

Imaging source region of the 2007 Noto Hanto earthquake by the group for aftershock observations of the 2007 Noto Hanto Earthquake

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The velocity structure and accurate aftershock distributions of the 2007 Noto Hanto earthquake (Mw 6.7) are elucidated by inverting the arrival times from the aftershocks using double-difference tomography (Zhang and Thurber, 2003). Dense temporal seismic stations were immediately deployed in and around the source region after the occurrence of mainshock. The participation organizations are Hokkaido University, Tohoku University, University of Tokyo, Nagoya University, Kanazawa University, Kyoto University, Kyusyu University, Kagoshima University, National Research Institute for Earth Science and Disaster Prevention and National Institute of Advanced Industrial Science and Technology.

Both P- and S-wave arrival times observed at the temporary and the surrounding permanent stations were picked manually. The initial hypocenter locations are determined assuming an 1D velocity structures [Ito and Wada, 2002]. The initial velocity structure for the tomography analysis is the same as for hypocenter determinations, and the V_p/V_s value is set as 1.73 in all the grids.

The seismic velocities in a hanging wall are faster than those in a footwall, and the velocity contrast extends to deep depths. The aftershocks associated with the mainshock are distributed around the boundary between the low and high velocity structures. It is interpreted that the mainshock fault plane of the Noto Hanto earthquake was reactivated as a reverse fault since the crustal shortening initiated.