岩手宮城内陸地震震源域周辺の３次元比抵抗構造解析ー低比抵抗体の存在とその意義

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3D MT Modeling Around the Focal Zones of Iwate-Miyagi Nairiku Earthquake- Crustal Conductors and Their Implications

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The 2008 Iwate-Miyagi Nairiku Earthquake (M 7.2) was an unusually large earthquake, which occurred near the volcanic regions. To understand the mechanism of inland earthquakes, it is important to study the structure around the area. Okada et al. (2012) observed aftershocks precisely and estimated the seismic velocity structure. Iinuma et al. (2009) detected coseismic and aseismic slips with GPS observations. Mishina (2009) and Ichihara et al. (2014) conducted 2-D and 3-D MT surveys respectively. However, the MT station distributions of the previous MT surveys were sparse. We carried out denser surveys and showed more precise resistivity structures around the area. We conducted MT surveys at 66 stations (59 stations from October until November in 2012 and 7 stations from October until November in 2014) around the area and estimated 3-D resistivity structures using inversion code of Siripunvaraporn and Egbert (2009) with full impedance tensor as response functions. The result of our final resistivity structures is similar to the one in Ichihara et al. (2014), but is more complex. We found a low resistivity zone to the northeast of Mt. Kurikoma below 3km depth. This anomaly is connected with a low resistivity zone located under Mt. Kurikoma below 10km depth. The locations of aseismic and co-seismic slips in Iinuma et al. (2009) correspond to the locations of low resistivity and high resistivity zones in our model respectively. This may represent that low resistivity zones are brittle and high resistivity zones are ductile.