Strong Ground Motions

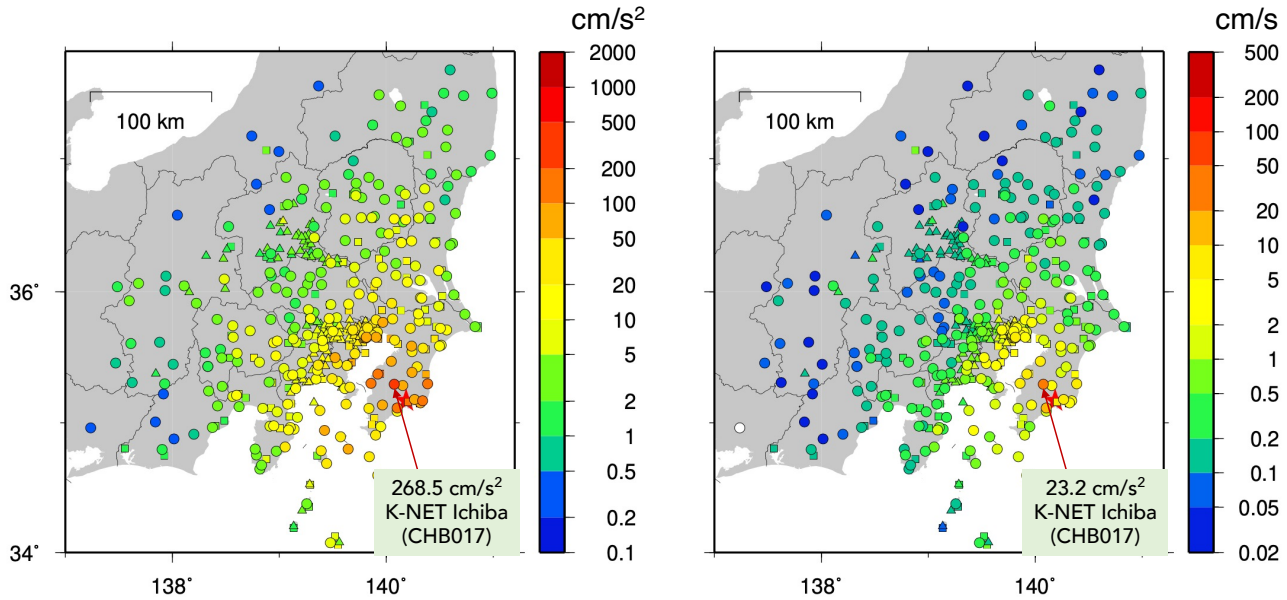
Southern Chiba Prefecture earthquake on May 11, 2023

IISEE, Building Research Institute

May 18, 2023

BRI Confidential

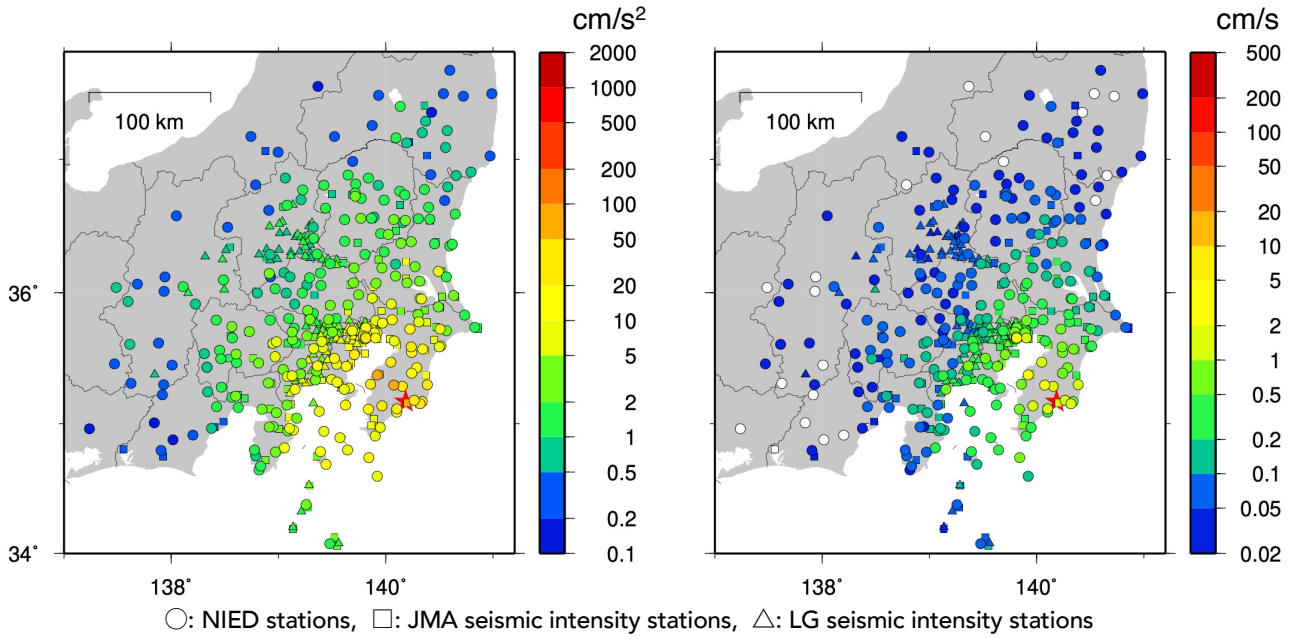
Observed PGAs/PGVs (Horizontal comp.)



