Plurigaussian Simulations in Geosciences

Simulation is the fastest developing branch of geostatistics and simulating facies inside reservoirs and orebodies is the most exciting part of this. Several methods have been developed to do this (sequential indicator simulations, Boolean simulations, Markov chains and plurigaussian simulations). This book focuses on the last type of simulations. It presents the theory required to understand the method, along practical examples of applications in mining and the oil industry as well as tutorial exercises. An accompanying CD features demonstration software to illustrate how these simulations work. Since the publication of the first edition, enormous numbers of papers have appeared in the literature on the subject. Plurigaussian simulations are now the preferred method for simulating facies in both mining & the oil industry. The new edition contains new case studies in both mining petroleum, together with an extensively updated theory section.

Features

- Plurigaussian simulations, now the preferred method for simulating facies, are presented here with new case studies for both the mining & petroleum industries
- Long awaited 2nd edition contains many updates in particular in the theory section
- A must for geostatistics practitioners and simulation novices alike

Contents

Introduction - Basic properties of indicators - Proportions - Thresholds - Variograms - Gibbs sampler - Case study - Freeware - References - Index.

Fields of interest

Mathematical Applications in Earth Sciences; Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences

Target groups

Professional/practitioner

Type of publication

Monograph

Due July 2011

Only available in print

Distribution rights in China: Science Press Ltd.

Y. Chen, China Earthquake Administration, Beijing, China; D. C. Booth, British Geological Survey, Edinburgh, UK

The Wenchuan Earthquake of 2008

Anatomy of a Disaster

“The Wenchuan Earthquake of 2008: Anatomy of a Disaster” gives a detailed account of the damage, seismology and tectonics of the event and discusses earthquake prediction, seismic hazard and risk management, the creation and implementation of building codes, and new practices used in rescue, relief and reconstruction. It will be of significant interest to researchers and practitioners engaged in seismology, geophysics, engineering, the social sciences, and disaster management and recovery. It also offers a valuable new and uniquely Chinese perspective with many insights for future mitigation of earthquake risk. Professor Yong Chen works for the China Earthquake Administration; Dr David C. Booth works for the British Geological Survey.

Features

- The first study include all aspects of the disaster, details of rescue and recovery operations in seismological and engineering aspects
- The most recent objective view of Chinese earthquake prediction emanate from the China Earthquake Administration
- The first exposition of the lessons learned from the earthquake by Chinese seismologists, engineers and administrators

Contents

Wenchuan earthquake - Wenchuan earthquake: Seismological features - Prediction efforts prior to Wenchuan earthquake - Seismic Hazard Assessment - Emergency response and rescue - Reconstruction of Wenchuan.

Fields of interest

Natural Hazards; Geotechnical Engineering; Structural Foundations, Hydraulic Engineering

Target groups

Research

Type of publication

Monograph

Due June 2011

2nd Ed. 2011. 280 p. 170 illus., 140 in color. Hardcover

- approx. € 99,95 | £90.00
- approx. * € (D) 106,95 | € (A) 109,95 | sFr 143,50
ISBN 978-3-642-17699-9

G. Gramelsberger, Free University Berlin, Germany; J. Feichter, Max Planck Institute for Meteorology, Hamburg, Germany (Eds.)

Climate Change and Policy

The Calculability of Climate Change and the Challenge of Uncertainty

The debate on how mankind should respond to climate change is diverse, as the appropriate strategy depends on global as well as local circumstances. As scientists are denied the possibility of conducting experiments with the real climate, only climate models can give insights into man-induced climate change, by experimenting with digital climates under varying conditions and by extrapolating past and future states into the future. But the ‘nature’ of models is a purely representational one. A model is good if it is believed to represent the relevant processes of a natural system well. However, a model and its results, in particular in the case of climate models which interconnect countless hypotheses, is only to some extent testable, although an advanced infrastructure of evaluation strategies has been developed involving strategies of model intercomparison, ensemble prognoses, uncertainty metrics on the system and component levels.

Features

- Discussion of most important topic in current climate research
- Bridges the gap between climate modellers and policy-/decision makers
- Calculability of uncertainty and its influence on society

Contents

1 Introduction to the Volume - 2 Modelling the Climate System – An Overview - 3 Climate Simulation, Uncertainty, and Policy Advice - The Case of the IPCC - 4 Dealing with Uncertainty – From climate research to integrated assessment of policy options - 5 Uncertainty in Climate Policy – Impacts on Market Mechanisms - 6 Insuring climate change – Managing political and economic uncertainties in flood management.

