Economic Geology
The Origin and Mining of Ore Deposits

Economic Geology focuses not only on the nature and origin of ore deposits but also explores the economic issues that surround the exploitation of mineral resources. Topics of particular focus are the rate of exploitation of natural resources, the question of when or if these resources will be exhausted, the pollution and social disturbance that accompanies mining, the compromises and challenges that arise from the explosion of demand from China, India and other rapidly developing countries, and the moral issues that surround mining of metals in lesser developed countries for consumption in the “first-world” countries. With its dual character, the book is useful as an introductory text for students in earth sciences and a reference volume for students, teachers and researchers of geography, economics and social sciences.

Features
- Contains numerous case studies and worked examples
- First introductory book which deals extensively with the economic and social issues of mineral exploitation
- Numerous colour figures

Contents

Fields of interests
Economic Geology; Landscape/Regional and Urban Planning; Environmental Law/Policy; Econojustice

Target groups
Upper undergraduate

Product Category
Graduate/Advanced undergraduate textbook

Dynamic land use/cover change modelling

J. J. Arsanjani, University of Vienna, Austria

The thesis is an original and novel contribution to land use/land cover change analysis using methods of geosimulation and agent-based modeling. The author implements several traditional methodologies of land use change by means of remote sensing and GIS techniques. An Agent-Based Model was developed in order to simulate land use change in the Tehran metropolitan area, comparing the outcomes of each particular methodology. All methods are compared, and advantages and disadvantages discussed.

Features
- Nominated by University of Vienna for a Springer Theses Prize
- The author developed a new Agent-Based Model that simulates land use change in the Tehran metropolitan area
- Traditional and new methodologies for the remote sensing of land use/cover change are compared, and advantages and disadvantages discussed

Contents
General Introduction.- Literature Review.- Study Area Description.- Data Preparation and Processing.- Implementation of Traditional Techniques.- Designing and Implementing Multi Agent Geosimulation.- Analysis of Results.- Conclusions and Recommendations.

Fields of interests
Remote Sensing/Photogrammetry; Landscape/Regional and Urban Planning; Geographical Information Systems/Cartography

Target groups
Research

Product Category
Monograph

Eddy Covariance
A Practical Guide to Measurement and Data Analysis

This highly practical handbook is an exhaustive treatment of eddy covariance measurement that will be of keen interest to scientists who are not necessarily specialists in micrometeorology.

Features
- Reference book for dimensioning building and managing eddy covariance systems
- Reference book for setting up rational data treatment procedures
- Reference for students who want to study the bases of eddy covariance
- Rational and accessible to non-specialists in micrometeorology

Contents

Fields of interests
Meteorology/Climatology; Climate Change; Physical Geography

Target groups
Research

Product Category
Monograph

Due December 2011
2011. X, 158 p. 61 illus., 40 in color. Hardcover
► $79.95
ISBN 978-3-642-22995-4

Due October 2011
2011. XI, 162 p. 52 illus. (Springer Theses) Hardcover
► $129.00
ISBN 978-3-642-23704-1

Due November 2011
2012. X, 270 p. 90 illus., 40 in color. (Springer Atmospheric Sciences) Hardcover
► $129.00
ISBN 978-94-007-2350-4
SpringerBriefs in Earth System Sciences
K. Hamilton, G. Lohmann, L. A. Mysak

SpringerBriefs in Earth System Sciences present concise summaries of cutting-edge research and practical applications. The series focuses on interdisciplinary research linking the lithosphere, atmosphere, biosphere, cryosphere, and hydrosphere building the system earth. It publishes peer-reviewed monographs under the editorial supervision of an international advisory board with the aim to publish 8 to 12 weeks after acceptance. Featuring compact volumes of 50 to 125 pages (approx. 20,000–70,000 words), the series covers a range of content from professional to academic such as:

7 A timely reports of state-of-the-art analytical techniques
7 bridges between new research results
7 snapshots of hot and/or emerging topics
7 literature reviews
7 in-depth case studies

Briefs are published as part of Springer’s eBook collection, with millions of users worldwide. In addition, Briefs are available for individual print and electronic purchase. Briefs are characterized by fast, global electronic dissemination, standard publishing contracts, easy-to-use manuscript preparation and formatting guidelines, and expedited production schedules.

Both solicited and unsolicited manuscripts are considered for publication in this series.

