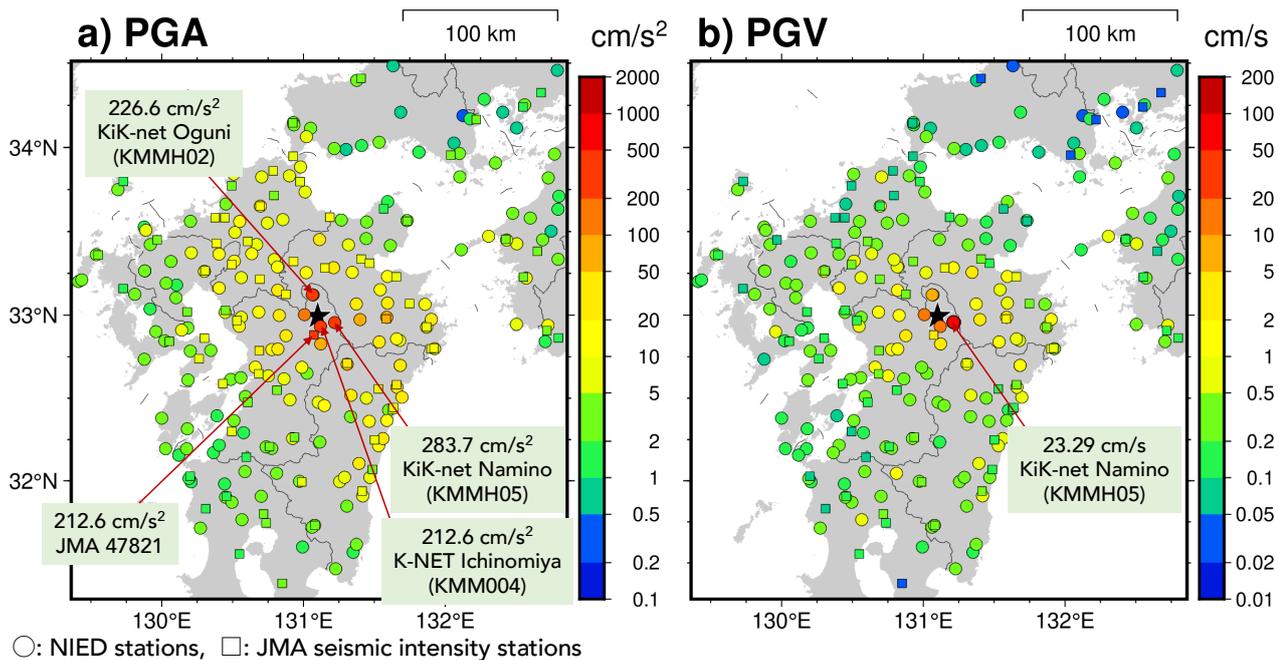# Strong Ground Motions

Earthquake in Aso, Kumamoto Pref. on November 25, 2025 (Mw5.4*, Mj5.8)
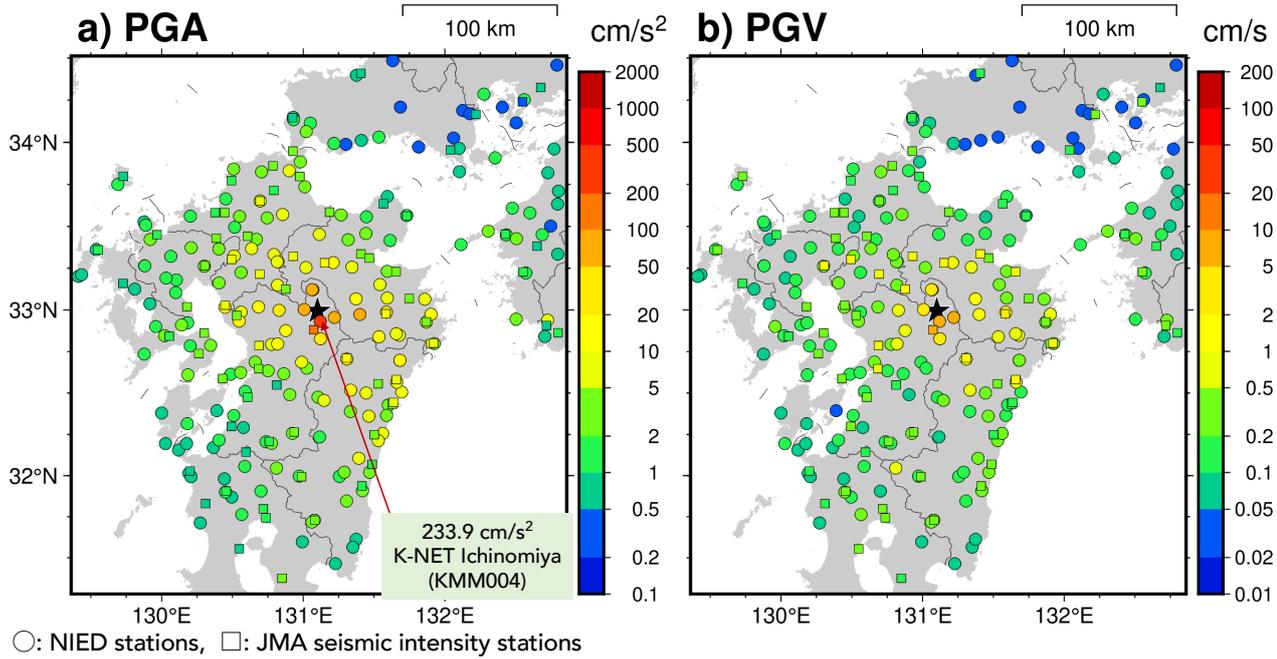
IISEE, Building Research Institute

