



Comparison between seismic ground effects and instrumental seismic intensity—an example from a study on the 2004 Chuetsu earthquake in Central Japan—

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Large earthquakes cause many types of geological phenomena. During the 2004 Chuetsu earthquake (Mj 6.8) in Central Japan, for instance, surface ruptures, landslides and liquefaction were observed in the wide area. This earthquake was followed by several large aftershocks larger than M 6. In the affected area, strong ground motion was recorded by seismic stations network managed by JMA (Japan Meteorological Agency) and other institutes. The JMA seismic intensity of "7" (the largest class in its scale) was observed in the epicentral area and "6 upper" at 12 stations (within the distance up to 30 km from the epicenter) during the main shock. Based on these intensity records, a meshed map of seismic intensity is compiled by JMA.

We are making a map with grids of 1 km, showing the distribution of sites of landslides and liquefaction generated by this earthquake. Various size of landslides occurred in hilly area near the epicenter, where many pre-existed large landslides are recognized. This area is composed of the unconsolidated sediments of the Plio-Pleistocene Uonuma Group and some landslides slipped on the bedding surface of these strata. Liquefaction, such as sand blows and floating of pipes and manholes occurred in the area along the Shinano River and the Uono River, not only on the alluvial plains but also on the terraces away from the epicenter. Clear surface faulting matching to the magnitude of the main shock couldn't be observed in the epicentral area, although several surface ruptures were reported. We will compare the occurrence of these geological phenomena and the intensity measured and estimated based on the instrumental data on each grid. The relationship between them will give us one of the good materials for discussion on INQUA intensity classification.