L. Bonaventura, MOX-Politecnico di Milano, Italy; R. Redler, R. Budich, Max-Planck-Institut für Meteorologie, Hamburg, Germany

Earth System Modelling - Volume 2
Algorithms, Code Infrastructure and Optimisation

Collected articles in this series are dedicated to the development and use of software for earth system modelling and aims at bridging the gap between IT solutions and climate science. The particular topic covered in this volume addresses the historical development, state of the art and future perspectives of the mathematical techniques employed for numerical approximation of the equations describing atmospheric and oceanic motion. Furthermore, it describes the main computer science and software engineering strategies employed to turn these mathematical methods into effective tools for understanding earth’s climate and forecasting its evolution. These methods and the resulting computer algorithms lie at the core of earth system models and are essential for their effectiveness and predictive skill.

Fields of interests
Computer Applications in Earth Sciences; Mathematical Applications in Earth Sciences; Simulation and Modelling

Target groups
Research

Product Category

Due October 2011
► $49.95
ISBN 978-3-642-23830-7

R. Ford, The University of Manchester, UK; G. Riley, The University of Manchester, Manchester, United Kingdom; R. Budich, R. Redler, Max Planck Institut für Meteorologie, Hamburg, Germany

Earth System Modelling - Volume 5
Tools for Configuring, Building and Running Models

Collected articles in this series are dedicated to the development and use of software for earth system modelling and aims at bridging the gap between IT solutions and climate science. The particular topic covered in this volume addresses the process of configuring, building, and running earth system models. Earth system models are typically a collection of interacting computer codes (often called components) which together simulate the earth system.

Features
► The only book to detail the issues and supporting technologies for configuring, building and running earth system models
► Part of an integrated series of books which bridge the gap between IT solutions and climate science
► Provides an in-depth perspective on the overall process of working with Earth System Models as well as each of the steps involved

Contents

Fields of interests
Computer Applications in Earth Sciences; Mathematical Applications in Earth Sciences; Simulation and Modelling

Target groups
Research

Product Category

Due October 2011
2012. 70 p. 20 illus., 5 in color. (SpringerBriefs in Earth System Sciences, 1) Hardcover
► approx. $69.95
ISBN 978-3-642-23931-1
Effective Parameters of Hydrological Models

V. Gorokhovski, Environmental Protection Agency, Athens, GA, USA

Models of geological objects are tools for interpolation and extrapolation of available data in space and time continuously. Real structures of the objects are unknown, and their models and simulated results carry uncertainty which cannot be evaluated in a provable way. The real issue is obtaining effective predictions in a reasonably defined sense. This requires a knowledge of mechanisms that convert actual geological properties into effective model parameters. These mechanisms are introduced in the book.

Features
- Numerous step-by-step tutorials help the reader to learn quickly
- A special chapter on next generation
- Flash introduces the reader to future applications
- Includes ten tips on how to protect flash sites from hackers

Fields of interests
Hydrogeology; Mathematical Applications in Earth Sciences

Target groups
Research

Product Category
Monograph

Due November 2011
2011. XI, 161 p. 56 illus., 34 in color. (SpringerBriefs in Earth Sciences) Softcover
➤ $49.95
ISBN 978-3-642-23721-8

Precipitation Modeling and Quantitative Analysis

X. Li, National Oceanic and Atmospheric Research (NOAA), Camp Springs, MD, USA; S. Gao, Chinese Academy of Sciences, Beijing, China

The book examines surface rainfall processes through cloud-resolving modeling and quantitative analysis of surface rainfall budget and summarizes modeling and analysis results in recent seven years. The book shows validation of precipitation modeling against observations and derives a set of diagnostic precipitation equations.

Features
- Unique quantitative analysis of rainfall processes for operational forecasters to improve their rainfall predictions
- Step-by-step tutorials of rainfall analysis for graduate students
- A complete set of two-dimensional sensitivity experiments for the reference of development of three-dimensional model experiments

Fields of interests
Meteorology/Climatology; Natural Hazards; Simulation and Modeling

Target groups
Graduate

Product Category
Monograph

Due November 2011
2012. XIII, 310 p. 140 illus., 8 in color. (Springer Monographs in Earth Sciences) Hardcover
➤ $179.00
ISBN 978-94-007-2380-1

Russian Arctic Seas

N. Marchenko, University Centre in Svalbad, Longyearbyen, Norway

Navigational conditions and accidents

For safe operations in the Arctic, it is critical to understand the natural conditions and to learn from the experiences of ice pilots who have worked there. In the context of planning the PetroArctic project, accounts of seagoing activities in the Russian Arctic Seas that resulted in accidents have been gathered and are now made available in this bilingual (Russian-English) volume. Here especially, the physical environment and navigation issues for the Kara, Laptev, East Siberian and Chukchi seas are described. Fully half of the book describes accidents induced by heavy ice conditions since 1900; 94 accidents are carefully reported and classified.

