

Preliminary Results of Wideband-MT Surveys in and around Hidaka Mountains, Hokkaido, Japan

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Wideband-MT soundings were carried out across the Hidaka Mountains, Hokkaido, Japan. The survey line is across the Hidaka Main Thrust, which is situated at the junction of the Kuril Arc and the Northeast Japan Arc. The characteristics of the observed apparent resistivity are summarized as follows : (1) Apparent resistivity show very low values (<100 Ohm-m) for periods shorter than 1 sec except a few sites situated at central part of survey line. This is interpreted as the Tertiary sediments and serpentinite distributed in this region. (2) Apparent resistivity show high resistivity values (300-500 Ohm-m) from short to long periods at the site of central part of survey line. This implies that lower crust of the Kuril Arc exposed in central part of study area show high resistivity values.

Electromagnetic observations were conducted across the Hidaka Mountains, Hokkaido, Japan. Refraction and reflection seismic surveys were also carried out in this area, and revealed the P-wave velocity crustal and upper mantle structure beneath the Hidaka Mountains. In July-August 2000, wideband (0.01 to 1000 sec) magnetotelluric soundings were carried out by Research Group for Crustal Resistivity Structure at 24 sites along the survey line with 150 km. The survey line is across the Hidaka Main Thrust, which is situated at the junction of the Kuril Arc and the Northeast Japan Arc. The main purpose of this survey is to investigate the electrical resistivity structure from the shallow crust to the upper mantle beneath the Hidaka Collision Zone. We acquired the electric and magnetic fields data using 13 sets of the MTU5 and MTU2-E systems, owned by Hokkaido Univ., GSJ and TIT. All of these instruments were synchronized using GPS. Quality of the data was fair.

The characteristics of the observed apparent resistivity are summarized as follows : (1) Apparent resistivity show very low values (<100 Ohm-m) for periods shorter than 1 sec except a few sites situated at central part of survey line. (2) Apparent resistivity values have a tendency to become higher toward the long periods longer than 1sec at the sites of western and eastern part of survey line. The former is interpreted as the Tertiary sediments and serpentinite distributed in this region. The latter implies that a resistive layer is situated in the middle to lower part of the crust, contrary to a conductive layer is distributed widely in the upper part of one. (3) Apparent resistivity show high resistivity values (300-500 Ohm-m) from short to long periods at the site of central part of survey line. This implies that lower crust of the Kuril Arc exposed in central part of study area show high resistivity values. We will present the preliminary analysis derived from MT impedance and discuss two-dimensional resistivity model.