This report contains preliminary analysis results.
*The moment magnitude (Mw) was adopted from the estimate provided by NIED F-net.
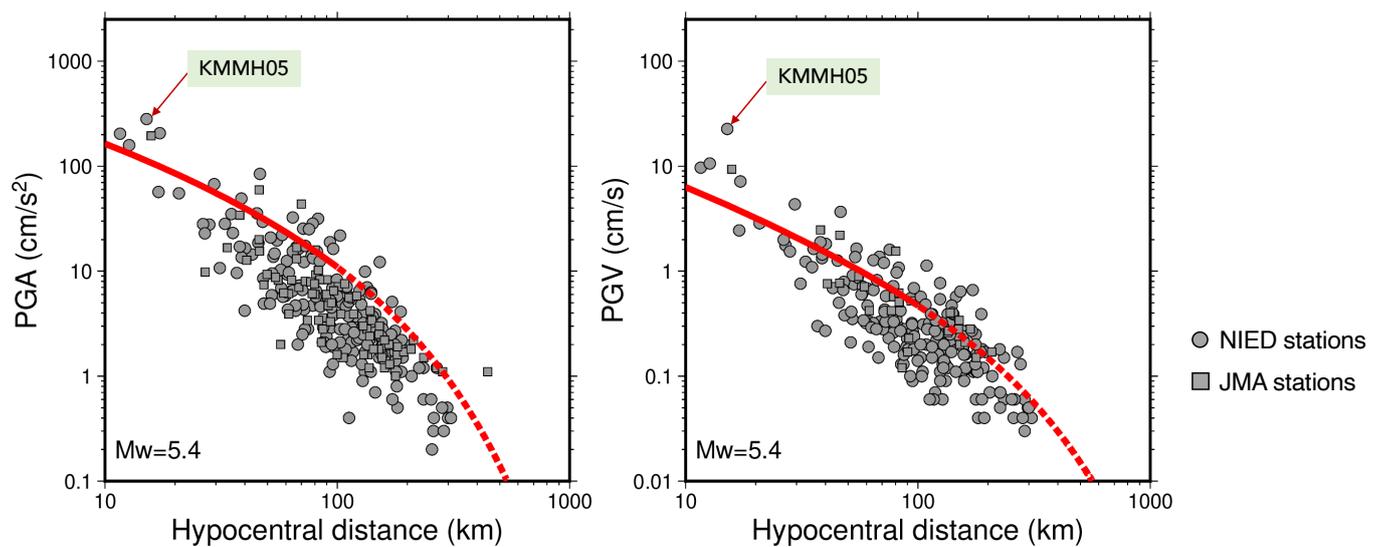 (The Mw estimated by JMA was also identical to NIED's estimate.)
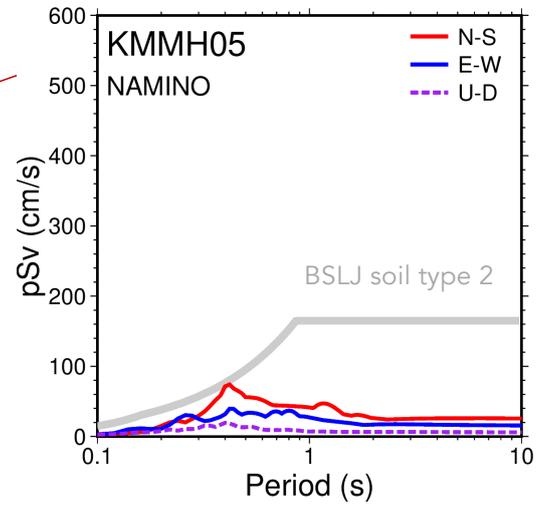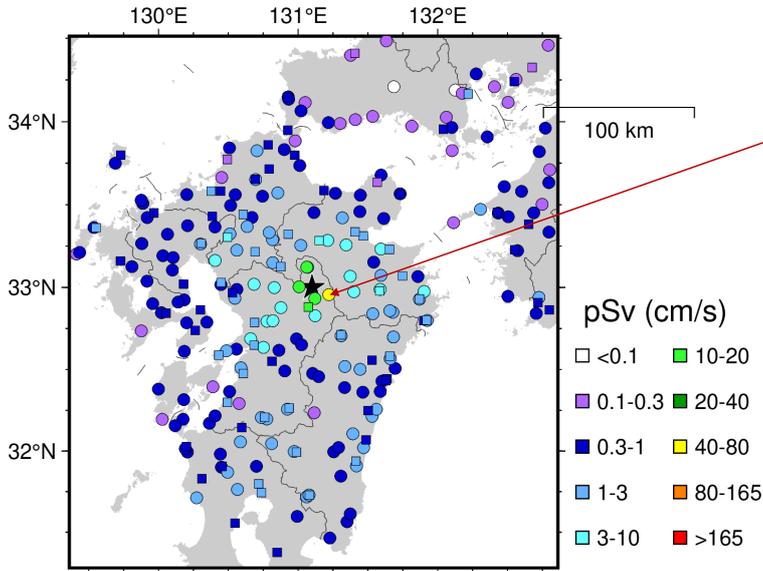

