

## **2-D CSAMT FORWARD RESEARCH**

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Most CSAMT data uses one dimension inversion method to process, that is to say, we supposed that geoelectric structure is horizontal layer under earth, which will cause some wrong results for structures are various, they may be two or three dimensions. In order to simulate controlled signal sources 3D features reasonably, we should use 3D methods. In some cases, geoelectric structures vary very small along strike direction, only alter along trend. These structures are 2D, but manpower is 3D. Therefore, CSAMT data can use 2.5D method to simulate. In this paper, we introduce a 2.5D finite element forward model method for CSAMT data, which based on the Maxwell's equations. The main principle is that change geoelectric parameters varied small strike direction to wave-number domain with Fourier transform, and use a series of wave numbers simulate 2D their electromagnetic field features. And using horizontal homogeneous three layers geoelectric structure showed 2.5D numerical simulation trait, which compared with 1D simulation results, we testified 2.5D finite element numerical simulation is reliable. At the same time, we simulated a known geoelectric structure model with 2.5D and computed its EM field values, apparent resistivity and impedance phasees. These results show that 2.5D numerical simulation is true. And it lays the foundation for 2.5D inversion.

2.5 dimension, CSAMT, finite element method

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