

The surface rupture of the 22 November 2014 Nagano-ken-hokubu earthquake (Mw 6.2), Nagano prefecture, central Japan

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The Nagano-ken-hokubu earthquake (Mw = 6.2) occurred on 22 November 2014 and the surface rupture due to the earthquake appeared along the Kamishiro fault (Sawa et al., 1999; Togo et al., 1999). To reveal features of the surface ruptures, we carried out surface exploration from 23 November to 26, and from 29 November to 3 December. In this survey, we observed ground deformations, recorded location data of fault traces with handy GPS, and carried out simple measurement of vertical displacement and horizontal shortening. As a result, we confirmed 9.2-km-long surface ruptures and ground deformations along the Kamishiro fault. These surface ruptures and their distributions indicate that NW-SE compressive east-dipping reverse fault (east side up) slipped at depth, which is consistent with fault-plane solution of main shock (JMA, 2014) and deformation pattern using SAR interferograms (GSI, 2014). In our surface exploration, we confirm flexural deformation that has contractive deformation near the fault tip and extensional deformation in the hanging wall side. These deformations show that the reverse fault change to low-angle at shallow depth and deform unconsolidated sediments in the basin.

Keywords: surface rupture, the 22 November 2014 Nagano-ken-hokubu earthquake, Itoigawa-Shizuoka Tectonic Line, Kamishiro fault

