

## **GROUNDING ELECTRICAL SOURCE AIRBORNE TRANSIENT EM (GREATEM) RESPONSE FOR 3D STRUCTURE**

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Airborne electromagnetics (AEM) is a useful tool for investigating subsurface structures because it can survey large and inaccessible areas. Disadvantages include lower accuracy and limited depth of investigation. The Grounded Electrical Source Airborne Transient Electromagnetic (GREATEM) survey system was developed to increase the depth of investigation possible using AEM. The method was tested in some volcanoes at 2004-2005. Survey results were verified by comparing the GREATEM data with other geophysical surveys and LOTEM data for the same location based on the transient response and resistivity structure. The resistivity structures obtained from both systems were almost identical.

GREATEM responses for 3D structures such as complicated subsurface and topographic effect are essential problem to apply it to survey in active tectonic area and volcano. Anomalous responses due to 3D structures are a potential cause of data distortion. Some researchers addressed this problem in the context of DIGHEM-type AEM, based on three-dimensional modeling. Their results showed that larger distortion appears at boundaries. In case of topographic effect, magnetic field responses decrease at the top of a trapezoidal hill and increase at its foot. The other hand, 3D effects in LOTEM data, obtained by three-dimensional modeling, such as effect of shallower complicated anomalous structure or topography are only significant at very early times, when it is manifest as a modification of the undistorted curve that nonetheless preserves its primary characteristics.

We investigated the 3D structure effect on GREATEM data using a three dimensional modeling method. The effects are almost similar to that for LOTEM.

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