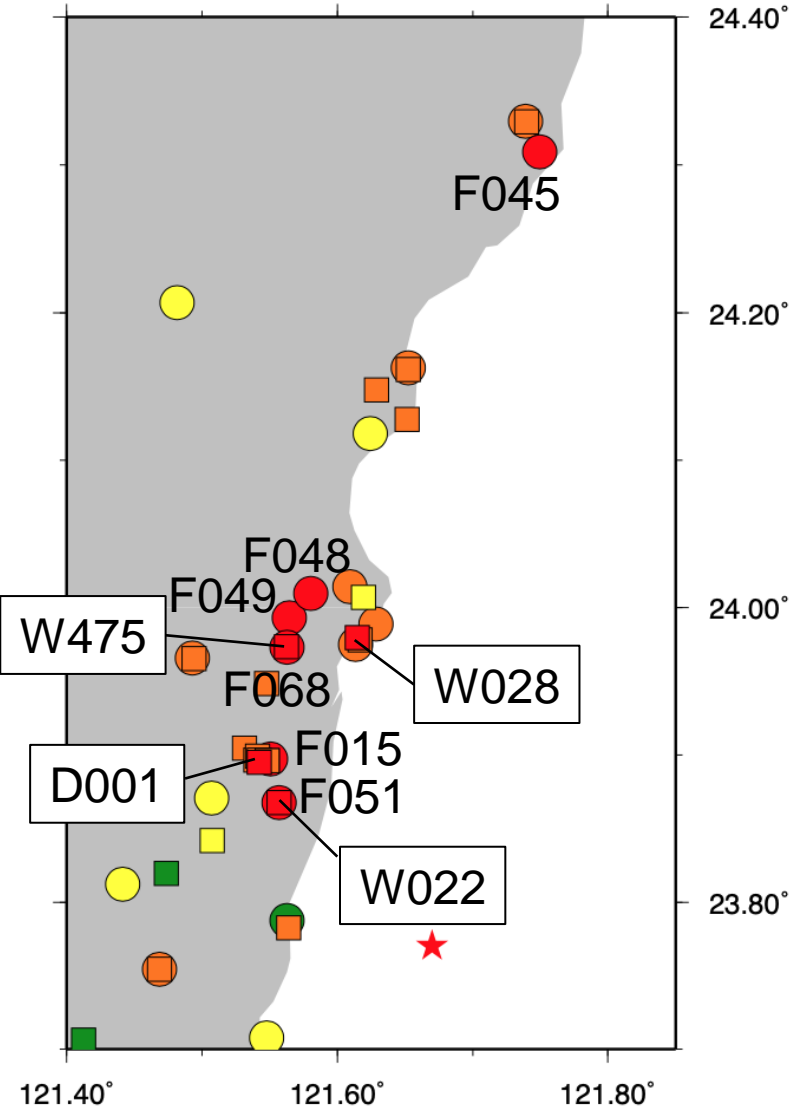
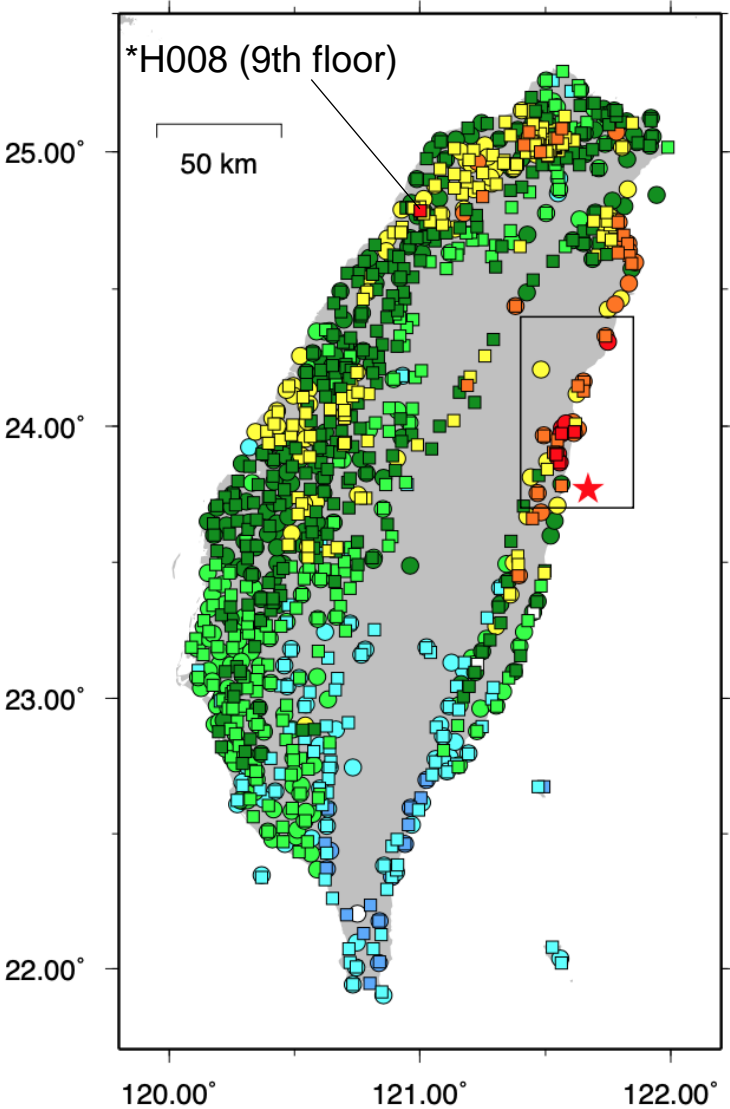
○: TSMIP(CWA) stations, □: P-Alert stations

