

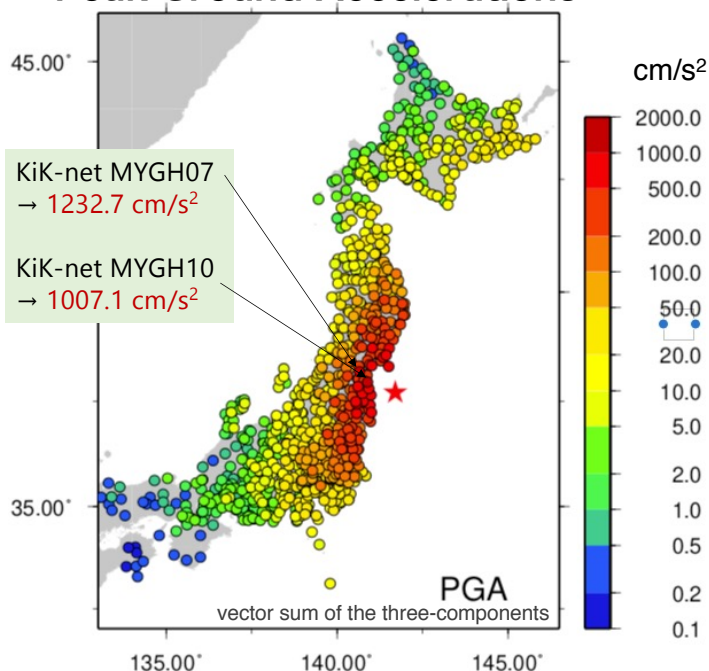
# Strong Ground Motions (NIED K-NET, KiK-net)

