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3D Resistivity Structure beneath Kyushu by Using Long Dipole Data of the Network-MT Survey

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The Kyushu district is a typical high angle subduction zone in Japan and many Quaternary active volcanoes, such as Aso, Kirishima and Sakurajima volcanoes, are located along the volcanic front. Network-MT observations, in which telephone line networks were used for long baseline telluric measurements (Uyeshima, 1990), were carried out in the Kyushu district from 1993 to 1998. We analyzed these data sets to determine regional scale electrical conductivity structure. As a preparatory step for three-dimensional imaging of the electrical resistivity structure beneath the Kyushu district, we applied several two-dimensional inversion analyses to the Network-MT impedance responses across the characteristic geology, tectonics and volcanoes. Here we used the REBOCC inversion code (Siripunvaraporn and Egbert, 1999), which adjusts appropriate the horizontal and vertical smoothing factors according to the intervals of the observation sites. In addition, we considered several tens kilometers electrode spacing for the measurement of voltage differences. And we were able to get much clearer overall resistivity structure to explain the observed Network-MT data set and have a rough grasp of the resistivity structure beneath whole Kyushu. Further, we found that the bottom of this conductor extends to the subducting Philippine Sea Plate. Then we carried out a three-dimensional inversion analyses to take account of the effects of the three-dimensional geographical features, especially, the ocean surrounding the Kyushu district. In this presentation, we would like to explain details of our reanalysis and obtained two-dimensional and three-dimensional models, and introduce the future direction of this study.