Contents

Part I Theory

Sequential Simulation with Iterative Methods ........................................... 3
Daisy Arroyo, Xavier Emery, and María Peláez

Applications of Randomized Methods for Decomposing and Simulating
from Large Covariance Matrices ................................................................. 15
Vahid Dehdari and Clayton V. Deutsch

Event-Based Geostatistical Modeling: Description and Applications ........... 27
Michael J. Pyrcz, Timothy McHargue, Julian Clark, Morgan Sullivan,
and Sebastien Strebelle

A Plurigaussian Model for Simulating Regionalized Compositions .............. 39
Xavier Emery and Ignacio Gálvez

New Flexible Non-parametric Data Transformation for Trans-Gaussian
Kriging .................................................................................................................. 51
Alexander Gribov and Konstantin Krivoruchko

Revisiting the Linear Model of Coregionalization ........................................... 67
Denis Marcotte

Modeling Nonlinear Beta Probability Fields ............................................... 79
K. Daniel Khan and J.A. Vargas-Guzman

Approximations of High-Order Spatial Statistics Through Decomposition 91
Ryan Goodfellow, Hussein Mustapha, and Roussos Dimitrakopoulos

Multiple-Point Geostatistical Simulation Based on Genetic Algorithms
Implemented in a Shared-Memory Supercomputer ........................................ 103
Oscar Peredo and Julián M. Ortiz

The Edge Effect in Geostatistical Simulations .............................................. 115
Chaoshui Xu and Peter A. Dowd
Extensions of the Parametric Inference of Spatial Covariances by Maximum Likelihood .......................... 129
Peter A. Dowd and Eulogio Pardo-Igúzquiza

Part II Petroleum

Constraining a Heavy Oil Reservoir to Temperature and Time Lapse Seismic Data Using the EnKF .............................. 145
Yevgeniy Zagayevskiy, Amir H. Hosseini, and Clayton V. Deutsch

Micro-modeling for Enhanced Small Scale Porosity-Permeability Relationships ............................... 159
Jeff B. Boisvert, John G. Manchuk, Chad Neufeld, Eric B. Niven, and Clayton V. Deutsch

Applications of Data Coherency for Data Analysis and Geological Zonation .................................. 173
John G. Manchuk and Clayton V. Deutsch

Multiscale Modeling of Fracture Network in a Carbonate Reservoir ............................................ 185
Sanjay Srinivasan and Ankesh Anupam

Uncertainty Quantification and Feedback Control Using a Model Selection Approach Applied to a Polymer Flooding Process ........................... 197
Sanjay Srinivasan and Cesar Mantilla

Efficient Conditional Simulation of Spatial Patterns Using a Pattern-Growth Algorithm ........................... 209
Yu-Chun Huang and Sanjay Srinivasan

Multiple-Point Statistics in a Non-gridded Domain: Application to Karst/Fracture Network Modeling ................................. 221
Selin Erzeybek, Sanjay Srinivasan, and Xavier Janson

Sequential Simulations of Mixed Discrete-Continuous Properties: Sequential Gaussian Mixture Simulation ............................................. 239
Dario Grana, Tapan Mukerji, Laura Dovera, and Ernesto Della Rossa

Accounting for Seismic Trends in Stochastic Well Correlation ................................. 251
Charline Julio, Florent Lallier, and Guillaume Caumon

Some Newer Algorithms in Joint Categorical and Continuous Inversion Problems Around Seismic Data ................................. 263
James Gunning and Michel Kemper

Non-random Discrete Fracture Network Modeling ................................. 275
Eric B. Niven and Clayton V. Deutsch
Part III  Mining

Kriging and Simulation in Presence of Stationary Domains:
  Developments in Boundary Modeling ........................................ 289
  Brandon J. Wilde and Clayton V. Deutsch

Assessing Uncertainty in Recovery Functions: A Practical Approach .... 301
  Oscar Rondon

Comparative Study of Localized Block Simulations and Localized
  Uniform Conditioning in the Multivariate Case .......................... 309
  Jacques Deraisme and Winfred Assibey-Bonsu

