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A preliminary report on resistivity structure survey in southern Tokai region

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In the Tokai region, great earthquakes have occurred repeatedly and such one is also expected to occur in the near future. Several studies estimated the fault models of past earthquakes in this region based on the historical, the geological and the geodetic data (e.g., Ando, 1975; Ishibashi, 1981). Recently, Sagiya (2007) and Kumagai *et al*. (2009) proposed the model which suggested a buried branching fault in the southern part of the Tokai region in addition to the main fault along the plate boundary, because the existence of such fault can better explain the observed geodetic and geological data. But the clear geographical evidence has not been found yet. So we decided to conduct a MT survey to investigate the resistivity structure in the southern part of the Tokai region (Kakegawa city). In this region, since the commercial electrical noise is expected to contaminate the observed electromagnetic signals, we planned the observation for longer period relative to usual observation. For conducting such longer period's observation, we developed a new measurement system using general commercial data loggers. We have conducted a preliminary test observation using this system. Although the new system needs less electric power and enables a long term observation, its sampling frequency is restricted to 200 Hz at most. So, we conducted the short term observation to obtain the data with higher frequencies before the main observation. We located ten observational sites on a line in the direction of N33^{o}W with the length of 20 km approximately. The observation line is perpendicular to the strike of the buried fault estimated by Kumagai *et al*. (2009). Although we successfully obtained the data with the frequency from 10^{-3} to 10^2 Hz, the data with the lower frequency are contaminated by the artificial noise at some sites. So, we processed the observed MT data with the remote reference technique, which resulted in great improvement of data quality. The apparent resistivity with the higher frequency is low and is approximately equal to 10 ohm-m at all sites. It might be derived from the sedimentary layers. The apparent resistivities with the lower frequency tend to increase in the northern sites and they attain to 1 k ohm-m. We will obtain more precise data with lower frequency by conducting long term observation for a few years and estimate the resistivity structure in this region.

Ando, M., Tectonophys. 27, 119-140, 1975.
Ishibashi, K., Earthq. Pred., Ewing Ser. 4, 297-232, 1981.
Kumagai, H., O. Fujiwara, K. Stake, and T. Sagiya, Japan Geoscience Union Meeting, T225-P005, 2009.
Sagiya, T., Japan Geoscience Union Meeting, S151-006, 2007.

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