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Three-dimensional modeling of dense magnetotelluric data around the earthquake swarm region, the western Nagano, Japan

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Investigation of the electrical structure around a seismic active region is an important issue to discuss what control the seismicity. The southeastern flank of the Ontake volcano, which is located in central Japan, is one of the most interesting fields to be explored. In this area, earthquake swarm activity has been continuously observed since 1976. Additionally, a large earthquake with the depth about 2km and a magnitude of 6.8 occurred in 1984 in the swarm region. Recent study of seismic tomography investigated by dense seismic network (Doi et al., 2009) found out low velocity anomalies along/beneath earthquake clusters. In order to delineate the detailed physical properties of the upper crust surrounding the seismogenic zone, we planned to image lateral heterogeneity of subsurface electrical structure. In this study, we conducted 3D modeling of dense AMT/MT data (Yoshimura et al., 2009; Iio et al., 2000; Kasaya et al., 2002), which now amount to 64 sites, to figure out electrical characteristics around the seismic swarm area. As a result, seismicity seems to concentrate along the margins between resistive and conductive regions. In this presentation, we will report and discuss the obtained resistivity structure comparing with detailed hypocenter distribution and velocity structure.

Keywords: resistivity structure, earthquake swarm activity