

# First analysis of rotational ground motion recordings in the West-Bohemia/Vogtland region

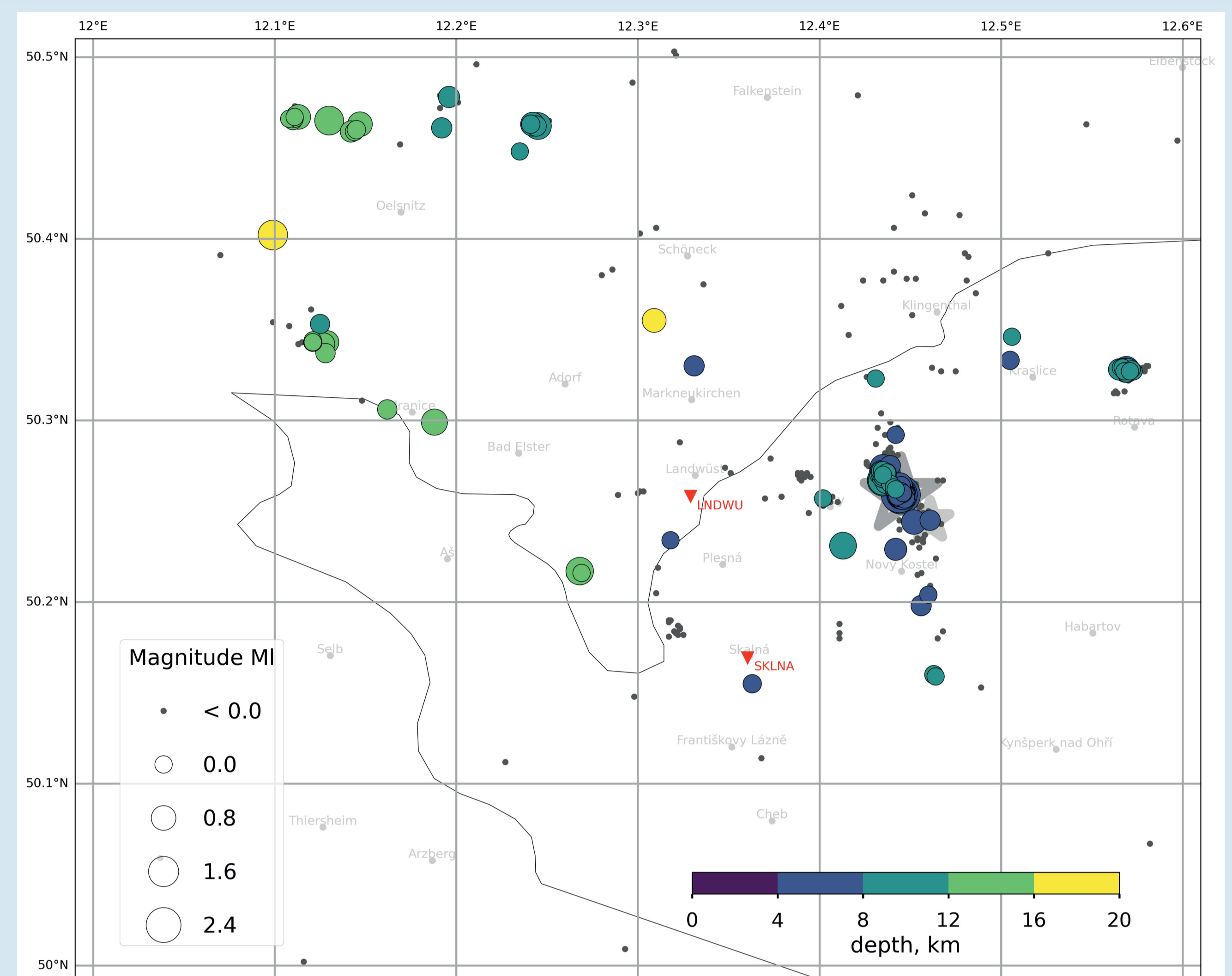