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

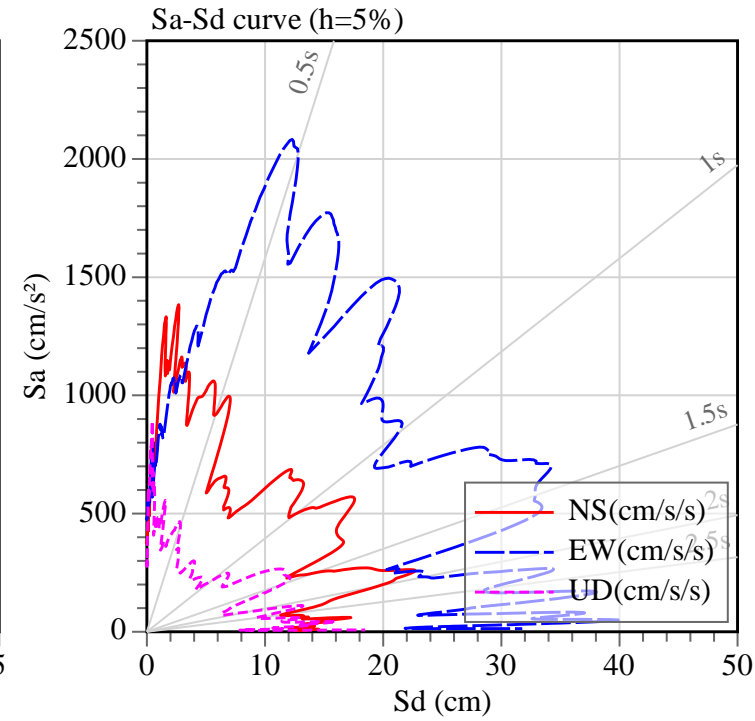
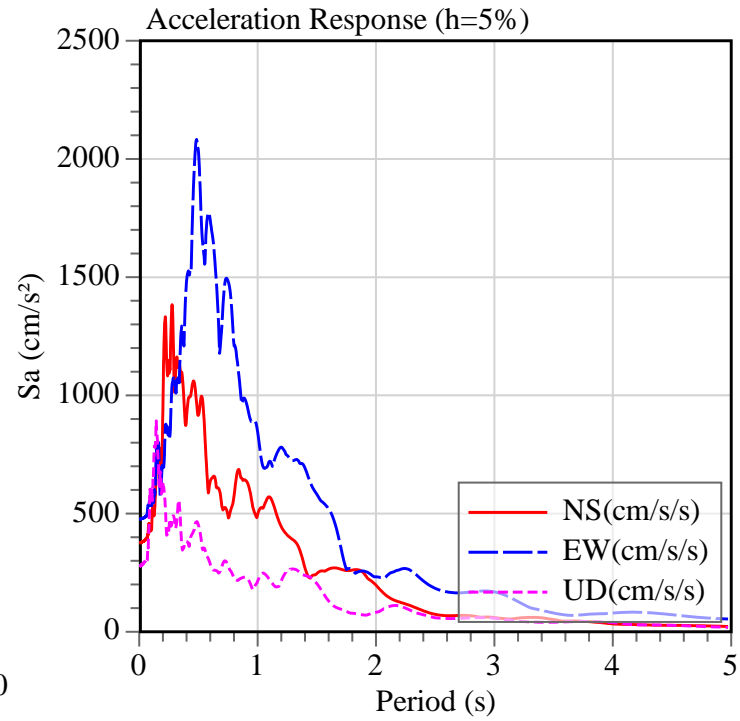
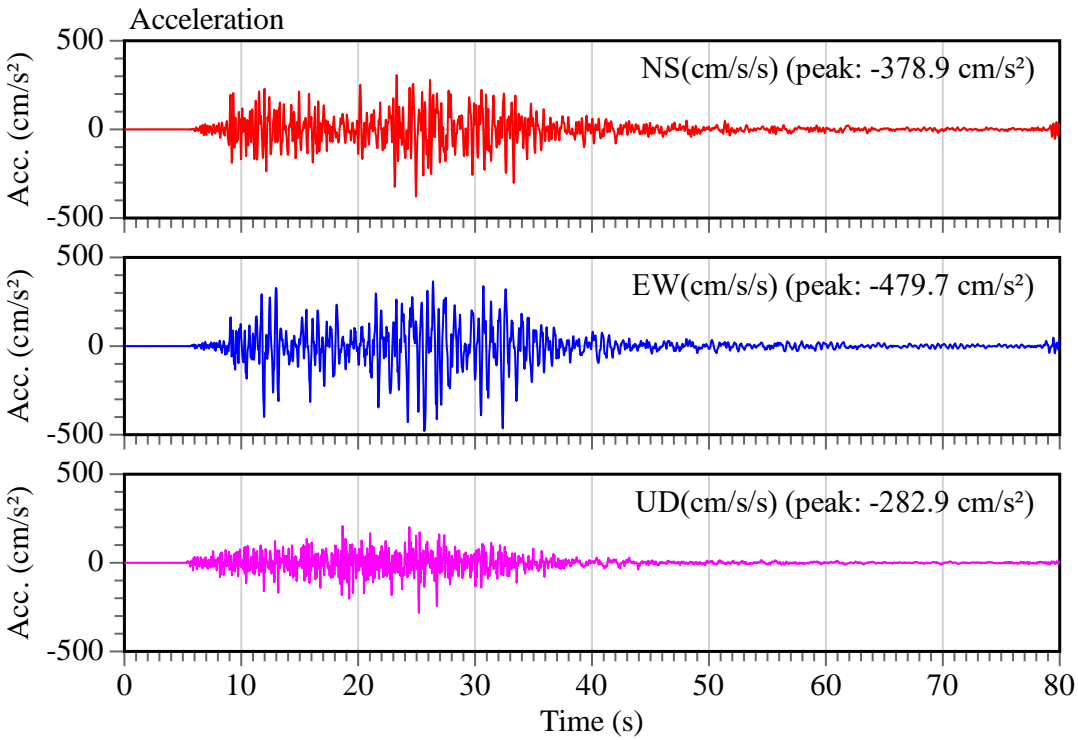