Fields of interest

Meteorology/Climatology; Political Science; Climate Change

Target groups

Research

Type of publication

Monograph

Available


- € 99,95 | £90.00
- * € (D) 106,95 | € (A) 109,95 | sFr 143,50
ISBN 978-3-642-21158-4
Long-range Transport of Man-made Contamination into the Arctic and Antarctica

The first volume of the series focuses on the history of the IPYs (International Polar Years). Achieving the central and original IPY idea, that it requires international coordination and collaboration among many national and institutional partners to realize an improved and renewed understanding of polar regions, has required differing strategies and tactics according to the political, economic, technical and scientific conditions and expectations extant at the time of each IPY. The history recounted here shows clearly the urgency of this IPY, the necessity of including biological and social sciences, and the key role of outreach, features to be well represented by the contents of subsequent volumes and by the series itself.

Features
- Presents the history of the first three International Polar Years (IPYs)
- Gives an overview of the 4th Polar Year
- Provides new evaluations of the Polar Years from the view of the 21st century

Contents

Fields of interest
Geophysics/Geodesy; Geochemistry; Ecotoxicology

Target groups
Research

Type of publication
Monograph

Due May 2011

2011. Approx. 250 p. (From Pole to Pole) Hardcover
- € 99.95 | £90.00
- * € (D) 106,95 | € (A) 109,95 | sFr 143,50
ISBN 978-3-642-17211-4

Geo-information
Technologies, Applications and the Environment

Geomatics, the handling and processing of information and data about the Earth, is one geoscience discipline that has seen major changes in the last decade, as mapping and observation systems become ever more sensitive and sophisticated. This book is a unique and in-depth survey of the field, which has a central role to play in tackling a host of environmental issues faced by Man. Covering all three strands of geomatics – applications, information technology and surveying – the chapters cover the history and background of the subject, the technology employed both to collect and disseminate data, and the varied applications to which geomatics can be put, including urban planning, assessment of biodiversity, disaster management and land administration.

Features
- Comprehensive overview of the entire geomatics discipline, suited not only for professionals but also for knowledgeable individuals
- The theory is supported by a lot of facts, examples, vision and opinions
- Discussion of societal consequences of using geo-informatics technology in developing countries

From the contents

Fields of interest
Geophysics/Geodesy; Remote Sensing/Photogrammetry; Environmental Analysis

Target groups
Professional/practitioner

Type of publication
Monograph

Due August 2011

- € 99,95 | £90.00
- * € (D) 106,95 | € (A) 109,95 | sFr 143,50
ISBN 978-94-007-1666-7

Forest Hydrology and Biogeochemistry
Synthesis of Past Research and Future Directions

Forest Hydrology and Biogeochemistry: Synthesis of Past Research and Future Directions is an advanced text and reference work for advanced undergraduates, graduate students, and researchers in the fields of hydrology, biogeosciences, ecology, plant science, forestry, boundary-layer meteorology, and geography. The book aims to advance forest hydrology and biogeochemistry by providing cogent and critical syntheses of past research and charting future research directions. This book will be of great value to researchers and practitioners as it provides a concise assessment of current knowledge and identifies areas in need of further research in a single comprehensive source.

Features
- Comprehensive and critical review of the past and recent research identification of knowledge gaps and recommendations of areas in need of further research
- Promotion of novel instrumentation and techniques to advance research
- A valuable reference tool for forest hydrologists and biogeochemists

From the contents

Fields of interest
Biogeosciences; Ecosystems; Physical Geography

Target groups
Research

Type of publication
Contributed volume

Due June 2011

2011. 600 p. 130 illus., 37 in color. (Ecological Studies, Volume 216) Hardcover
- € 169,95 | £153.00
- * € (D) 181,85 | € (A) 186,94 | sFr 244,00
ISBN 978-3-642-17326-7

R. Kallenborn, Norwegian Institute for Air Research, Norway (Ed.)

M. Lemmens, Delft University of Technology, The Netherlands

D. F. Levia, University of Delaware, Newark, DE, USA; D. Carlyle-Moses, Thompson Rivers University, Kamloops, BC, Canada; T. Tanaka, University of Tsukuba, Ibaraki, Japan (Eds.)
**History of Cartography**

This volume deals with cartography in the 19th and 20th centuries, a period in the history of cartography on which very little has been published. The ICA Commission on Maps and Society participated as its field of study often overlaps with that of the ICA Commission on the History of Cartography. The USGS which is the official USA mapping organisation, was invited to emphasise that the ICA Commission on the History of Cartography is not only interested in historical maps, but also has as mandate the research and document the history of Geographical Information Science.