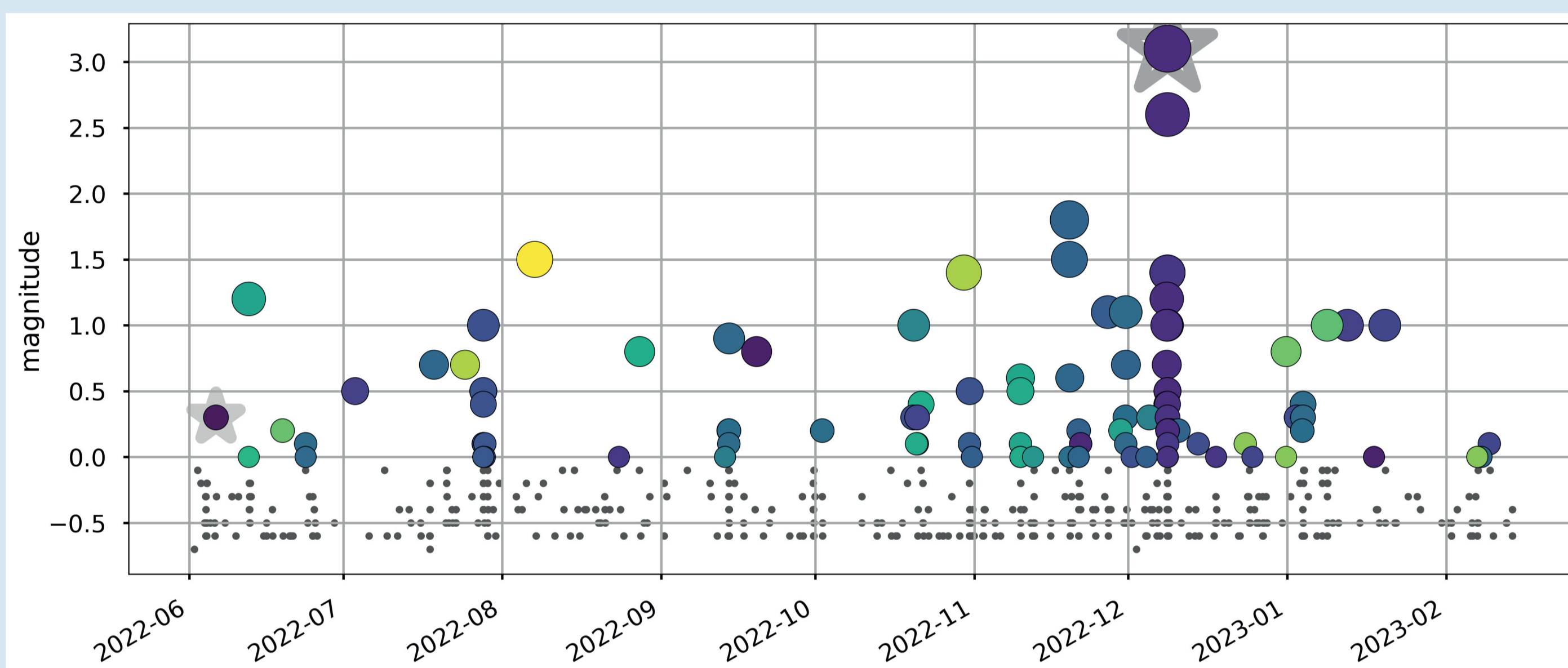
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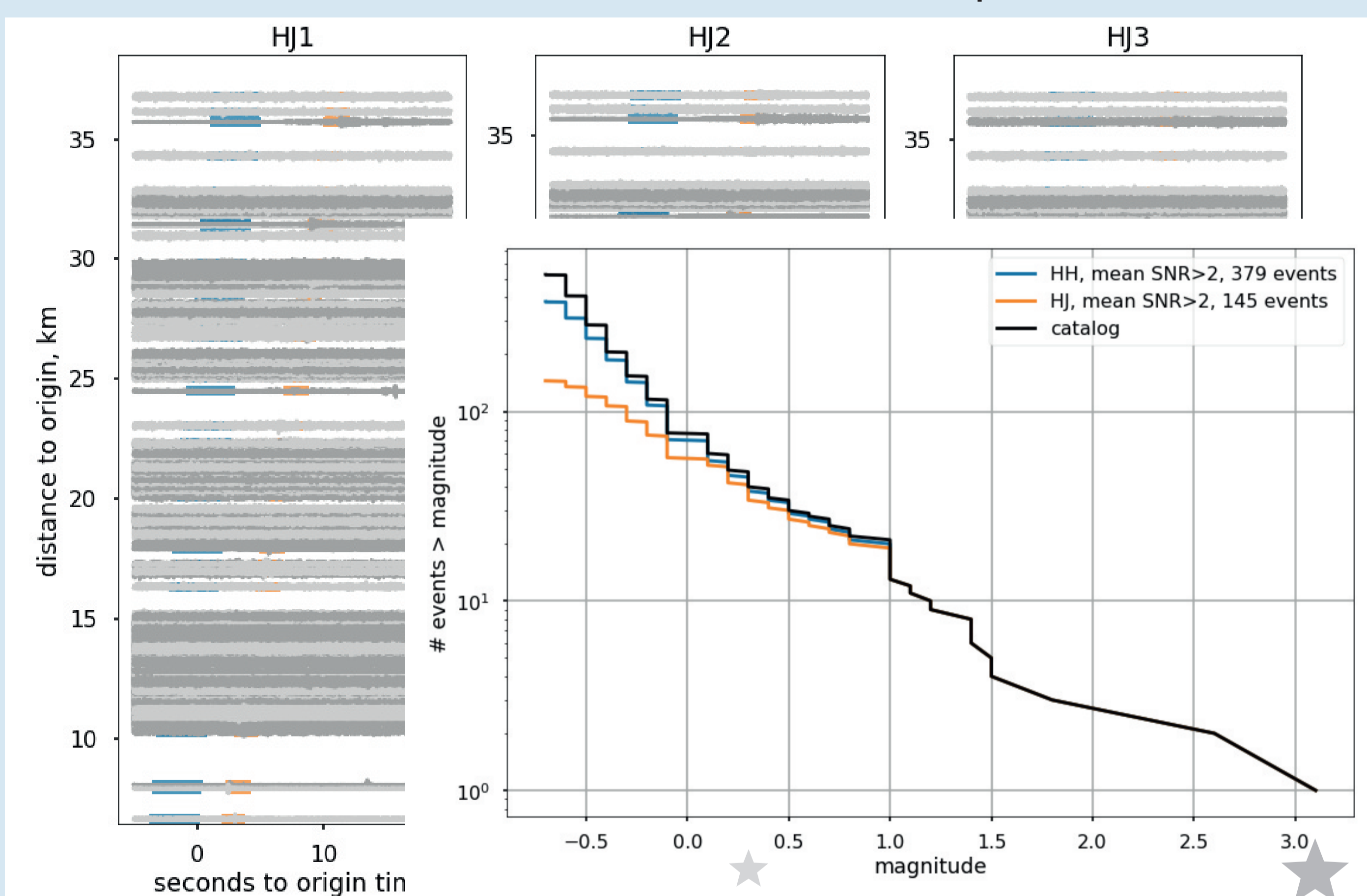
## Event catalog

