

## A preliminary report on a resistivity structure beneath the eastern part of Chugoku and Shikoku regions, southwestern Japan

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The purpose of this study is to estimate an electrical resistivity structure beneath the eastern part of Chugoku and Shikoku regions, southwestern Japan in order to clarify the relationship among deep crustal conductive areas, the seismicity in these regions and the subducting Philippine sea plate. In this presentation, a preliminary report of a two-dimensional resistivity structure beneath these regions, based on the result of the wide band MT observations carried out from fall to winter of 2006, is given.

Our research group has shown that there is a clear relationship between resistivity and seismicity in the Sanin and Shikoku regions. We investigated deep crust resistivity structures in the measurement lines that traverse a linear seismic activity area along with the coastal part of Japan Sea, including Yoshioka and Shikano seismic fault of Tottori earthquake in 1943, M7.2 and the epicenters of the remarkable earthquakes in the eastern part of San-in region, for example, Western Tottori earthquake in 2000, M7.3, and so on. As the result, in the eastern part of San-in region, it was found that a conductive area exists in the deep crust part under the seismic region, which is a resistive area, along with the seismic activity area stretching nearly in the east and west direction. On the other hand, in the Shikoku region, the same investigation was carried out mainly in the outer zone, the south side of MTL (Median Tectonic Line) and the preliminary result suggested that a remarkable conductive area should exist in the upper crust of the outer zone, and that the conductive area in the central and western part should have a clear relation with the non-seismic area.

These studies suggest that high conductivity (low resistivity) is possibly caused by the existence of deep crustal fluids, which probably play an important role in the inland earthquake occurrence mechanism of these regions. As one of the possible interpretations of water supply system, it is thought that the fluids in the deep crust are supplied from the subducting Philippine Sea plate by means of the dehydration processes. However, the existence of the plate is not thoroughly identified in the geological inner zone of the southwestern Japan Arc. Furthermore, limiting the investigations carried out so far to the Sanin area and the outer zone of the Shikoku region, we thought that in order to grasp a whole tectonic setting, from the foreside to the backside in the southwestern Arc, quantitative discussions based on the wideband MT survey transecting in these regions should be required.

A wide band MT observation was carried out from the Sep.29th to the Dec.19th in 2006. A total of 5 Phoenix measurement devices was used to observe geomagnetic field and electric current. The data in Kirishima (Kagoshima prefecture) was used for a remote reference method under the permission of Phoenix Corporation. Fortunately, geomagnetic storms happened during the observation in Shikoku region and a good record was obtained on almost all points. However, a remarkable geomagnetic disturbance could not be recorded during the observation in the eastern part of Okayama. The general description of resistivity structure investigation using these data and the existing data is preliminarily reported hereinafter.

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