2-dimensional electrical resistivity structure in the southern part of Boso Peninsula, Japan

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Magnetotelluric (MT) surveys were carried out in the southern part of Boso Peninsula to image the deep structure of subducting oceanic plates and the shallow sedimentary formations. We obtained two north-south profiles across the Mineoka Tectonic Belt (MTB). The resistivity distributions of the Philippines Sea and Pacific plates, and the subsurface structures above them were revieled. The model indicates that the uppermost layers are conductive, and their thickness is larger than the south of MTB than in the north. This heterogeneous structure seems to correspond to the accretionary prism and the forearc basen, developed through the subduction of the Philippine Sea plate. It may be further noticed that these resistivity distribution may have some correlations with the areas of non-asperity for aseismic slip events and the areas of asperity for large earthquakes. Namely, the main decollement is more strongly coupled under the forearc basin than the accretionary prism. These features suggest that probably both deep structures of resistivity and mechanical strength are affected be the fluids supplied from the subducting oceanic plates. Such a correspondence, however, is not quite straightforward because of the complexity due to the east-west resistivity variation in the uppermost part of the Phillipines Sea plate and the shallower subsurface structure.

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