- ⊠ Horizontal axis is not the “shortest distance to the fault”.
- ⊠ PGA/PGV values are the larger of the maximum values of NS and EW components.
- ⊠ Interplate earthquake (depth=34.8 km) is assumed for the estimation.
- ⊠ Estimated values beyond 100 km (dashed line) are shown as reference values.

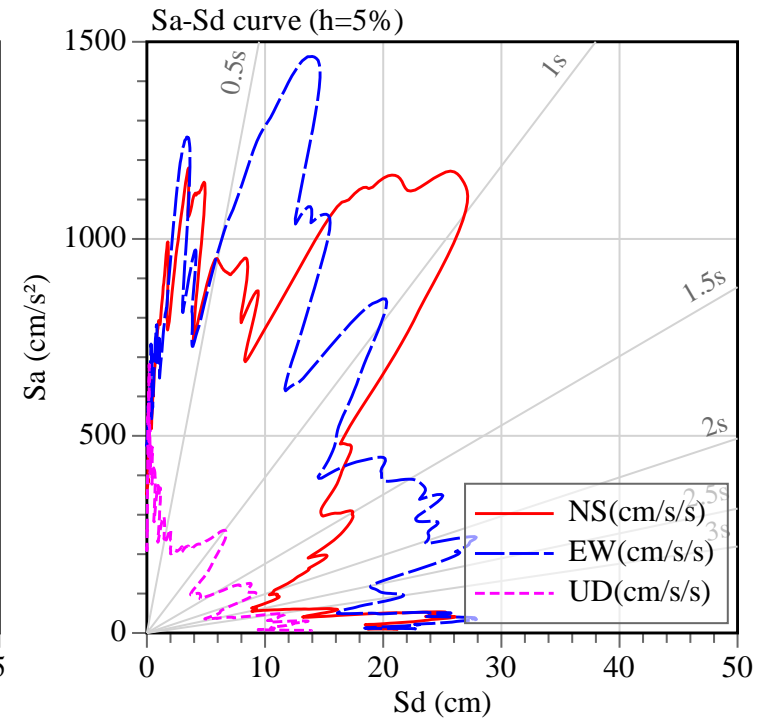
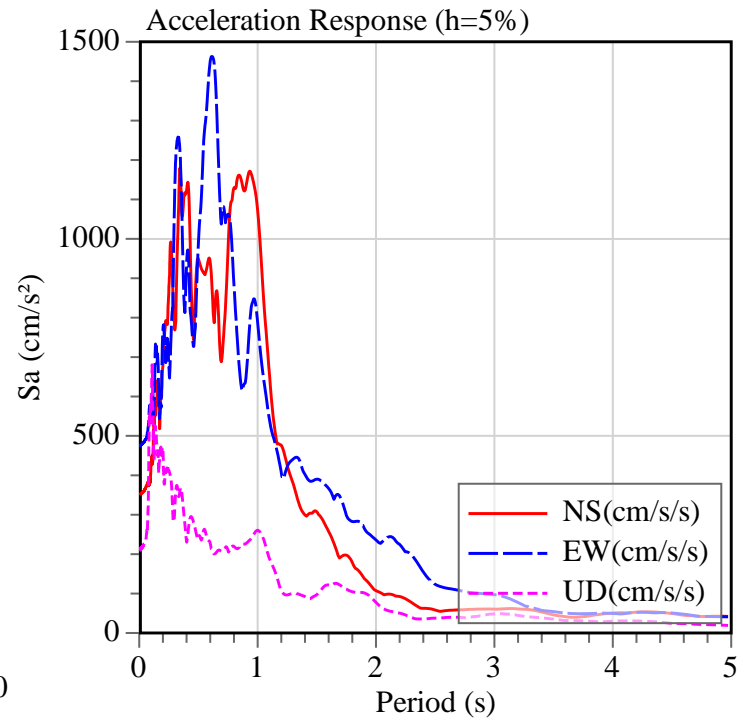
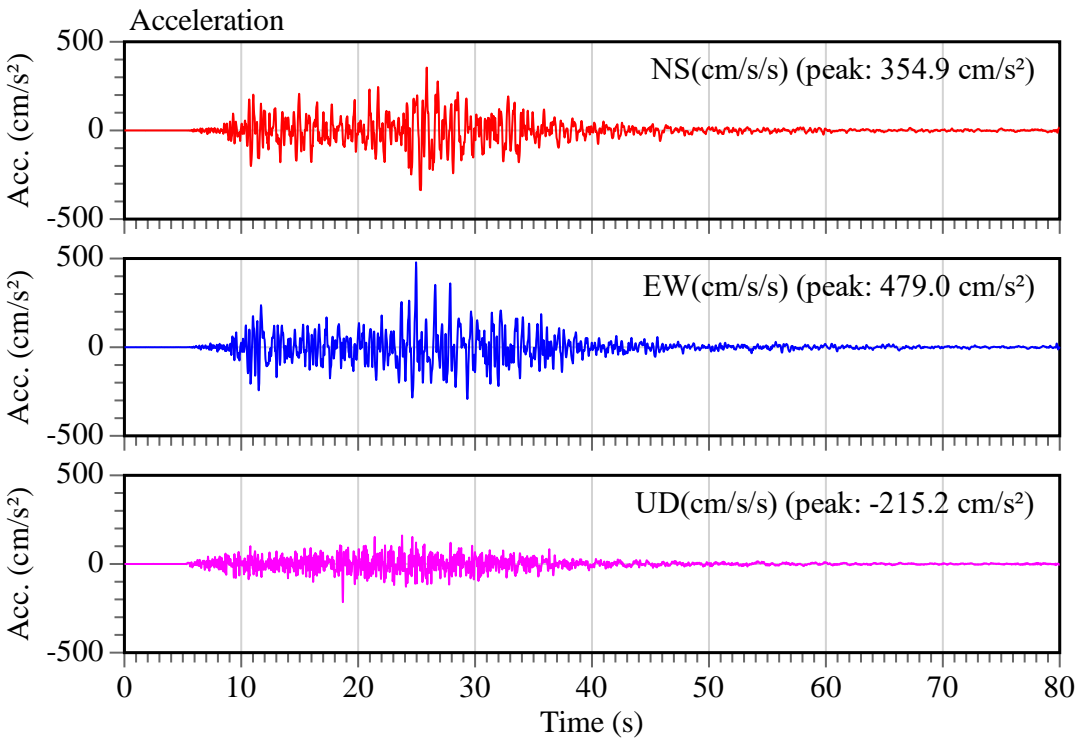
Pseudo-velocity response (pSv: 1–2 s, h=5%)



