

R003-11

D会場 : 11/5 PM2 (15:45-18:15)

16:45~17:00

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## **Resistivity structure beneath Southern Tohoku imaged by joint inversion of magnetotelluric and geomagnetic transfer functions**

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The southern part of Tohoku is a volcanically and seismically active region in the Northeast Japan subduction system. Active volcanoes and deep, low-frequency volcanic earthquakes are distributed on and off the volcanic front, implying a complex distribution of deep fluids beneath the area. To comprehend it, we study the electrical resistivity structure beneath the area using the magnetotelluric (MT) method because resistivity is sensitive to the composition and connectivity of fluids. MT stations were deployed on three across-arc profile lines, and we aim for a three-dimensional structure. However, because three-dimensional inversion demands much computational time, this presentation shows the first-order approximation of two-dimensional structures for the respective line. In addition to the standard MT transfer functions, such as the MT impedance and vertical magnetic field transfer functions, we also estimated the inter-station horizontal magnetic field transfer functions because it has been proven to aid resistivity structure modeling, especially in enhancing the resolution of conductive anomalies. The main feature of the result is a deep conductor found in the uppermost mantle, consistently detected beneath the three profile lines. A spatial correlation of the conductor with the hypocenters of deep, low-frequency earthquakes signals the existence of a deep fluid-rich area. However, unlike most studies in subduction zone arc that reveal a deep conductor under the volcanic front, the conductor here is closer to the back-arc side near a back-arc volcano (Mt. Numazawa), triggering some speculation about the deep fluid flow. For example, since volcanic activity in the southern Tohoku began with volcanoes in the volcanic front, such as Mt. Azuma and Mt. Adatara, and then later continued to Mt. Numazawa in the back-arc side over time, deep fluids under the volcanic front might have been spreading toward the back-arc. However, it is still a matter of discussion. Besides, some other compelling features of the resistivity structure will also be discussed in the presentation.