Fault model of the Mid Niigata Prefecture Earthquake in 2004

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The surface earthquake faults of the Mid Niigata prefecture Earthquake in 2004 were found along the pre-existing active fault traces of both Obiro fault and the northern part of the western marginal fault of the Muikamachi basin. Leveling survey clarify the the vertical dislocation across the source area. The seismic activities related with the earthquake inform us the fault geometry in upper crust. We examined the fault model of the earthquake on the basis of these data.

Although there are two clear west-dipping fault planes in the central part of the source area, we can see only one west-dipping fault plane in other places. In both cases, not only the faulting just beneath the Uonuma Hills but also surface faulting along the eastern boundary of the hill has proved indispensable in matching the calculated deformation with the observed one. The hypocenters distributed by JMA fit our model fine, but those shifted away several kilometers are never suitable for the tectonic features.