

Relocation of hypocenters in the source region of the 2004 Mid-Niigata Prefecture Earthquake before the earthquake occurrence

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We determined hypocenter distribution in the focal region of the 2004 Mid-Niigata Prefecture Earthquake during a period from June, 2002 to just before the main shock in order to compare the earthquake source faults and the hypocenter distribution before the earthquake occurrence.

We collected waveforms recorded by JAM, universities, and NIED stations, and manually picked P and S wave arrival times. Arrival time picking by the cross-correlation method was not used because waveforms of the first motion were reverberant at most of the stations and that method was not effective to such waveforms.

179 sources were re-located by using DD(Double Difference) hypocenter determination method. Re-located sources gathered in narrower areas compared to the initial locations by JMA. However, we could not delineate earthquake source faults from the re-located hypocenters because they were not distributed on planes.

There were some sources at the depth of around 15km near the hypocenter of the main shock. Lower limit of the hypocenter depth was around 15km in this area. Seismic activities at the lower limit of hypocenter distribution possibly have relation to a starting point of a rupture.