- Source: Seismologieverbund zur Erdbebenbeobachtung in Mitteldeutschland
- 2022/06/01 - 2023/02/15
- 559 events within 30 km around Novy Kostel
- Swarm activity around Novy Kostel
- 2 BlueSeis-2A sensors in Landwüst & Skalna (until 2023/01/23)

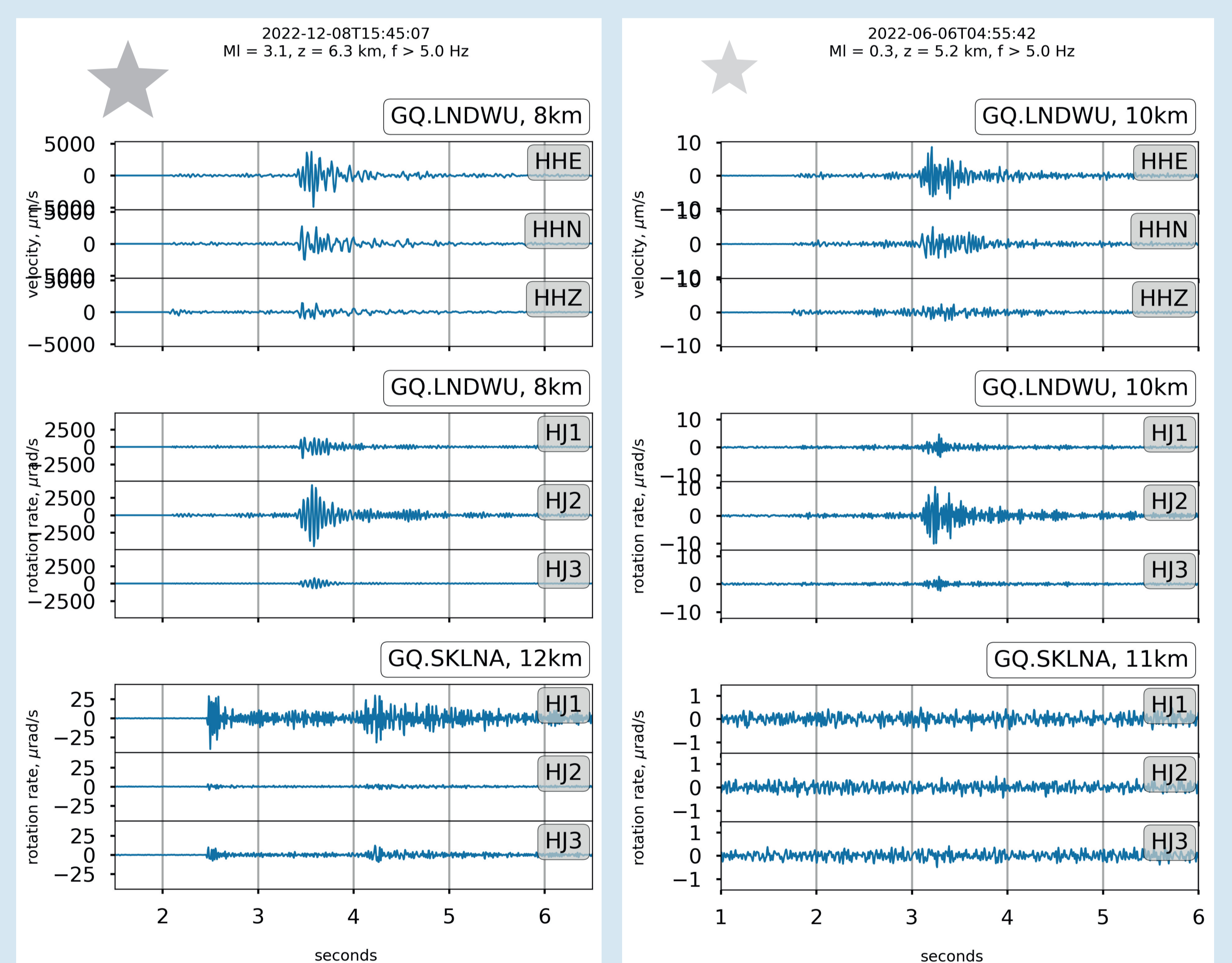


## Magnitude-frequency distribution

- Signal-to-noise ratio: Avg. surface wave amplitude / avg. pre-event amplitude
- Choose events with mean SNR over all 3 components > 2.



## Waveform samples

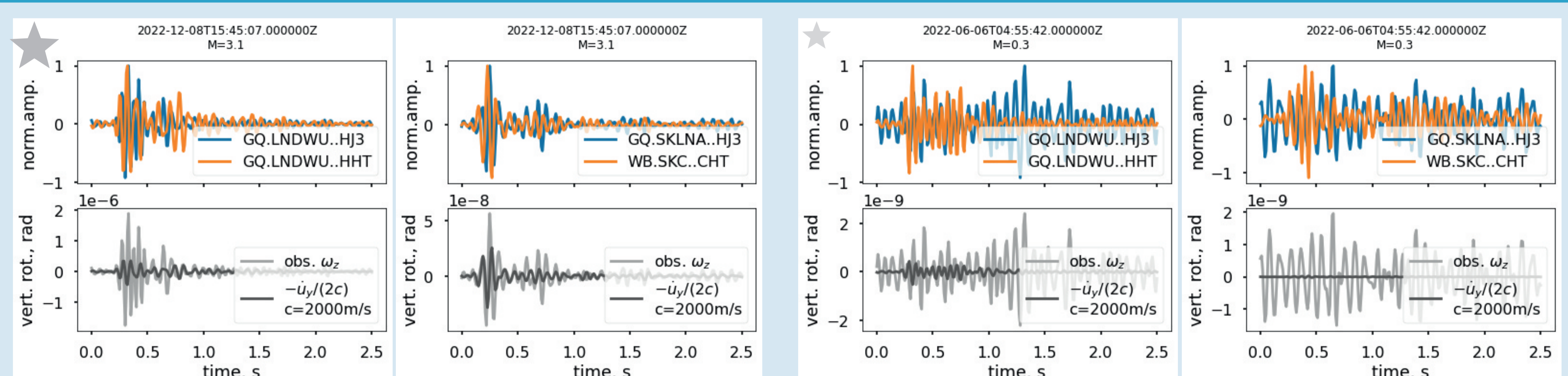


## Phase velocities

- vertical rotation & transverse particle velocity are related:

$$\omega_z(x, y, z, t) = -\frac{\dot{u}_y(x, y, z, t)}{2c}$$

- predict observed  $\omega_z$  from translational data



## Background

The data are intended to complement waveform inversions for seismic moment tensors. The study area is characterized by

recurring seismic swarms, which are presumably driven by the migration of mantle fluids through the crust. In order to better understand the role of fluids in the earthquake mechanism a good resolution of

the non-double-couple (i.e. volumetric and tensile) components of the seismic moment tensor is needed. Adding rotational data has been shown beneficial in synthetic studies.