

Coseismic deformation of the Mid Niigata prefecture Earthquake in 2004 by RADARSAT/InSAR

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The crustal deformation associated with the Mid Niigata prefecture Earthquake in 2004 (M6.8) was detected using RADARSAT SAR interferometry. The displacement of 40 cm in the line-of-sight to the satellite was observed in the west of the main-shock epicenter, and that of -20 cm was observed in the east of it. Fault parameters estimated from the obtained deformation were in good agreement with those of CMT solution for the main-shock provided by the Japan Meteorological Agency. In the postseismic period, the steep gradient of deformation was found around the Obiro and the Western Muikamachi Basin faults, and it indicates that the fault-slip occurred in the shallow depth of the fault. Since the seismicity in the shallow depth of the Western Muikamachi Basin fault was low, we think that it must be an aseismic slip. Moreover the crustal deformation associated with the aftershock which occurred on October 27 (M6.1) was detected, and it was ascertained that this aftershock have ruptured the conjugate plane. From the fact that the locations and/or the mechanisms of these faults were significantly different, it is ascertained that at least three faults were involved in a series of these earthquakes.