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2007 年能登半島地震震源域周辺の 3 次元比抵抗構造
Three-dimensional electrical resistivity structure around the 2007 Noto Hanto Earthquake

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The 2007 Noto Hanto Earthquake (M6.9) occurred near the west coast of the Noto Peninsula which is located in the back arc area of Central Japan, on 25 March 2007. The focal mechanism of this damaging earthquake shows a reverse fault with a small amount of strike-slip component with a strike of approximately N55E and high angle dip. The two largest aftershocks, both M5.3, occurred within one day near the offshore and onshore edges of the aftershock region. Yoshimura et al. [2008] carried out a wide-band magnetotelluric survey in the onshore area covering the eastern half of the source region, and obtained two-dimensional resistivity models along five profiles as a preparatory step for imaging three-dimensional structure, As the results, they pointed out that a conductive body, which seems to represent fluid-filled zone, is located beneath the mainshock hypocenter and the active aftershock region.

In order to verify the relationship between seismicity and electrical resistivity structure, we carried out additional two-dimensional modelings and three-dimensional analysis by using data of Yoshimura et al. [2008]. As a consequence of additional two-dimensional models, it is revalidated that the distributions of deep conductors correspond with the aftershocks activity. Using the results of two-dimensional analyses along nine profiles as initial and prior models, three-dimensional inversion (WS-INV3DMT: Siripunvaraporn et al., 2005) was applied to the data of Yoshimura et al. [2008]. The full components the impedance tensor at 14 periods 26 sites were inverted. Significant characteristics of the obtained preliminary model are: (1) distribution of resistive blocks at shallow depth seems to correspond to undulation of gravity basement structure (AIST, 2007); (2) a conductive body, beneath the mainshock hypocenter, spreads to the eastern edge of the active aftershock region.

In this presentation, we will show a whole image of two-dimensional and three-dimensional resistivity models compared with main and aftershock activity and discuss the sensitivity of remarkable features of models.

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