○: NIED stations, □: JMA seismic intensity stations, △: Local Government (LG) seismic intensity stations

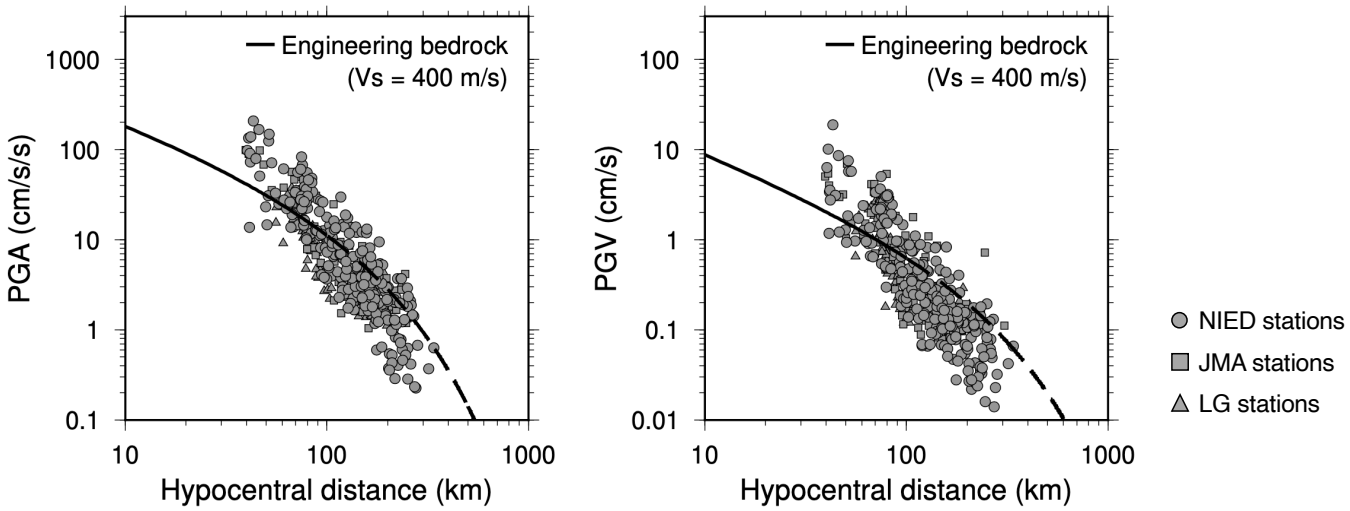
※ PGA and PGV are the maximum values of vector summation in the horizontal components.

Observed PGAs/PGVs (UD comp.)



