

## Distribution of tiled roof damage around Tsukuba and Tsuchiura cities, caused by the 2011 Off the Pacific Coast of Tohoku

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In Tsukuba and Tsuchiura cities and its surrounding area, there were a number of building damages and land disasters induced by the 2011 Off the Pacific Coast of Tohoku Earthquake on March 11, 2011. Among these seismic damages, a large number of roof tiles damages were distributed in a wide area. The roof tiles damages are good indicator to reveal the relationship between seismic intensity and topographical-geological feature. In this study, we mapped 7,142 of tiled roof damages extracted from satellite image (Google Earth image). These damages are distributed not only on an alluvium but also on middle terraces of geology. Furthermore, these damages may deeply depend on subsurface geology as well as surface geology, because various damage ratios of roof tiles are found on the same surface geology. We carried out microtremor survey (H/V spectral ratio) to evaluate the relation between tiled roof damage and subsurface geology. In this presentation, we demonstrate the relationship among the distribution of tiled roof damage, results of microtremor, and subsurface geology based on boring.

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