Application of Stochastic Simulations and Quantifying Uncertainties in
  the Drilling of Roll Front Uranium Deposits ............................. 321
  Gwenaëlle Petit, Hélène De Boissezon, Valérie Langlais,
  Gabrielle Rumbach, Askar Khairuldin, Thomas Oppeneau, and
  Nicolas Fiet

Multivariate Estimation Using Log Ratios: A Worked Alternative .......... 333
  Clint Ward and Ute Mueller

Measuring the Impact of the Change of Support and Information Effect
  at Olympic Dam ........................................................................ 345
  Colin Badenhorst and Mario Rossi

Comparative Study of Two Gaussian Simulation Algorithms,
  Boddington Gold Deposit ....................................................... 359
  Michael Humphreys and Georges Verly

Non-multi-Gaussian Multivariate Simulations with Guaranteed
  Reproduction of Inter-Variable Correlations ............................... 371
  Alastair Cornah and John Vann

Field Parametric Geostatistics—A Rigorous Theory to Solve Problems
  of Highly Skewed Distributions ................................................ 383
  Rochana S. Machado, Miguel Armony, and
  João Felipe Coimbra Leite Costa

Multiple-Point Geostatistics for Modeling Lithological Domains at a
  Brazilian Iron Ore Deposit Using the Single Normal Equations
  Simulation Algorithm .............................................................. 397
  Hélder Abel Pasti, João Felipe Coimbra Leite Costa, and
  Alexandre Boucher

Practical Implementation of Non-linear Transforms for Modeling
  Geometallurgical Variables ..................................................... 409
  Ryan M. Barnett and Clayton V. Deutsch
Combined Use of Lithological and Grade Simulations for Risk Analysis in Iron Ore, Brazil ............................................................ 423
Debora Roldão, Diniz Ribeiro, Evandro Cunha, Ricardo Noronha, Amanda Madsen, and Lilian Masetti

The Use of Geostatistical Simulation to Optimize the Homogenization and Blending Strategies ........................................... 435
Diego Machado Marques and João Felipe Coimbra Leite Costa

Plurigaussian Simulations Used to Analyze the Uncertainty in Resources Estimation from a Lateritic Nickel Deposit ................................ 445
Diego Machado Marques, Edgar Mario Müller, and João Felipe Coimbra Leite Costa

Domaining by Clustering Multivariate Geostatistical Data .................. 455
Thomas Romary, Jacques Rivoirard, Jacques Deraisme, Cristian Quinones, and Xavier Freulon

The Influence of Geostatistical Techniques on Geological Uncertainty ................................................................. 467
Joanna K. Marshall and Hylke J. Glass

Part IV Environmental, Climate and Hydrology

A Study on How Top-Surface Morphology Influences the Storage Capacity of CO₂ in Saline Aquifers ........................................... 481
Anne Randi Syversveen, Halvor Møll Nilsen, Knut-Andreas Lie, Jan Tveranger, and Petter Abrahamsen

Modeling and Analysis of Daily Rainfall Data ........................................ 493
Bjørn H. Auestad, Andreas Henriksen, and Hans A. Karlsen

A Stochastic Model in Space and Time for Monthly Maximum Significant Wave Height ....................................................... 505
Erik Vanem, Arne Bang Huseby, and Bent Natvig

Interpolation of Concentration Measurements by Kriging Using Flow Coordinates ........................................................... 519
Martine Rivest, Denis Marcotte, and Philippe Pasquier

A Comparison of Methods for Solving the Sensor Location Problem ....... 531
Rodolfo García-Flores, Peter Toscas, Dae-Jin Lee, Olena Gavriliouk, and Geoff Robinson

Comparing Geostatistical Models for River Networks .......................... 543
Gregor Laaha, Jon Olav Skoien, and Günter Blöschl

Author Index .................................................................................. 555
Subject Index .................................................................................. 557
Geostatistics Oslo 2012
Abrahamsen, P.; Hauge, R.; Kolbjørnsen, O. (Eds.)
2012, XIV, 559 p., Hardcover
ISBN: 978-94-007-4152-2