

Deep structure of the Miocene igneous complex in the Kii peninsula, Southwest Japan, inferred from wide-band magnetotelluric soundings

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Miocene igneous complexes in the Outer Zone of Southwest Japan intruded into the Shimanto accretionary prism of Cretaceous to Tertiary age, in association with tectonic events such as the opening of the Japan Sea and beginning of the subduction of the Shikoku Basin beneath the southwest Japan arc. A wide-band magnetotelluric survey was carried out in order to image the deep structure of the Kumano Acidic Rocks and the Omine Granitic Rocks which are large igneous complexes of Middle Miocene age in the Kii peninsula. The electrical resistivity structure of the area down to 30 km was estimated from the two dimensional inversion for the TM mode data. The electrical resistivity structure comprises a resistive layer of about 5 km thickness in the uppermost part of crust, a conductive layer at depths of 8 -15 km beneath the Cretaceous sedimentary terrane, and a highly resistive body extended to the depth of about 20 km beneath the Miocene igneous complexes. Location and geometry of the highly resistive body are likely to indicate that the Kumano Acidic Rocks and the Omine Granitic Rocks are connected together in deeper subsurface. K-Ar and FT ages, geochemical compositions and other geophysical data support that the resistive body is composed of several fossil magma reservoirs in relation to the Kumano Acidic Rocks and the Omine Granitic Rocks.

Keywords: wide-band magnetotelluric survey, Kii peninsula, Kumano Acidic Rocks, Omine Granitic Rocks, fossil magma reservoir

References

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