Special Issue

Geophysical Inversion

Message from the Guest Editors

Geophysical inverse problems are ubiquitous in many areas of geoscience, including geophysical imaging, exploration, and monitoring. Solving these inverse problems is often challenging because the unknown Earth parameters of interest are highly dimensional, and their observations are indirect and corrupted by noise, while the creation of parameter-to-observable maps are computationally expensive and suffer from non-trivial null-spaces. To this end, robust and uncertainty-aware inversion becomes important in real-world applications to extract the full value from such observations. This Special Issue welcomes:

- Innovations in modeling, simulation, and optimization via computational algorithms;
- Case histories highlighting challenges and solutions in geophysical applications;
- Novel inversion methods based on scientific machine learning and generative artificial intelligence;
- Low-cost and scalable uncertainty quantification and Bayesian inference techniques;
- Applications for energy transitions, such as geological carbon/hydrogen storage and geothermal exploration.

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Understanding the Earth's origin and its bio-geological evolution, the multiple implications of the geosciences (as a coherentset of interconnected disciplines), and the sociocultural and ethical interdisciplinary approaches, will be crucial for a better understanding of Nature, and also for undertaking scientificallybased political decisions.
We are committed to drive *Geosciences* to a position in which it is recognized for its high-quality, cutting-edge research and scientific influence, and strongly encourage and invite your participation and manuscripts.

Editor-in-Chief

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