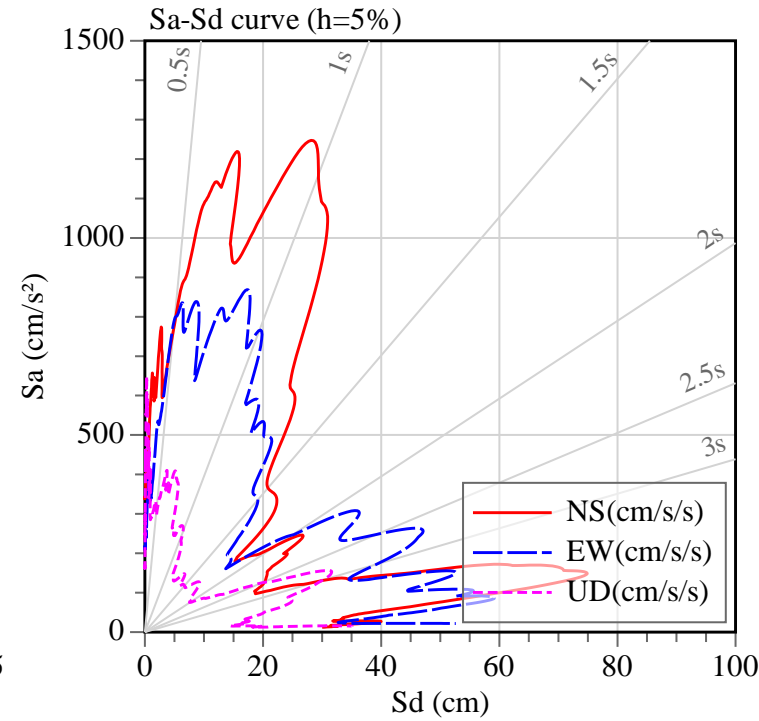
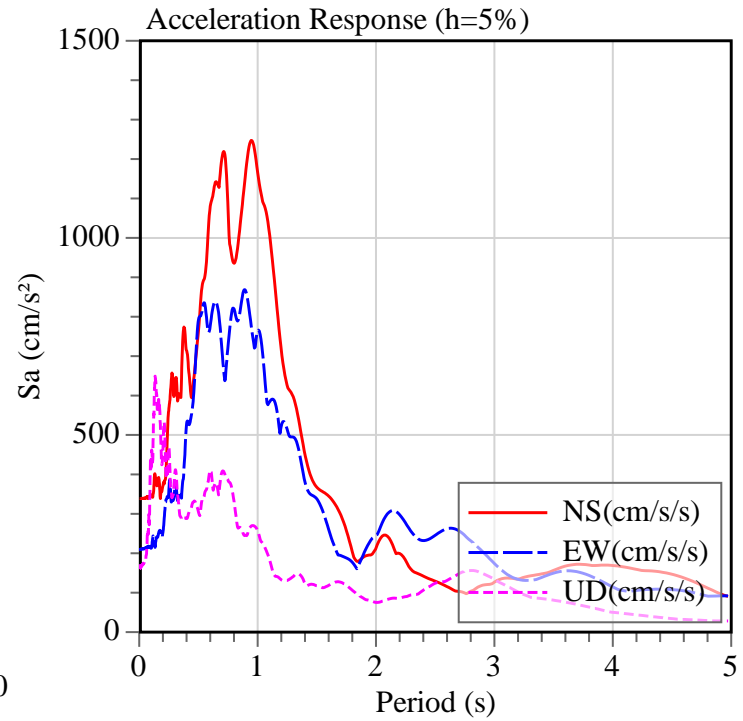
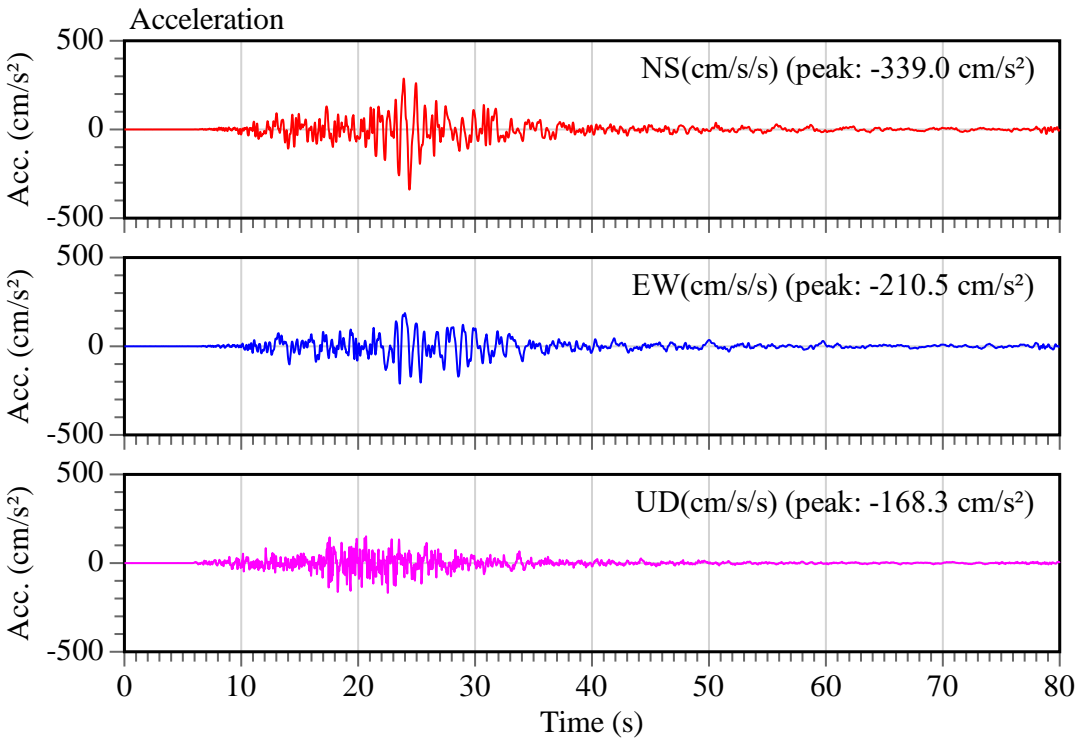
Ground motion at D001