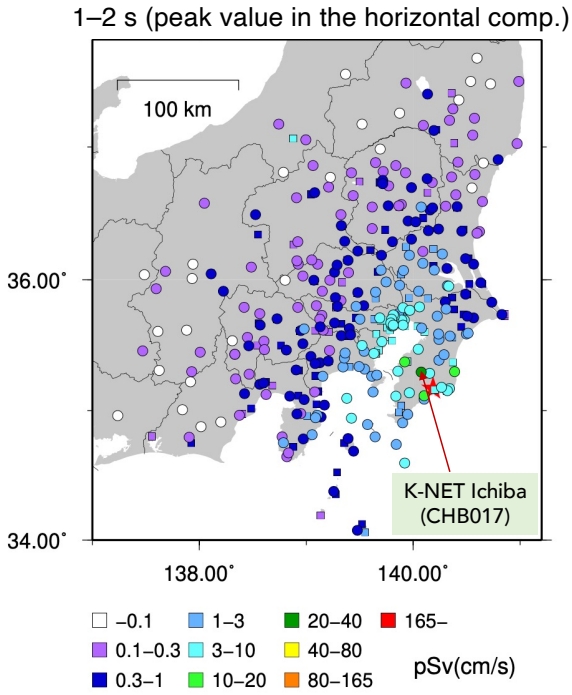
BRI Confidential

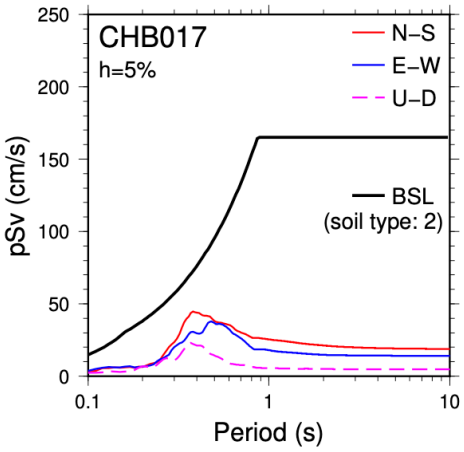
Observed PGAs/PGVs vs GMPE (Si & Midorikawa, 1999)



※ 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=40 km) is assumed for the estimation.
※ Estimated values beyond 100 km (dashed line) are shown as reference values.

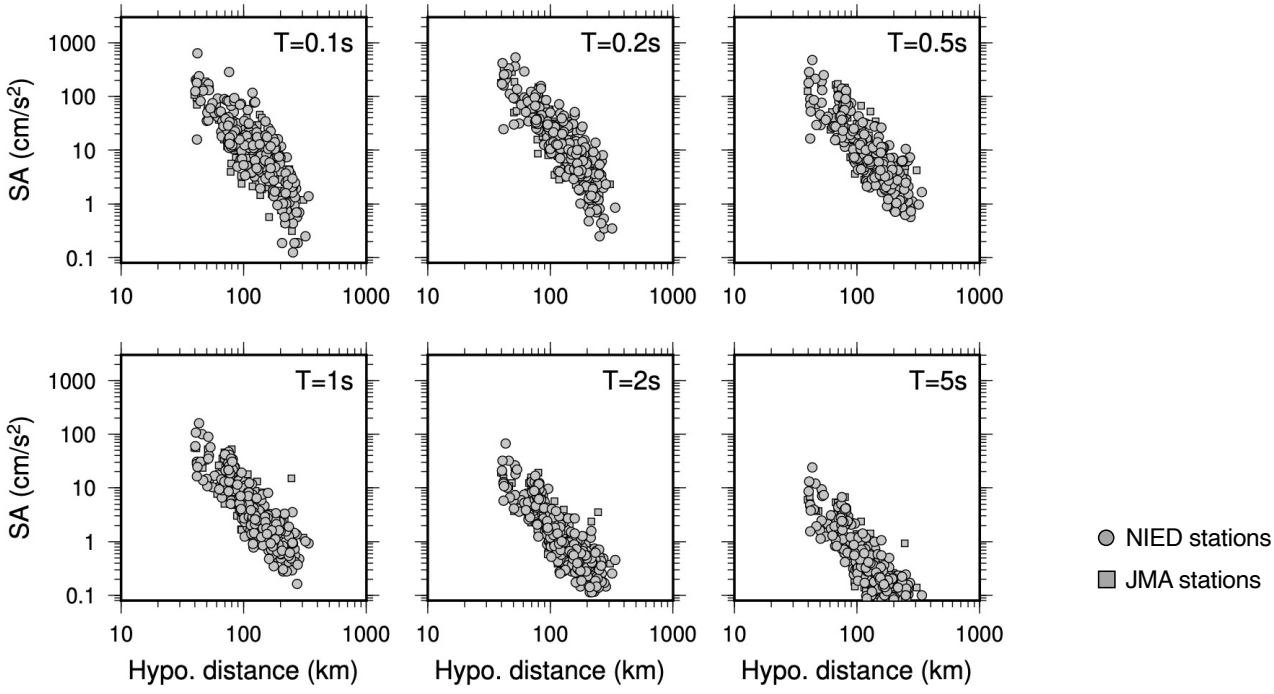
Pseudo-velocity response (pSv: T=1–2 s, h=5%)





Responses of pSv >165 cm/s were not observed in the period between 1 and 2 sec.

Attenuation characteristics of response spectra (h=5%)



Summary

–Southern Chiba Prefecture earthquake on May 11, 2023–

The largest PGA and PGV were recorded at K-NET station Ichiba (CHB017).

The seismic intensity of 5-upper was measured at LG Fujimi station, but seismic intensities at K-NET station Kisarazu (~1 km from Fujimi) and JMA station Ota (~2 km from Fujimi) were both 4, suggesting the possibility of a local amplification effect at Fujimi.

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 used accelerograms from JMA seismic intensity meters and PGA/PGV information provided by local governments (SK-net).

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).