Crustal resistivity structure beneath the source region of 2014 northern Nagano earthquake

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In this study we have determined two dimensional (2-D) resistivity structure beneath the source region of 2014 northern Nagano earthquake. Seventeen magnetotelluric (MT) stations were deployed in the study area. The MT data were collected using five component wide-band MT instruments (Phoenix MTU-5 system). A simultaneous remote reference measurement was carried out at the Sawauchi site (400 km northeast of the study area). The observed apparent resistivity and phase data were inverted simultaneously using the 2-D inversion code of Ogawa and Uchida [1996]. The obtained resistivity model through the inversion show as follows: (1) The mainshock hypocenter is located in a prominent conductive zone. (2) This anomaly is imaged in the depth range of 3 to 20 km. (3) These results indicate that the conductive zone may be due to crustal fluids that contributed to the occurrence of the large earthquake.

Keywords: 2014 northern Nagano earthquake, resistivity structure, crustal fluids