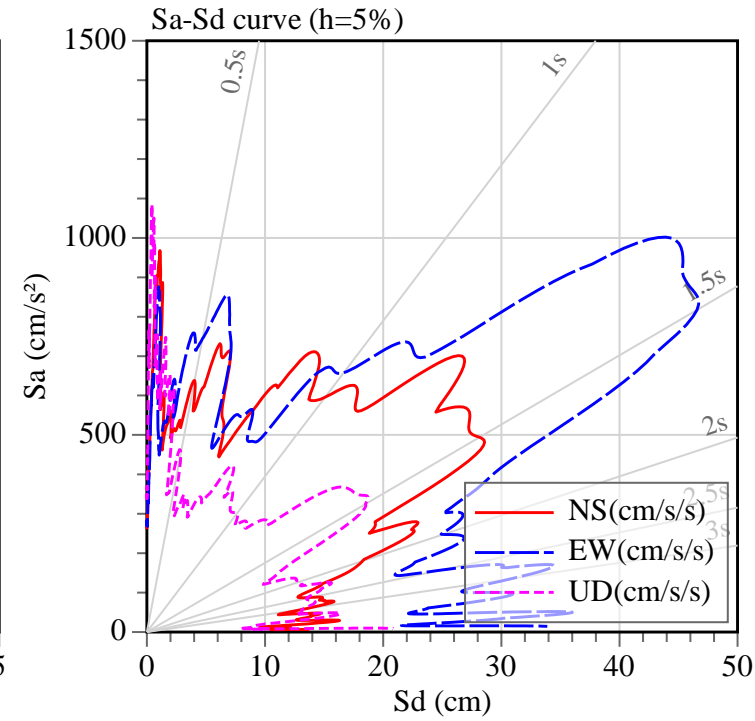
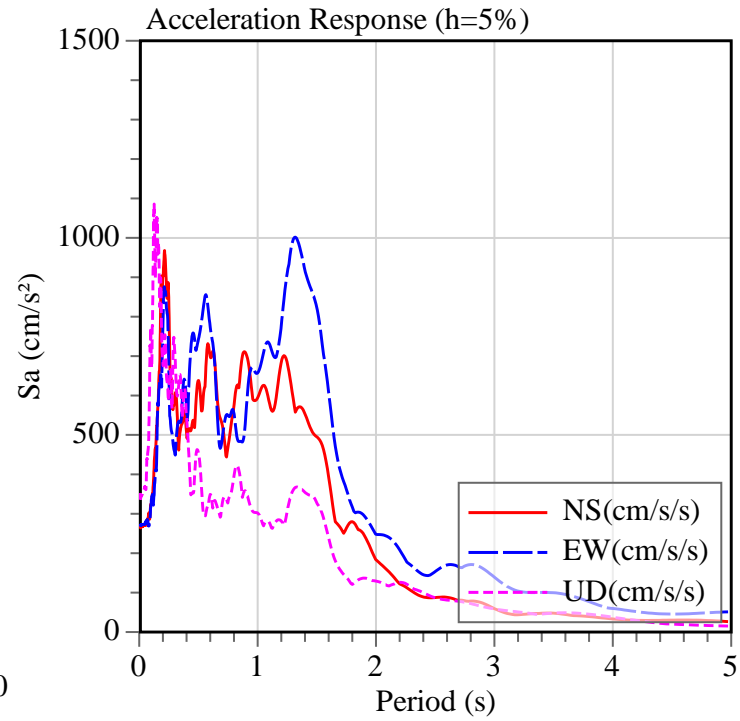
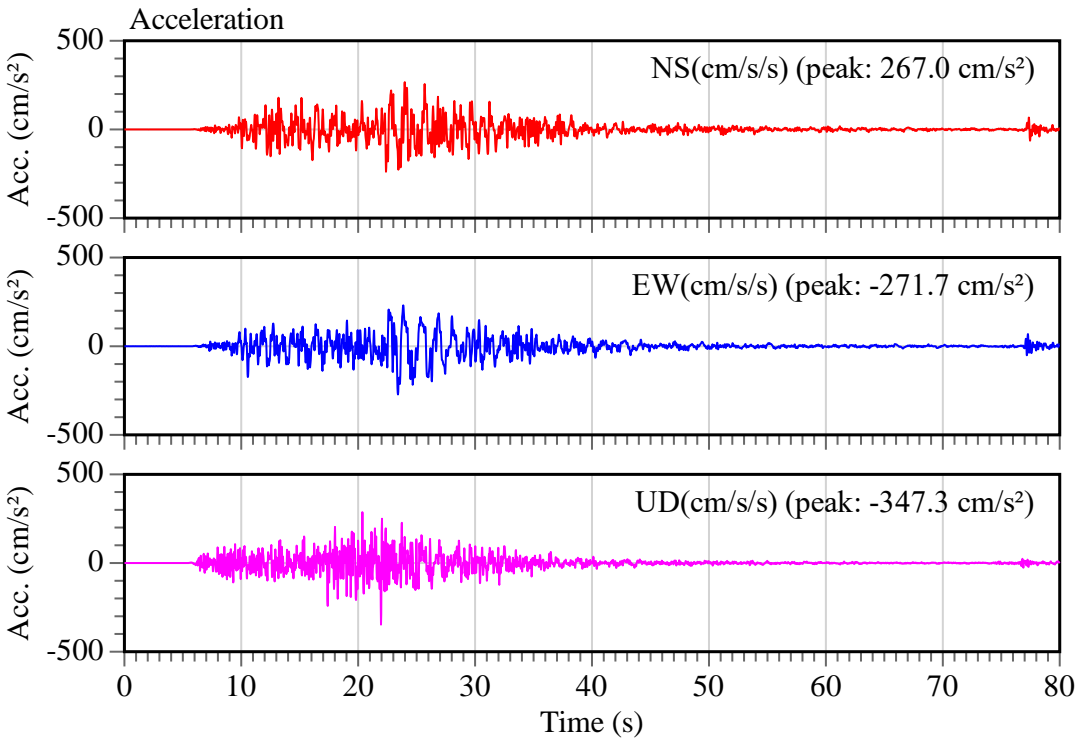
Ground motion at W022



