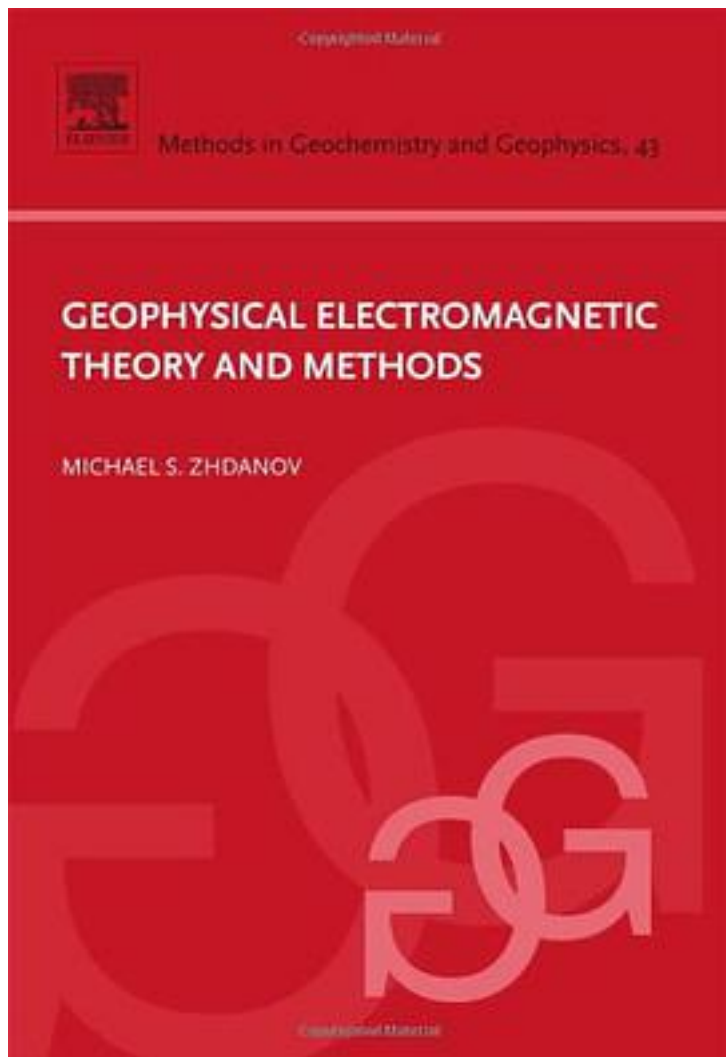


# Geophysical Electromagnetic Theory and Methods, Volume 43



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In this book the author presents the state-of-the-art electromagnetic (EM) theories and methods employed in EM geophysical exploration.

The book brings together the fundamental theory of EM fields and the practical aspects of EM exploration for mineral and energy resources.

This text is unique in its breadth and completeness in providing an overview of EM geophysical exploration technology.

The book is divided into four parts covering the foundations of EM field theory and its applications, and emerging geophysical methods.

Part I is an introduction to the field theory required for baseline understanding.

Part II is an overview of all the basic elements of geophysical EM theory, from Maxwell's fundamental equations to modern methods of modeling the EM field in complex 3-D geoelectrical formations.

Part III deals with the regularized solution of ill-posed inverse electromagnetic problems, the multidimensional migration and imaging of electromagnetic data, and general interpretation techniques.

Part IV describes major geophysical electromagnetic methods-direct current (DC), induced polarization (IP), magnetotelluric

(MT), and controlled-source electromagnetic (CSEM) methods-and covers different applications of EM methods in exploration geophysics, including minerals and HC exploration, environmental study, and crustal study.

\* Presents theoretical and methodological findings, as well as examples of applications of recently developed algorithms and software in solving practical problems

\* Describes the practical importance of electromagnetic data through enabling discussions on a construction of a closed technological cycle, processing, analysis and three-dimensional interpretation

\* Updates current findings in the field, especially with MT, magnetovariational and seismo-electric methods and the practice of 3D interpretations

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