

Integrated Survey on the Source Fault of the 1984 Western Nagano Prefecture Earthquake

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The 1984 Western Nagano Prefecture Earthquake (MJ6.8) occurred at shallow part of the southern foot of Mt. Ontake volcano, middle part of Japan. Despite the large magnitude neither clear surface rupture nor active fault has been found around the source area. Therefore the earthquake is an issue for seismic assessment based on active fault survey. The purpose of this study is to find any tectonic geomorphologic features in the source area and to elucidate its relation to the source fault. In order to achieve it, an integrated survey with (1) micro earthquake observation, (2) airborne LIDAR, and (3) seismic reflection survey was demonstrated in the source area from 2006 to 2008. The survey area of airborne LIDAR (18 km x 4 km) covers main part of the aftershock distribution just after the mainshock. A linear zone with abrupt change of topographic roughness was found in ENE-WSW direction at the center of the LIDAR target area. River valleys flowing down to SSE direction change their directions and widths abruptly across the linear zone. Seismic reflection survey across the source region detect deformation zone just beneath the linear zone. These features of topographic and crustal deformation coincide well with the aftershock distribution. Therefore they indicate a tectonic trace formed by the cumulative displacement of the source fault.