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Microseismicity in northern part of the 1891 Nobi earthquake fault system by a temporary dense network

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It is necessary to establish the evaluation approach onto successive rupturing of active faults to improve the accuracy in strong motion prediction and seismic hazard assessment. Authors have carried out an integrated survey including geological, geomorphologic, and geophysical approaches in the northern source area of the 1891 Nobi Earthquake (M8.0) since 2009. This earthquake occurred by successive rupturing of some major active faults running in NW-SE direction. In this report, preliminary result of the microearthquake observation executed in 2009 is described.

The microearthquake observation network with 26 stations was developed around the Nukumi faults and half the north of the Neodani fault for about five months from June 22nd to November 26th. About 400 local earthquakes were manually detected from a continuous record and their hypocenters were located provisionally using a P wave velocity structural model of two horizontal layers (5.5km/s to 0-3km, and 6.0km/s to 3km-). The hypocenter depths around the Nobi Earthquake fault system tend to become shallow northwardly from the Neodani fault to the Nukumi fault, though the seismicity is not so active.

Travel time residuals along the Nukumi fault tend to be negative in Gifu Prefecture and positive in Fukui Prefecture. But the latter ones radically change to be negative off north of the source region. Because the residuals reflect the regionality of the velocity structure, the crustal structure of the source region is possible to be different from the outside. We will discuss on strike of faults ruptured in the last earthquake from the view of stress field estimated by focal mechanisms.