

## Broad-band telluric and magnetotelluric measurements in Oita prefecture, Kyushu, Japan

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Recent development of 3-D magnetotelluric (MT) inversion codes (e.g., Siripunvaraporn et al., 2009; Kelbert et al., 2014) allows us to deduce the 3-D resistivity structure. However, it is still hard to obtain MT data at many sites. In particular, measurements of broad-band MT data is not easy to be conducted; because the apparatus is expensive, heavy, and has high electric power consumption (12~18W). These factors sometimes hamper to obtain large MT dataset, though a sufficient number of sites are crucial for a reliable 3-D resistivity structure.

For MT impedance calculations, it is not necessary to record the magnetic field in all sites. Alternatively, the MT impedance can also be calculated by using the magnetic field of other sites. Indeed, such kind of impedances has been used to deduce the high-resolution resistivity structure (e.g., Unsworth et al., 1997). In an extreme case, it is possible to deduce the 3-D resistivity structure with single magnetic field site (e.g., Hata et al., 2015). Considering that omitting of magnetic field measurements leads to reduce the effort in the field, we developed a new telluric measurement apparatus with low power consumption (1.8W). In the presentation, we will show the result of the field test that is performed by using the new telluric apparatus and the MT apparatus. The broad-band (200~0.001 Hz) MT impedances obtained in the Oita prefecture, Kyushu, Japan, will also be shown.