**Fields of interest**

Geographical Information Systems/Cartography

**Target groups**

Research

**Type of publication**

Monograph

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**Inside Risk: A Strategy for Sustainable Risk Mitigation**

This book comprises the main results of the Scenario (Support on Common European Strategy for sustainable natural and induced technological hazards mitigation) project, funded as a Specific Support Action under the VI FP. This book addresses three main needs: first, it constitutes an assessment of the situation of Europe as far as natural na-tech risks are considered; second, it suggests future research themes to be opened of widened so as to tackle new and emerging threats as well as changes in the potential response to risk governance, in order to improve the way scientific and technical expertise informs decision making regarding all fields of mitigation, ranging from structural to non structural measures, such as planning, education and land use planning.

**Contents**

Introduction to Sustainable Risk Mitigation for a More Resilient Europe. - Europe at Risk (Following EU Funded Research on Hazar and Risks). - Impact and Losses of Natural and Na-Tech Disasters in Europe. - Current Mitigation Practices in the EU. - Risk Futures in Europe. - From Global to Local and from Local to Global: Examples of Event Scenarios in Europe.

**Fields of interest**

Environmental Analysis; Optics, Optoelectronics, Plasmonics and Optical Devices

**Type of publication**

Proceedings

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**Due June 2011**


- € 199,95 | £180.00
- * € (D) 213,95 | € (A) 219,94 | sFr 287,00
  ISBN 978-94-007-1638-4

Also available as Softcover

- € 99,95 | £90.00
- * € (D) 106,95 | € (A) 109,95 | sFr 143,50
  ISBN 978-94-007-1639-1

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**Due May 2011**

2011. X. 190 p. 35 illus. in color. Softcover

- € 39,95 | £35.99
- * € (D) 42,75 | € (A) 43,95 | sFr 57,50
  ISBN 978-94-88470-18-1.1

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**Due August 2011**


- approx. € 99,95 | £90.00
- * approx. * € (D) 106,95 | € (A) 109,95 | sFr 143,50
  ISBN 978-3-642-19087-2

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**Polarimetric Detection, Characterization, and Remote Sensing**

Proceedings of the NATO Advanced Study Institute on Special Detection Technique (Polarimetry) and Remote Sensing Yalta, Ukraine, 20 September –1 October 2010

As the need for accurate and non-invasive optical characterization and diagnostic techniques is rapidly increasing, it is imperative to find improved ways of extracting the additional information contained within the measured parameters of the scattered light. This is the first specialized monograph on photopolarimetry, a rapidly developing, multidisciplinary topic with numerous military, ecological remote-sensing, astrophysical, biomedical, and technological applications.

**Fields of interest**

Remote Sensing/Photogrammetry; Monitoring/ Environmental Analysis; Optics, Optoelectronics, Plasmonics and Optical Devices

**Target groups**

Graduate

**Type of publication**

Proceedings

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**Land-Use and Land-Cover Changes**

Impact on Climate and Air Quality

Wildfires, changing glaciers, deforestation, open-pit mining, increasing demands for food and bio-fuel production and the growth of megacities change our landscape. The book comprehensively reviews the current knowledge on how natural and anthropogenic land-use/cover changes affect weather, air quality and climate worldwide and explains how these changes may trigger further land-use/cover changes. It discusses how anthropogenic land-use/cover changes have affected local and regional climate and air quality since the settlement of America and the industrialisation. It addresses the topic how long-range transport of pollutants and dust of devasted areas as well as telecommunications may cause changes far away from the areas where the land-use/cover changes occurred, for which land-use/cover change may become an international issue similar to CO2. It also discusses relations to global change and future societal and scientific challenges related to land-use/cover changes.

