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Restrictions on spatiotemporal geometry imposed by field measurements and natural media; Restrictions on spatiotemporal geometry imposed by physical laws; The Complementarity Idea; Putting Things Together: The Spatiotemporal Random Field Concept; Correlation analysis and spatiotemporal geometry
Permissibility criteria and spatiotemporal geometryEffect of spatiotemporal geometry on mapping; Some Final Thoughts; 2. Spatiotemporal Geometry; From the General to the Specific; The General Knowledge Base; A mathematical formulation of the general knowledge base; General knowledge in terms of statistical moments; General knowledge in terms of physical laws; Some other forms of general knowledge; The Specificatory Knowledge Base; Specificatory knowledge in terms of hard data; Specificatory knowledge in terms of soft data; Summa Theologica; 3. Physical Knowledge
Acquisition and Processing of Physical KnowledgeEpistemic Geostatistics and the BME Analysis; Prior stage; Meta-prior stage; Integration or posterior stage; Conditional Probability of a Spatiotemporal Map and its Relation to the Probability of Conditionals; Material and strict map conditionals; Other map conditionals; The BME Net; 4. The Epistemic Paradigm; A Pragmatic Framework of the Mapping Problem; The Prior Stage; Map information measures in light of general knowledge; General knowledge-based map pdf
General knowledge in the form of random field statistics (including multiple-point statistics)General knowledge in the form of physical laws; Possible modifications and generalizations of the prior stage; The Meta-Prior Stage; The Integration or Posterior Stage; The Structure of the Modern Spatiotemporal Geostatistics Paradigm; The Two Legs on Which the BME Equations Stand; 5. Mathematical Formulation of the BME Method; Specificatory Knowledge and Single-Point Mapping; Posterior Operators for Interval and Probabilistic Soft Data; Posterior Operators for Other Forms of Soft Data; Discussion
6. Analytical Expressions of the Posterior Operator

Sommario/riassunto

This scholarly introductory treatment explores the fundamentals of modern geostatistics, viewing them as the product of the advancement of the epistemic status of stochastic data analysis. The book's main focus is the Bayesian maximum entropy approach for studying spatiotemporal distributions of natural variables, an approach that offers readers a deeper understanding of the role of geostatistics in improved mathematical models of scientific mapping. Starting with a overview of the uses of spatiotemporal mapping in the natural sciences, the text explores spatiotemporal geometry, the epistemic