Distribution patterns of house damages in the central part of Mashiki Town caused by the 2016 Kumamoto Earthquake: Geological and geomorphological implications

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Serious house damages were caused by the 2016 Kumamoto Earthquake in the central part of Mashiki Town, Kumamoto Prefecture. Our detailed investigation on the damage distribution reveals that the houses were most seriously damaged in the lower part of the gentle-slope areas along the margin of the uplands and less damaged in the lowland along the Akitsu-gawa River. Lateral movements and/or failures of the embankment caused the collapse of houses only in the steep slope areas along the small incised valleys.
Although the uplands in the study area are composed mainly of pyroclastic-flow deposits derived from the Aso volcano, they are covered by soft tuffaceous muddy sediments with various thickness. Consequently, the margin of the uplands, in which the house damages were most serious, would be underlain by the thick soft muddy sediments or ones with different (rather soft) physical properties.

Keywords: earthquake disaster, house damage, geologic setting