Ground motion at W028



Ground motion at W475

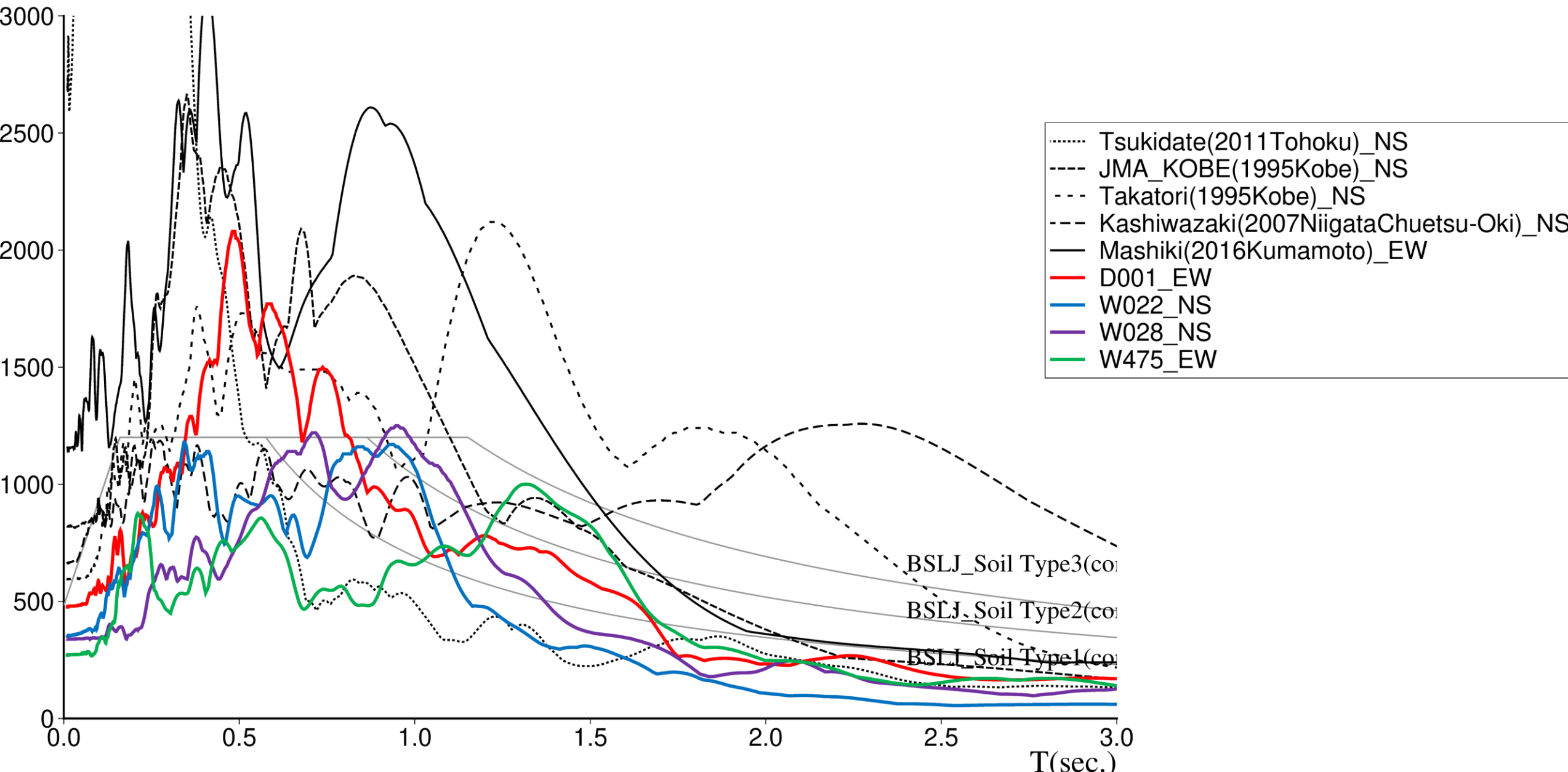


Response acceleration spectrum S_a and response periods

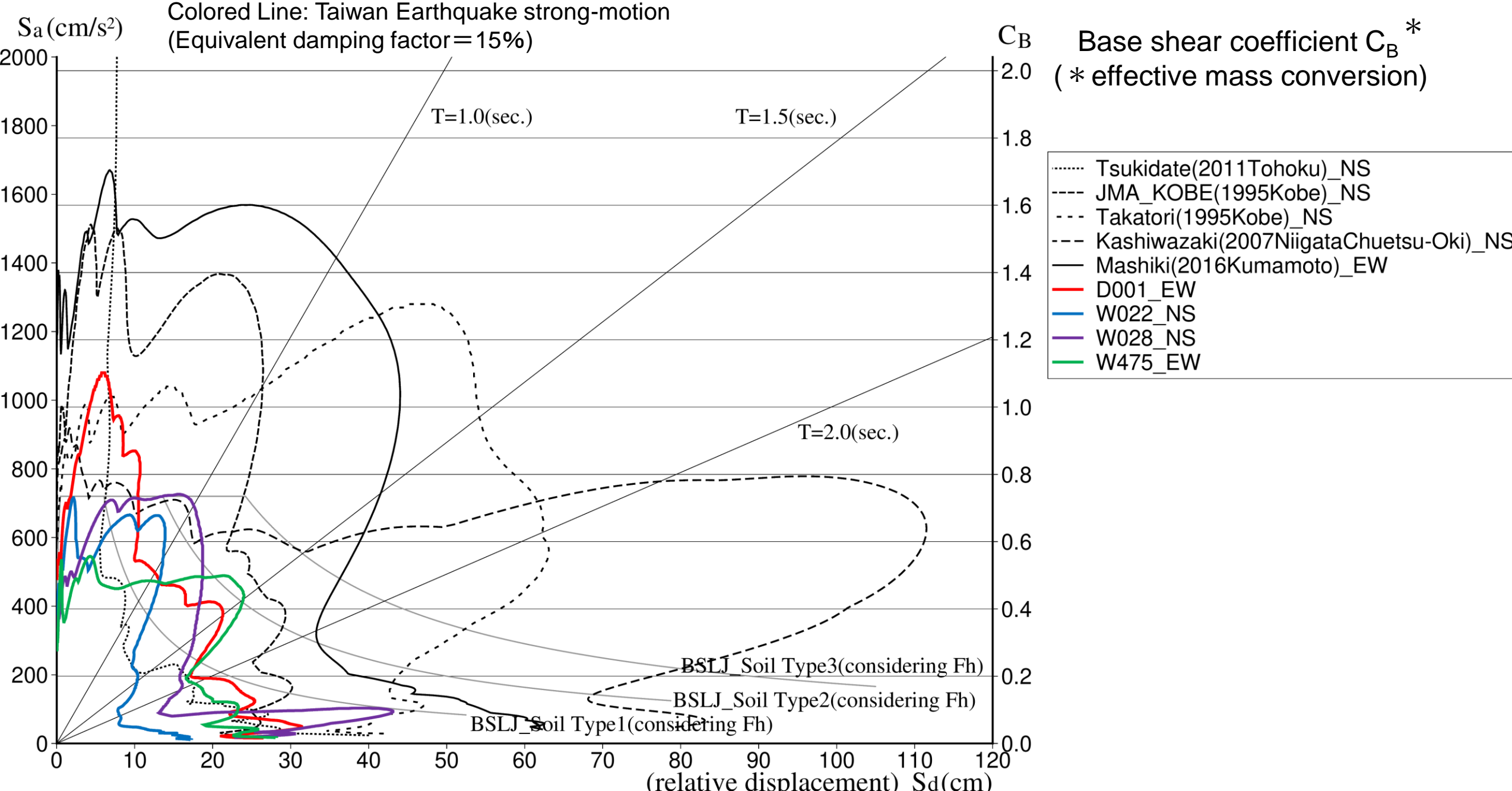
S_a (cm/s²)

Colored Line: Taiwan Earthquake strong-motion

(Equivalent damping factor = 5%)



$S_a - S_d$ curve and response periods



Summary

- Large ground motions were observed over a wide area in Taiwan (not only in the east part near the epicenter but also in the west part).
- Strong-motion records at least 10 sites in and near Hualien show responses slightly above 165 cm/s in the period of 1-2 seconds.
- The response acceleration (S_a) of the East-West (EW) components of D001 (Hualien) showed large values at around the period of 0.5 seconds. The North-South (NS) components of W028 and W022 (Hualien) showed large values at around 1.0 seconds.
- From the S_a - S_d curve assuming a 15% equivalent damping ratio, the observation data for the Taiwan earthquake in 2024 were smaller than past typical earthquakes in Japan.

Acknowledgement:

We used strong motion data provided by P-Alert, TSMIP(CWA), NIED(K-NET, KiK-net), JMA, and, RTRI. S_a -T and S_a - S_d were calculated using the View Wave by Kashima, BRI.