

Seismic intensity simulation of the entire 1923 Kanto earthquake sequence

*Hiroe Miyake¹, Satoko Murotani², Kazuki Koketsu¹

1. Earthquake Research Institute, University of Tokyo, 2. National Museum of Nature and Science

The 1923 Kanto earthquake has been extensively analyzed from seismic, geodetic, and earthquake engineering aspects. Most mainshock rupture models consisting of two slip regions extending from Kanagawa to southern Boso are well constraint by geodetic data. However, the seismic intensity distributions of the 1923 Kanto earthquake based on the housing collapse rate show a significant northern extension toward Saitama. It is well known that several M7-class aftershocks were associated with the 1923 Kanto earthquake, and some of those are seen in the mainshock waveform traces. We here simulate seismic intensity distributions of the entire 1923 Kanto earthquake sequence and discuss the degree of difference of the seismic intensity from the entire sequence and the mainshock only.

To estimate seismic intensity distributions, we employ a set of ground motion prediction equations, fault geometries, and velocity models with different engineering bedrock definitions. The exact locations, depths, and seismic moment of the aftershocks are still under discussion and earthquake catalogs show large variability. Therefore we perform a grid search to measure the sensitivity of hypocenters and moment magnitudes to seismic intensity. We also test ground motion simulations to reduce the overlap between large slip regions and strong motion generation areas for the mainshock, which is expected to shift the current seismic intensity distribution to the west or deep.