Resistivity structure in the southern part of Boso Peninsula inferred from MT observations (II)

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The southern part of Kanto District, Central Japan is situated in front of the triple junction of the plates (Pacific, Philippine Sea, and Eurasia), and the tectonic activity associated with the subduction is remarkable. At the southern part of Boso Peninsula, there exists complex geological features due to the past plate motion. The main purpose of this study is to infer the geological features beneath the southern part of Boso Peninsula by magnetotelluric (MT) method.

MT observation was performed from 10 July to 24 August, 2001. MT stations were 29 along the three base lines; across the Kamogawa Tectonic Belt (KTB, 2 lines) and along the Mineoka Range. So far, we have analyzed electromagnetic data at 7 sites along the NS base line (16 km length) across the KTB. The results were as follows;

(1) There exists low resistivity mass down to 6 km depth under the middle or southern part of western area of Kamogawa Tectonic Belt. It is concerned with the transform motion in the expansion of Shikoku Basin. It might cause the fracture of intruded rock body in the belt, and groundwater penetration in the fractured area.

(2) The lower part of above low resistivity mass may indicate the boundary layer or root of intruded ultramafic rock body by the accretionary complex due to the subductive motion of Philippine Sea Plate.

(3) In the northern region of Kamogawa Tectonic Belt, the bottom of low resistivity mass is gradually deepened and thickened. It is considered to correspond to the deposit in the forearc basin before or during the formation of the Mineoka Range.

(4) In the southern region of Kamogawa Tectonic Belt, the bottom of low resistivity mass becomes gradually shallower. This is corresponding to the accretionary complex associated with subduction of Philippine Sea Plate.

We carried out the second field campaign in 2005 to expand the base line to the north and south directions, including the Kanozan Geodetic Observatory, GSI. As a result, the lateral distance became about 50 km. We will show the results that we compared the two-dimensional electrical structure with the seismic reflection profiles obtained by Sato et al. (2005) and other geophysical information.

Reference:
H. Sato et al., SCIENCE, Vol.309, pp.462-464, 2005.