Observed PGAs/PGVs (Horizontal comp.)

a) PGA

100 km   cm/s^2

226.6 cm/s^2
KiK-net Oguni
(KMMH02)

283.7 cm/s^2
KiK-net Namino
(KMMH05)

212.6 cm/s^2
JMA 47821

212.6 cm/s^2
K-NET Ichinomiya
(KMM004)

b) PGV

100 km   cm/s

23.29 cm/s
KiK-net Namino
(KMMH05)

○: NIED stations, □: JMA seismic intensity stations

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

Observed PGAs/PGVs (Vertical comp.)

a) PGA

100 km

cm/s^2

b) PGV

100 km

cm/s

233.9 cm/s^2
K-NET Ichinomiya
(KMM004)

◯: NIED stations, ☐: JMA seismic intensity stations

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

KMMH05

KMMH05

PGA (cm/s^2)

PGV (cm/s)

Mw=5.4

Mw=5.4

Hypocentral distance (km)
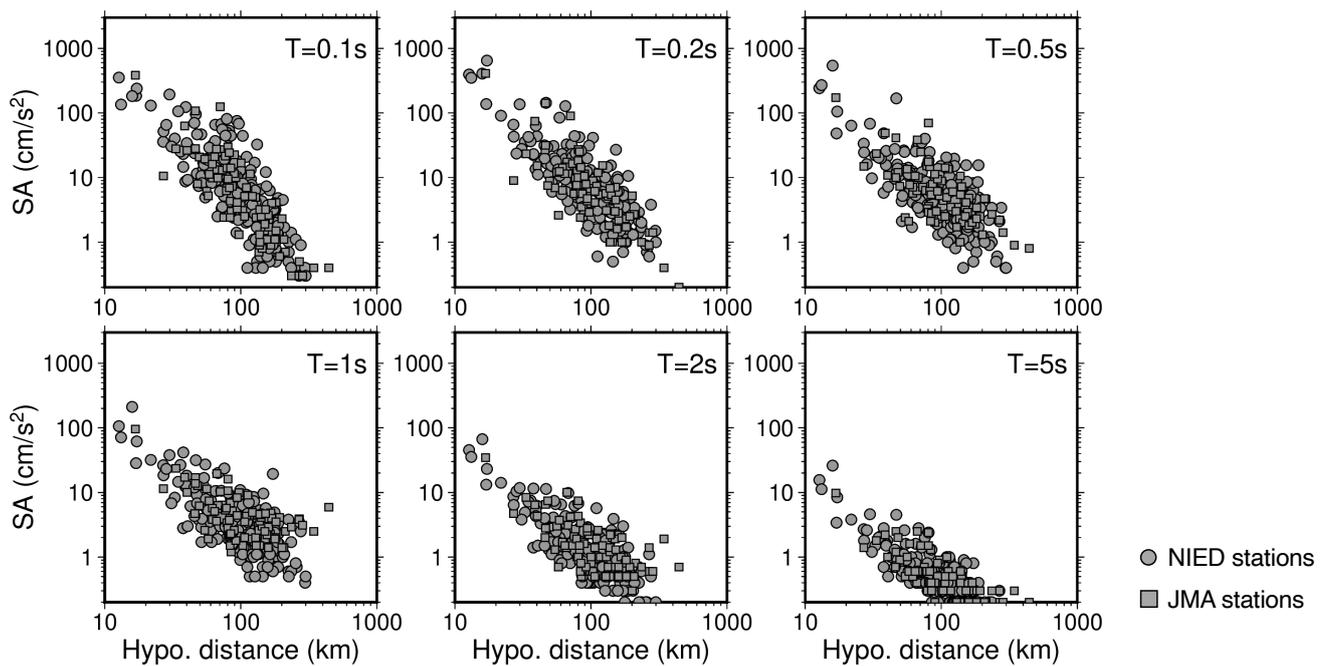
Hypocentral distance (km)

◯ NIED stations

☐ JMA stations

※ 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=9.1 km) is assumed for the estimation.
※ Estimated values beyond 100 km (dashed line) are shown as reference values.

Pseudo-velocity response
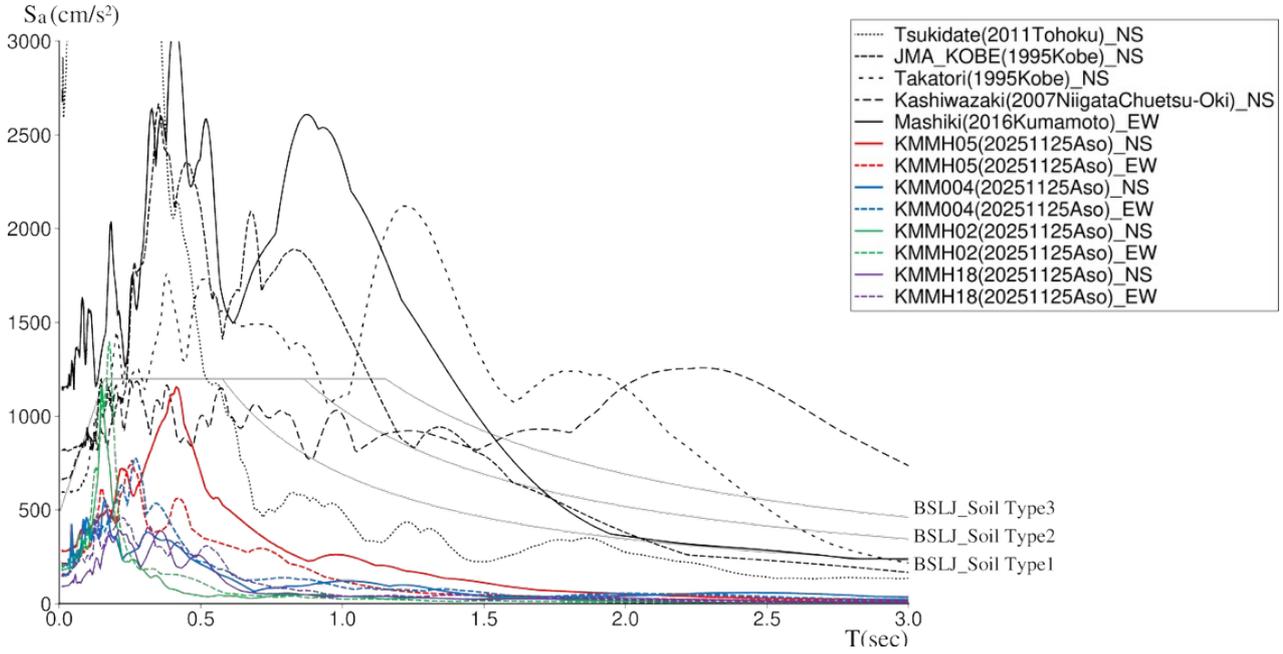## (pSv: maximum value for periods of 1–2 s, 5% damping)

pSv (cm/s)

