

Geometry of surface fault ruptures of the 2016 Kumamoto earthquake and house damages

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During the Kumamoto earthquake (Mw 7.3) on April 16, 2016 severe house damages were caused by the strong shaking and surface fault rupture along active fault known as the Futagawa-Hinagu fault in central Kyushu, southwest Japan and near-by faults some of which were not known before. Main surface fault ruptures with right-lateral slip appeared along northern part of the Futagawa-Hinagu. Severe house damages appeared in narrow zones several hundred meters from the surface fault traces, and destructive house damages were unevenly distributed and concentrated in the both ends of the main surface fault rupture as observed Mashiki town and Minami-Aso village. Along the main surface fault rupture severe house damages were locally concentrated in the places where surface fault ruptures make steps and bends, while house damages were relatively small along the areas where surface fault ruptures extends straight except for the damages on the fault traces. House damages along the surface fault ruptures with normal slip were rather small suggesting that ground shaking was not so strong.

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