Resistivity structure at the western foot of the Ou Backbone Range

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The Research Group for Crustal Structure organized by universities and other research institutes in Japan carried out wide-band MT observation along an east-west line across the Senya fault in 1998 and 1999. The line was elongated from Japan Sea toward east to cover the Ou Backbone Range. The resistivity structure obtained by this work (Ogawa et al., 2001; Takahashi, 2000MS; etc.) was compared with the distribution of the hypocenters for microearthquakes. Based on the comparison, microearthquakes occur on the boundary zones between resisitive block and conductive one.

Adding to the joint observation by the Research Group for Crustal Structure, we started another wide-band MT observation. The main purpose is constructing a three-dimensional resistivity structure and discussing the relationship between resistivity and earthquakes more in detail. We installed an east-west observation line about 3km north of that of the joint observation. The length of the new observation line was about 30km, the total number of the observation site was 21and the average interval of observation sites was less than 2km. The observation periods were within October in 2001 and April to May in 2002. The new observation line was across the Ota fault that is the northern elongation of the Senya fault.

We constructed a preliminary structure from the data obtained around the Ota fault and compared with the result of the joint observation. So far, we obtained similar structure along both observation lines, although we should be going to discuss based on the structure decided after more careful modelings. We recognize a relatively conductive zone around the underground fault surface of the Senya and Ota fault. On the other hand, the hanging block to the east of the Senya and Ota fault shows rather high resistivity. Intruded dykes of dacite in Tertiary period are possible causes of the high resistivity. Besides, 7, 8km to the west of the Senya and Ota fault, the resistive block is recognized at the 5-15km depth. The values of resistivity in this resistive block show a little difference between the result of the joint observation and that of the new observation in this study, as means we are possible to detect a kind of three-dimensional resistivity structure in this area.