- □ <0.1
- ▣ 0.1-0.3
- ■ 0.3-1
- ■ 1-3
- ■ 3-10
- ■ 10-20
- ■ 20-40
- ■ 40-80
- ■ 80-165
- ■ >165

KMMH05
NAMINO

- N-S
- E-W
- U-D

BSLJ soil type 2

pSv (cm/s)

Period (s)

Attenuation characteristics of response spectra (Sa) 5% damping

T=0.1s
T=0.2s
T=0.5s
T=1s
T=2s
T=5s

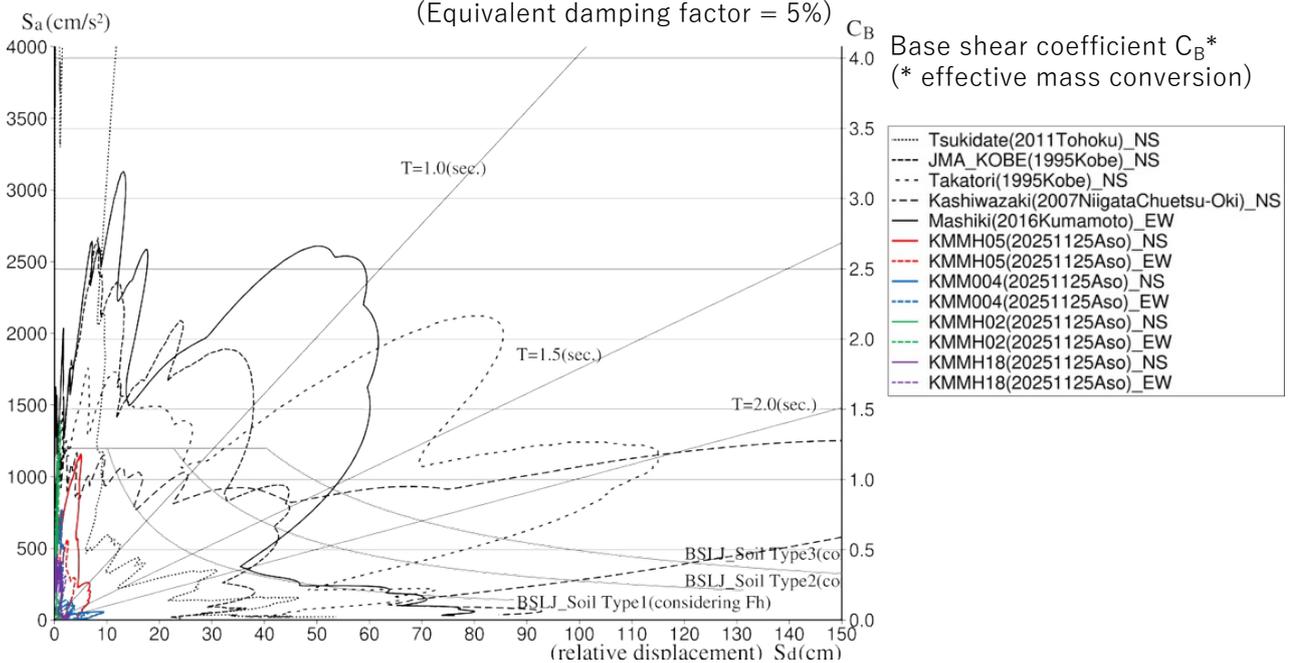SA (cm/s²)
Hypo. distance (km)

- ○ NIED stations
- ▢ JMA stations

Response acceleration spectrum Sa and response periods

（Equivalent damping factor = 5%）

Sa – Sd curve and response periods

（Equivalent damping factor = 5%）

Summary

KiK-net station Namino (KMMH05) shows larger PGA and PGV.

Response of pSv >165 cm/s (5% damping, period of 1–2 s) was not observed.

The response acceleration (Sa) of the North-South (NS) component of KMMH05 Shows large values at around the period of 0.4s.

From the Sa-Sd curve, assuming a 5% equivalent damping ratio, the Sa-Sd shapes of this earthquake were smaller than past major earthquakes in Japan.