**Features**
- Discusses the impact of land-use/cover changes on the atmosphere, considering the water, energy and trace gas cycle
- Discusses the impact of land-use/cover changes on the atmosphere in various climate regions of the world including the polar regions
- Explores climate and air quality impacts of land-use/cover changes in relation to global change

**Contents**
1. Introduction.
2. Physical and chemical principles.
3. Impact of land-cover and land-cover changes.
4. Future challenges.
5. Conclusions.
- Appendix: List of abbreviations.
- Index.

**Fields of interest**
Meteorology/Climatology; Atmospheric Protection/Air Quality Control/Air Pollution; Physical Geography

**Target groups**
Research

**Type of publication**
Monograph

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**Integration of Satellite and Photo Geomorphology for Preliminary Terrain Evaluation**

L. Rivard, Saint-Lambert, Québec QC Canada

**Visual interpretation techniques**

The twin sets of Figures in the manual are to be presented as examples that demonstrate how the interfacing of stereo airphotos and satellite images in visual qualitative photogeomorphology studies can yield more geospatial information than can be derived from either source independently. The airphoto coverage in each satellite image will be indicated by a frame. The sets are preceded by some definition of the necessary background. They are ordered into ten sections according to the author’s taxonomic classification of genetic groups as used in his Atlas and Glossary of Geohazard-associated Geounits. The majority of airphotos are taken from those used in the Atlas, the satellite images have been down loaded from Google Earth without processing.

**Features**
- The only book dealing with the systematic integration of both airphotos and satellite images in geological terrain evaluation
- The only text that explains the combined method of visual, qualitative analysis and interpretation of photo and image data sets
- The only text to demonstrate with some 100 examples the application of the integration method
- The facing page viewing layout of the data sets is unique

**Fields of interest**
Earth Sciences, general; Physical Geography; Civil Engineering

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**Advances in Cartography and GIScience. Volume 1**

A. Ruas, Laboratoire COGIT-IGN, Saint Mandé, France (Ed.)

**Introduction**

This book is comprised of a selection of the best papers presented during the 25th International Cartography Conference which was held in Paris between 3rd and 8th July 2011. The scope of the conference covers all fields of relevant GIS and Mapping research subjects, such as geovisualization, semiotics, SDI, standards, data quality, data integration, generalization, use and user issues, spatio-temporal modelling and analysis, open source technologies and web services, digital representation of historical maps, history of GIS and cartography as well as cartography for school children and education.

**Features**
- Gives a comprehensive account of GIS and Mapping research.
- A selection of the best papers presented at the 25th International Cartography Conference.
- First volume of the new subseries of the International Cartographic Association.

**Contents**
- Map Design and Map Analysis.
- Use and User Issues.
- Historical Data.
- Map Projection.

**Fields of interest**
Geographical Information Systems/Cartography; Computer Applications in Earth Sciences

**Target groups**
Research

**Type of publication**
Monograph

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**Due September 2011**

2011. X, 200 p. 70 illus. (Atmospheric and Oceanographic Sciences Library, Volume 44) Hardcover
- approx. € 99,95 | £90.00
- *approx. *€ (D) 106,95 | € (A) 109,95 | sFr 143,50
ISBN 978-94-007-1526-4

**Due July 2011**

- approx. € 99,95 | £90.00
- *approx. *€ (D) 106,95 | € (A) 109,95 | sFr 143,50
ISBN 978-3-642-20607-8

**Due May 2011**

- € 169,95 | £153.00
- *€ (D) 181,85 | € (A) 186,94 | sFr 244,00
ISBN 978-3-642-19142-8
Active tectonics of the Hellenic subduction zone

This thesis is remarkable for the wide range of the techniques and observations used and for its insights, which cross several disciplines. It begins by solving a famous puzzle of the ancient world, which is what was responsible for the tsunami that destroyed settlements in the eastern Mediterranean in 365 AD. By radiocarbon dating of preserved marine organisms, Shaw demonstrates that the whole of western Crete was lifted out of the sea by up to 10 meters in a massive earthquake that, which occurred on a previously unknown fault. The author shows that the resulting tsunami would have the characteristics described by ancient writers, and uses modern GPS measurements and coastline geomorphology to show that the strain build-up near Crete requires such a tsunami-earthquake about every 6,000 years - a major insight into Mediterranean tsunami hazard. A detailed seismological study of earthquakes in the Cretan arc over the last 50 years reveals other important features of its behaviour that were previously unknown. Finally, she provides fundamental insights into the limitations of radiocarbon dating marine organisms, relating to how they secrete carbon into their skeletons. The thesis resulted in three major papers in top journals.

