

Spatial distribution of hypocenters and focal mechanisms in and around the focal area of the 1891 Nobi earthquake

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We have investigated hypocenter distribution and focal mechanisms of micro-earthquakes that occurs in and around the focal area of the 1891 Nobi earthquake with M 8.0. Data observed at stations operated by the NIED (Hi-net), JMA, Nagoya University, Kyoto University, and Tokyo University in the period of January 2003-January 2009 was used in this study. Data observed at five temporally stations diploid on April 2008 was also used. After automatically event detection and hypocenter determination by the routine system at the NIED Hi-net, we manually picked the arrival times of the P- and S-waves from the detected earthquakes and polarities of the P-waves and determined the hypocenters and focal mechanisms. As the result, 1908 hypocenters and 765 focal mechanisms were determined. We also relocated the earthquakes by using the double-difference technique [Waldhauser and Ellsworth (2000)]. In this analysis, we used not only the arrival times but also the high precision differential time from phase correlation of the P- and S-waves. The obtained hypocenters are mainly distributed in and around the focal area of the 1891 Nobi earthquake. Especially, many hypocenters are distributed along the Neo valley faults on the ground surface and are also distributed on a west dipping plane south of the surface faults with at least 10 km size at a depth range from 7 to 14 km. Focal mechanisms of the earthquakes along the surface faults and on the dipping plane are strike-slip and dip-slip types, respectively; these mechanisms agree with the above mentioned hypocenter distribution. However previous studies proposed a vertical fault [Mikumo and Ando (1976)] and east dipping fault [Nakano et al. (2007)] as a branch fault in this area, this result shows existence of a west dipping fault, which may corresponding to the mainshock fault or its branch fault.