

## Field experiment of the CCR survey using cylinder electrodes

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CCR survey is effective method to investigate long survey line or wide survey area because of the capability of the resistivity measurements without putting iron electrode stakes. One of the CCR survey systems (OhmMapper; Yamashita et al., 2004) uses the dipole cable for the capacitive coupled electrodes with dipole-dipole array configuration. The dipole size and separation distances are determined by the length of the dipole cable and the distances between the transmitter and the receivers, and the apparent resistivity and the apparent depth are calculated by the same equation as usual ERT. For instance, when we use the 2.5 m dipole cable and the shortest separation from the transmitter to the receiver is 2.5m, the apparent depth is 1.875m. There are no data points shallower than 1.875m in the pseudo resistivity section, so the inverted resistivity model from such dataset has less accuracy and resolution in the shallower depth. Therefore, we developed the cylinder type capacitive coupled electrodes, which correspond to 0.5 m dipole, for the applications of shallow subsurface. We conducted the field experiment using the cylinder electrodes. As a comparison, we measured the resistance for the dipole-dipole array configuration with 0.5 m dipole size using normal iron electrodes. The observed resistance using the cylinder electrodes decreased with increasing the distance, and it was comparable to the 0.5 m dipole-dipole array measurement. Also, we found that the resolution was improved by adding the cylinder electrode data to the conventional OhmMapper data, particularly in the shallower depth.

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