Seismic Intensity Distribution of the 1889 Meiji Kumamoto Earthquake

Noriko Niida[2], *Yoshiko Yamanaka[1]

1. Graduate School of Encironmental Studies, University of NAGOYA, 2. Department of Earth & Planetary Sciences, University of NAGOYA

We investigated historical earthquakes in the Kumamoto Prefecture. We collected historical earthquake information in the history books of the prefecture or the municipalities, historical newspapers, and Official Gazette.
On July 28th 1889 (Meiji 22), the earthquake (M=6.3) occurred at the west of Kumamoto city. Damage statistics on each municipality are reported in Official Gazette. Using seismic damage of house, bridge and crack in the ground, we estimated seismic intensity based on the relationship between seismic intensity and seismic damages proposed by Usami(2016) and obtained the distribution of seismic intensity of this event. The obtained seismic intensity map was compared with the site amplification factor data by National Research Institute for Earth Science and Disaster Resilience (NIED). It seems that the region which have larger site amplification factor tends to become higher seismic intensity.
Takemura(2016) estimated seismic intensity distribution from the collapsed houses reported by Imamura(1920) . His seismic intensity distribution almost resembles one in this study. In some area, seismic intensity of this study came to have a bigger 2-3 rank as his result. Because we estimated seismic intensity from damage of bridges and crack in the ground as well as the damage of the house, our estimated seismic intensities become a little bigger. Houses in the Meiji period were generally located on relatively strong ground which have small value of amplification factor. On the other hand, bridges often stand on the weak ground.
We concluded that seismic intensity determined from damage of houses sometimes becomes smaller than that from damage of other structures.

Keywords: the 1889 Meiji Kumamoto Earthquake, Seismic Intensity Distribution