Features
- Nominated by University of Cambridge for a Springer Theses Prize
- The work solves a famous puzzle of the ancient world, which is what was responsible for the tsunami that destroyed settlements in the eastern Mediterranean in 365 AD
- The thesis resulted in three major papers in top journals

From the contents

Fields of interest
Geology; Structural Geology; Natural Hazards

Target groups
Research

Type of publication
Monograph

Due June 2011
2011. 220 p. 257 illus., 60 in color. (Springer Theses) Hardcover
- € 99,95 | £90.00
- * € (D) 106,95 | £ (A) 109,95 | sFr 143,50
ISBN 978-3-642-20803-4

Geospatial Techniques in Urban Planning

This work presents cases studies of applications of Geotechnology such as Geography Information Systems, virtual reality and cellular automation and multi-agent systems in the field of urban planning and design. These are joint research presentations with students and colleagues from Kanazawa University. All these case studies are about application in Japanese or Chinese cities, which are on-field examples reflecting the enormous spread of geo-computation technology. Nevertheless, the concepts have wide applicability to other contexts. The works can be classified into three types of Geotechnological applications at different levels of urban spaces, which are relevant to different kinds of urban planning and development projects. The book is comprised of three parts: Part 1: Geosimulation and land use plan Part 2: Geo Visualization and urban design Part 3: Geography information system and planning support

Features
- First book of this kind
- Unique study for those new to urban planning
- Provides a comprehensive overview

Contents
Part 1: Geosimulation and land use plan.- Part 2: Geo Visualization and urban design.- Part 3: Geography information system and planning support.

Fields of interest
Geographical Information Systems/Cartography; Remote Sensing/Photogrammetry; Environmental Management

Target groups
Professional/practitioner

Type of publication
Monograph

Due September 2011
2011. X, 350 p. 100 illus. (Advances in Geographic Information Science) Hardcover
- € 129,95 | £117.00
- * € (D) 139,05 | £ (A) 142,94 | sFr 186,50
ISBN 978-3-642-19058-2

Modelling of Hydrological Processes in the Narew Catchment

Since climate and land use strongly affect the runoff pattern and intensity of solute export, it is likely that some observations and conclusions formulated on the basis of investigations carried out in forested catchment may not be fully adequate to describe controls on solute export from agricultural watersheds. The primary objective of the present research is to better understand the flow paths that affect the fluxes of dissolved compounds from a small agricultural catchment during snowmelt. This book focuses on spring snowmelt, because this is the dominant hydrological event in many moderate and high latitude catchments and, thus, is regarded as a prominent factor influencing the quality of surface waters.

Features
- Helps to better understand the flow paths that affect the fluxes of dissolved compounds from a small agricultural catchment during snowmelt
- Focuses on spring snowmelt which is the dominant hydrological event in many moderate and high latitude catchments
- Emphasizes the importance of hydrological events in effecting both the hydrological and chemical response of surface waters

Contents
Operational Rainfall/Snowmelt-runoff Model for Upper Narew River.- Multi-site Calibration and Validation of the Hydrological Component of SWAT in a large Lowland Catchment.- Automatic Calibration of the WetSpa Distributed Hydrological Model for small Lowland Catchments.- Modelling Hydrological Flow Paths during Snowmelt induced high flow event

Fields of interest
Hydrogeology; Soil Science & Conservation; Agriculture

Target groups
Research

Type of publication
Monograph

Due July 2011
- € 99,95 | £90.00
- * € (D) 106,95 | £ (A) 109,95 | sFr 143,50
ISBN 978-3-642-13558-3

Z. Shen, Kanazawa University, Kanazawa City, Japan

B. Shaw, University of Cambridge, Cambridge, UK

D. Światek, Warsaw University of Life Sciences, Warsaw, Poland; T. Okruszko, Warsaw University of Life Sciences, Warsaw, Poland (Eds.)