

Influence of statics shift in 3D magnetotelluric inversion

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Recent years, three-dimensional magnetotelluric(MT) inversions are widely used for geophysical investigation. These techniques have been reveal conductivity structure reasonably well, in case of simple structures. Compered with two-dimensional MT inversions, three-dimensional MT inversions can recover more realistic and clear conductivity structure, in the complicated geological settings.

However, the three-dimensional MT inversions have been applied to observed data recently. So many refinement should not been considered. An effect of local conductivity anomalies around observation points to a three-dimensional MT inversion is one of the major problems. This research reveals so-called "static effects" to three-dimensional MT inversion. The static shift is an example that local anomalies distort amplitudes of electric field and effect on MT response functions.

In order to improve results of three-dimensional MT inversion with static effects, we developed a three-dimensional MT inversion code in which static shift is adjusted local surface anomalies on the top layer of the model. This research shows static shift makes distortion in the result of former three-dimensional MT inversion code, and new code can reduce the distortion on an inversion result by static shift. But, in order to improve the result of three-dimensional MT inversion, we must develop the technique to correct the static shift based on the new code . In this research we modified WSINV3DMT(W. Siripunvaraporn et al, 2005) for a three-dimensional MT inversion code.