

Extremely Severe House Damage Confined to Narrow Zones along the Surface Fault Ruptures in Mashiki by 2016 Kumamoto Earthquake

*Yasuhiro Suzuki¹, Mitsuhsa Watanabe², Takashi Nakata³, Kei Tanaka⁴

1. Nagoya University, 2. Toyo University, 3. Hiroshima University, 4. Japan Map Center

In the vicinity of the earthquake fault in Mashiki downtown, catastrophic building damage occurred. The relationship between surface faulting and house damages suggests localized strong shaking along the surface fault ruptures.

In order to analyze relation between surface faulting and house damage quantitatively, we mapped surface fault ruptures in detailed by field observation, and depicted damaged houses in the downtown by interpretation of aerial photograph taken by the Geospatial Information Authority of Japan on April 15 and 16.

Most of the severely destroyed or collapsed houses are confined to the narrow zone less than 120m across along surface fault ruptures. 95 percent of collapsed houses are located within 120m from the fault traces.

House damage ratio has clear relationship with the distance from the fault. The closer is distance from the fault rupture, the higher is ratio of house damage. Ratio of severely damaged houses including collapsed housed reaches 40 percent at maximum, and exceeds 30 percent within 55.85m from the fault.

The house damages just on the fault are quantitatively analyzed, and nearly 50 percent houses were collapsed or severely destroyed. It is noteworthy that the damage ratio does not differ by the age of construction.

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