

“Forward and inverse integral equation methods in two-and-half dimension for geophysical electromagnetic problems”

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Abstract – We discuss a two-and-half dimensional forward algorithm for modelling low-frequency electromagnetic scattering problems, based on a domain integral equation approach. A standard Conjugate Gradient method is employed. This algorithm is the basis for solving the inverse problem employing the so-called Multiplicative Regularized Contrast Source Inversion method. The method is intended to be used for interpretation of largescale electromagnetic geophysical data. Some results of inverting low-frequency electromagnetic data for single- and crosswell data configurations are presented. Further, the advantage of invoking reciprocity and combining single-well and cross-well data are discussed.