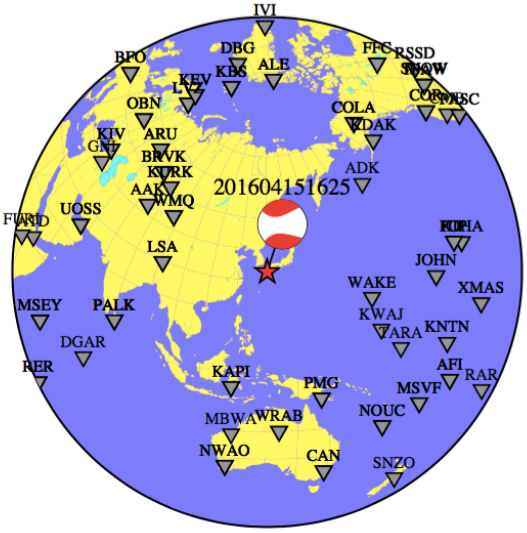
Slip distribution Inversion of 2016 Mw7.0 Kumamoto earthquake in Japan

[a] Li-Yu Kan, [a] Hao Kuo-Chen, and [b] Li Zhao

[a] *Institute of Geophysics, National Central University, Taiwan*

b Institute of Earth Sciences, Academia Sinica, Taiwan

For moderate and large earthquakes, point-source approach is not enough for describing the rupture complexity of the source. Finite-source slip distribution is a better way to reflect the temporal-spatial relationships of the earthquake, and it is needed for accurate ground motion predictions. We can describe the finite fault at the source as the summation of many subfaults. Every sub-fault has its own source parameters, including amplitude of slip, rake angle, average rupture velocity, and the rise time.



We used KiK-net, F-net regional data, and IRIS global teleseismic data to invert the slip distribution of 2016 Mw7.0 Kumamoto earthquake by fitting observations and synthetics calculated with 1D velocity model. The preliminary result shows that the residual from inversion with the NE-SW plane is smaller than that with the NW-SE plane, which also meets the distribution of aftershocks. The maximum slip was at about 20 km NE from the hypocenter along this plane. Then we simulate the ground motion using the finite fault result to obtain the peak ground velocity (PGV) map.

<Reference>

Chen Ji et al. (2002), Source Description of the 1999 Hector Mine, California, Earthquake, Part I: Wavelet Domain Inversion Theory and Resolution Analysis