

EM IMAGING BENEATH THE BACK-ARC REGION OF SOUTHWEST JAPAN: COOPERATIVE SEAFLOOR AND LAND SURFACE EM OBSERVATIONS

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Seafloor and land surface electromagnetic (EM) observations were made across the back-arc region of southwest Japan. In this region, called the San-in region, seismicities are remarkably distributing within a belt of about 4-10 km wide parallel to the coastline of the Sea of Japan. The cutoff depths of these seismicities are shallower than approximately 10km. In the seismic belt, several large earthquakes greater than M6 occurred in last 100 years (e.g. the 2000 Western Tottori Earthquake). Moreover, quaternary volcanoes are also located in the seismic belt. In order to reveal heterogeneity of resistivity structure around such seismogenic zone, wide-band magnetotelluric (MT) surveys have been carried out along a number of NS profiles, namely perpendicular to the seismic belt, on land since 1998. Previous MT surveys detected high conductive blocks beneath the seismic belt on each MT profile. These conductive blocks seem to extend in a direction parallel to the seismic belt. To figure out deep-seated structure of the conductive zone and clarify the relationship between subducting Philippine Sea Plate and the crustal conductor, we set up two long MT arrays which extend from fore-arc to back-arc. Up to the present date, we have acquired MT data at 10 seafloor EM sites and 9 long-period land EM sites since 2006. An important improvement of the present observation in comparison to the previous one is the employment of matching OBEM system to operate in neritic regions. It enables the cooperative seafloor and land surface EM surveys. We will show the outlines of our research project, an overview about the new MT data, and preliminary results along the two MT profiles in this presentation.

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