



Numerical Methods of Geophysical Fields Inversion

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Deadline for manuscript
submissions:

closed (16 November 2018)

Message from the Guest Editor

Dear Colleagues,

The overwhelming volume of modern knowledge regarding the Earth's interior became available due to the results of geophysical observations, on or near the surface. Inversion of geophysical fields within the framework of the corresponding mathematical model provides the most complete knowledge about subsurface distributions of desired parameters. However, it is necessary to stress, that we could never describe a real geological medium using such an abstract object as a system of partial differential equations. Hence, the proper mathematical model is necessary in providing reliable results of geophysical inversion. It is worth mentioning that the emergence and development of such a direction of modern mathematics as inverse and ill-posed problems originates in geophysics. The key position in modern theory and numerical methods of inverse and ill-posed problems takes nonlinear least squares and various regularization techniques. It is these two components form the basis of modern methods of geophysical fields inversion which is dedicated to this issue.





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Message from the Editor-in-Chief

Understanding the Earth's origin and its bio-geological evolution, the multiple implications of the geosciences (as a coherent set of interconnected disciplines), and the sociocultural and ethical interdisciplinary approaches, will be crucial for a better understanding of Nature, and also for undertaking scientifically based political decisions.

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Journal Rank: CiteScore - Q1 (*General Earth and Planetary Sciences*)

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