IISEE, Building Research Institute

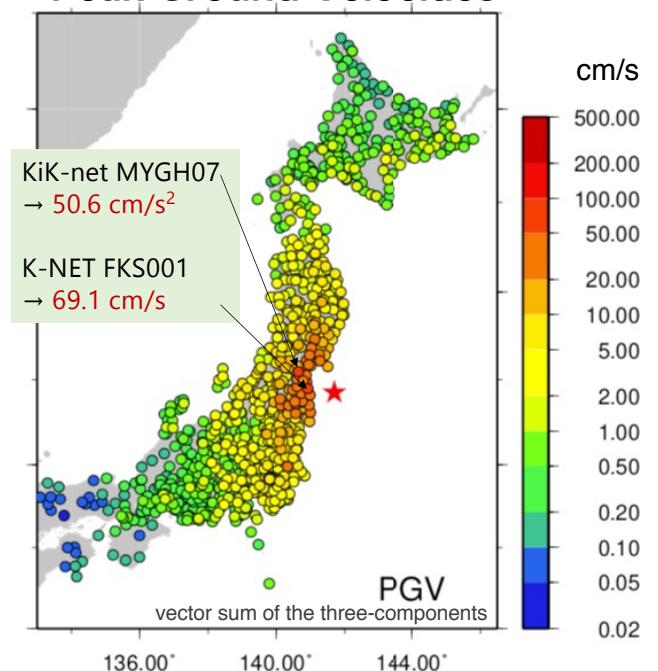
2022/3/17

## NIED Strong-motion data (K-NET, KiK-net)

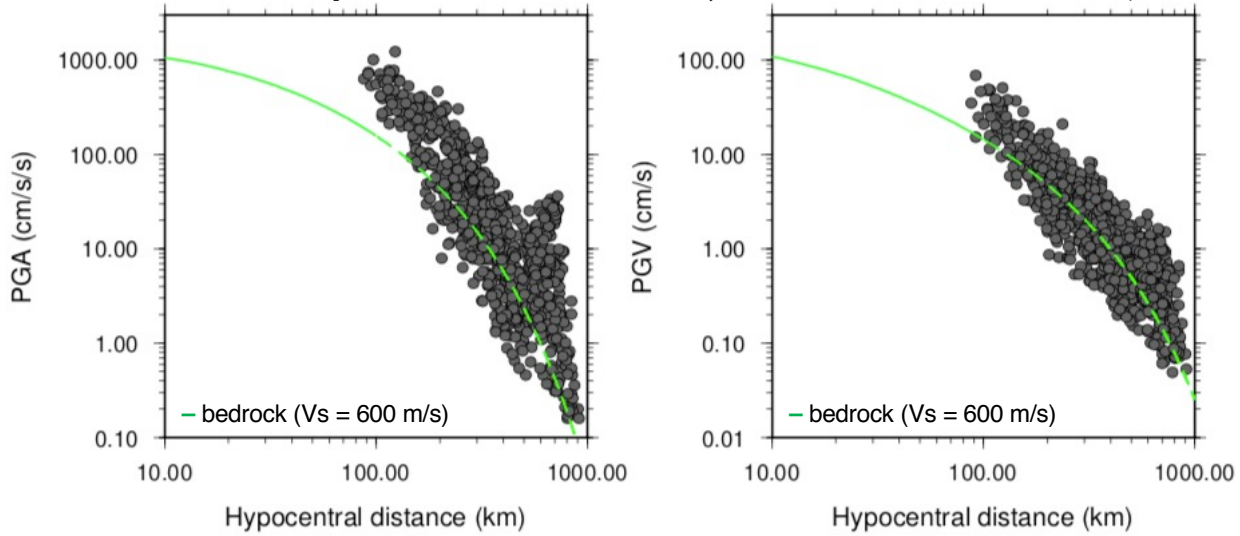
### Peak Ground Accelerations



### Peak Ground Velocities



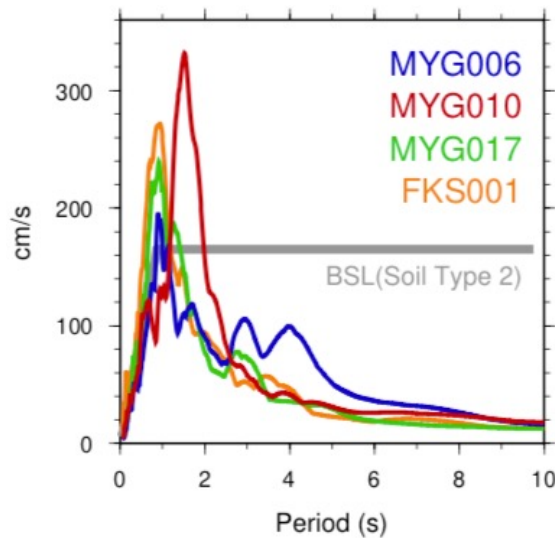
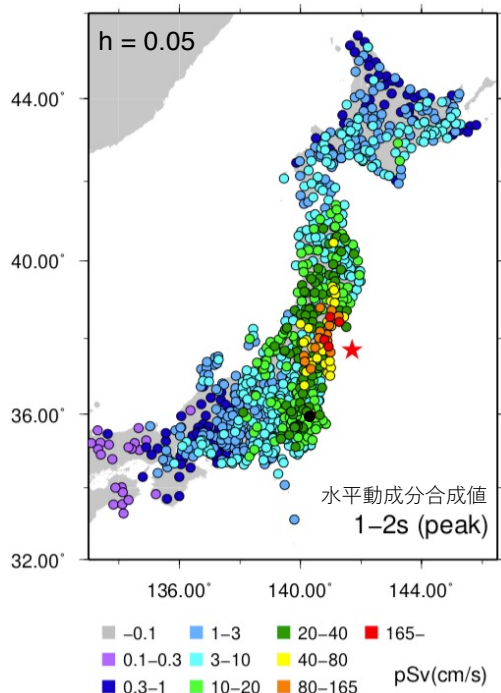
## Observed PGAs/PGVs vs GMPE (Si and Midorikawa, 1999)



→ PGAs are underestimated between 100 and 200 km.

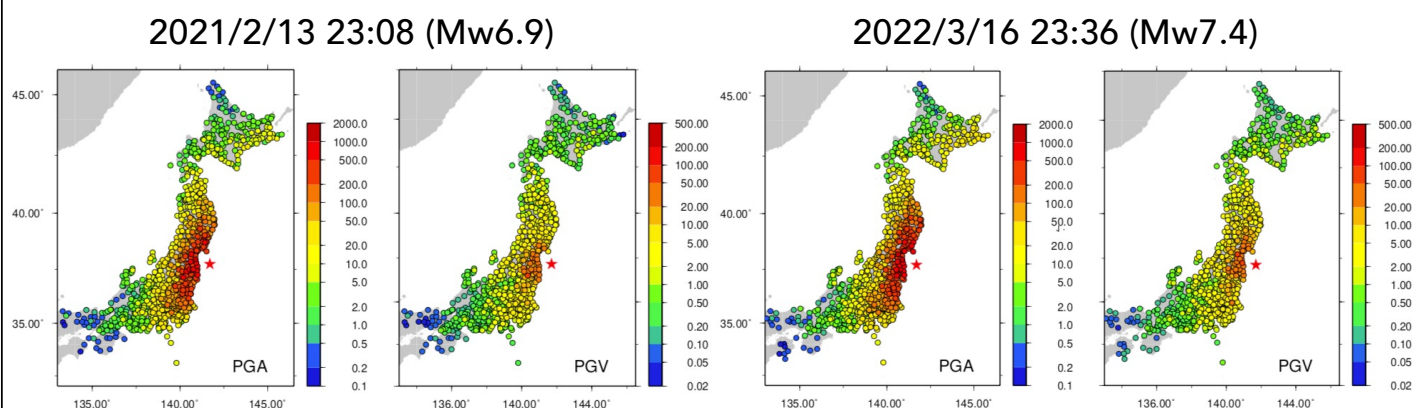
- ※ Hypocentral distance is shown in the horizontal axis (not “shortest distance to the fault”).
- ※ Intraplate earthquake is assumed for the estimation.
- ※ Estimated values beyond 100 km (dashed line) are shown as reference values.

## Pseudo-velocity Response Spectra (pSv; 1-2 s)



- Large responses (> 165 cm/s) between 1 and 2 s are seen at three stations in Miyagi Pref. and one in Fukushima Pref.
- Maximum: K-NET station MYG010 (Unofficially calculated JMA seismic intensity: 6-lower)

## Comparison of ground motions between 2021 (Mw=6.9) and 2022 Off-Fukushima EQs.



- Similar PGA and PGV distributions (2021 ground motions are slightly larger than those of the 2021 earthquake).

## Summary

- Strong ground motions were recorded in broad regions in NE Japan.
- PGA and PGV distributions show similar trends with the 2021 Off-Fukushima earthquake (Mw6.9, occurred on February 13, 2021).
- Maximum PGA was recorded at KiK-net station MYGH07 (**1232.7 cm/s<sup>2</sup>**).
- Maximum PGV was recorded at K-NET station MYG006 (**69.1 cm/s**).
- Maximum response peak between 1 and 2 s was seen at K-NET station MYG010 (**331.7 cm/s**), which showed JMA intensity of 6-lower (unofficial value)

### Acknowledgements:

We used K-NET and KiK-net strong-motion data provided by the National Research Institute for Earth Science and Disaster Resilience; NIED), Japan  
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Velocity response spectra were calculated using the subroutine program developed by Osaki (1994).  
 Figures were prepared by using the Generic Mapping Tools (GMT: Wessel and Smith, 1998).