# Preliminary report of wide-band MT soundings around the Senya fault system, the Tohoku district, Japan

# Masaaki Mishina Working Group for MT Data Analysis around the Senya Fault in 1998

In 1998, magnetotelluric soundings at wide-band frequencies (100 - 0.001 Hz) were carried out across the Ou backbone range in the Tohoku district, northeast Japan. A two-dimensional inversion is attempted. A preliminary resistivity model reveals conductive zones at the depth down to 7 - 8 km along the Senya fault and other thrust faults, which are interpreted as fracture zones along active faults. The resistivity model indicates a deep conductive zone beneath the depth of 10 km, which is possibly interpreted as the lower crust. There seems to be a rise of the deep conductive zone beneath the center of our survey line, whose location roughly coincides with a deep extension of the Senya fault.

Electromagnetic observations were conducted across the Ou backbone range in the Tohoku district, northeast Japan. Seismic surveys were also carried out in this area, and are imaging the deep structure of the Senya active fault and other thrust faults surrounding the Ou backbone range. The electrical conductivity is very sensitive to the existence of fluid in the crust, and is useful for evaluating the crustal growth beneath the Ou backbone range.

In 1998, magnetotelluric (MT) soundings at wide-band frequencies (100 - 0.001 Hz) were carried out at 15 sites along a survey line with length of 45 km. Induction vectors and strike directions at frequencies lower than 0.1 Hz indicate that a regional resistivity structure beneath the Ou backbone range is approximately two dimensional with N-S strike. A two-dimensional inversion by using TM mode response is attempted. A preliminary resistivity model reveals a conductive zone at the depth down to 7 - 8 km along the Senya fault. Similar conductive zones are found along other thrust faults in this region, and these are interpreted as fracture zones along active faults. The preliminary resistivity model indicates a deep conductive zone beneath the depth of 10 km, which is possibly interpreted as the lower crust. There seems to be a rise of the deep conductive zone beneath the center of our survey line, whose location roughly coincides with a deep extension of the Senya fault. It possibly implies a correlation between active faults in the upper crust and the lower crustal structure.