Features
- Bilingual format enables readers to see the original names, current geographic names (also located on maps) and names of the ships to fully understand the accidents
- Supports learning of special vocabulary and expressions of Russian speakers
- Unique collection of archival materials about sea-ice navigation and accidents plus illustrations, eye-witness accounts, and original maps of accident sites
- First English-language descriptions of the Russian Arctic seas from navigational perspective

Fields of interests
Applied Earth Sciences; Physical Geography; Monitoring/Environmental Analysis

Target groups
Research

Product Category
Monograph

Due December 2011
2012. VIII, 280 p. 111 illus. Hardcover
➤ $129.00
ISBN 978-3-642-22124-8
Reconstructing Human-Landscape Interactions - Volume 1
Interpreting Desert and Fluvial Environments

The Holocene is unique when compared to earlier geological time in that humans begin to alter and manipulate the natural environment to their own needs. Domestication of crops and animals and the resultant intensification of agriculture lead to profound changes in the impact humans have on the environment. Conversely, as human populations began to increase geologic and climatic factors begin to have a greater impact on civilizations. To understand and reconstruct the complex interplay between humans and the environment over the past ten thousand years requires examination of multiple differing but interconnected aspects of the environment and involves geomorphology, paleoecology, geoarchaeology and paleoclimatology. These Springer Briefs volumes examine the dynamic interplay between humans and the natural environment as reconstructed by the many and varied sub-fields of the Earth Sciences.

Features
► Cutting edge research in the field of human environment interactions ► Broad geographic appeal

Contents
Foreword by Michelle Goman.- Genesis of an artifact layer at the La Playa archaeological site, Sonora, Mexico.- Quaternary stratigraphy of the La Playa archaeological site, Northern Sonora, Mexico.- The Red River raft and its sedimentological implications.

Fields of interests
Earth System Sciences/Management; Geography (general); Environment, general

Target groups
Research

Product Category
Monograph

Due October 2011

Due September 2011
2011. 950 p. 300 illus. (Springer Geology, Volume) Hardcover ► $279.00 ISBN 978-3-642-22121-7

Due October 2011
**Tsunamis in the World Ocean**

*Past, Present and Future Volume II*

**Contents**
- Energy Decay of the 2004 Sumatra Tsunami in the World Ocean
- Sedimentary Deposits from the 17 July 2006 Western Java tsunami, Indonesia
- Use of Grain Size Analyses to Assess Tsunami Flow Depth, Speed, and Traction Carpet Characteristics
- The July 15, 2009 Fiordland, New Zealand Tsunami: Real-time Assessment
- Evaluation of the 15 July 2009 Fiordland, New Zealand, Tsunami in the Source Region
- Field Survey of the 27 February 2010 Chile Tsunami
- Tsunami Measurements in Bays of Shikotan Island
- Parameters of Tsunami Source versus Earthquake Magnitude
- Relationship of Tsunami Intensity to Source Earthquake Magnitude as Retrieved from Historical Data
- Anatomy of Historical Tsunamis: Lessons Learned for Tsunami Warning
- Tsunami Recurrence versus Tsunami Height Distribution along the Coast
- Can the Waves Generated by Fast Ferries be a Physical Model of Tsunami?
- Sensitivity Study of Hydrodynamic Parameters During Numerical Simulation of Tsunami Inundation
- Nearshore Tsunami Inundation Model Validation: Toward Sediment Transport Applications
- A New Tool for Inundation Modeling: Community Modeling Interface for Tsunamis (ComMIT)
- A Second Generation of Tsunami Inundation Maps for the State of California

**Fields of interest**

- Natural Hazards

**Target groups**

- Research

**Product Category**

- Monograph

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**Seismic Wave Propagation and Scattering in the Heterogenous Earth**

Seismic waves - generated both by natural earthquakes and by man-made sources - have produced an enormous amount of information about the Earth's interior. In classical seismology, the Earth is modeled as a sequence of uniform horizontal layers (or spherical shells) having different elastic properties and one determines these properties from travel times and dispersion of seismic waves. The Earth, however, is not made of horizontally uniform layers, and classic seismic methods can take large-scale inhomogeneities into account.

**Feature**

- A comprehensive survey of the latest developments in seismic wave propagation and analysis and the first coherent introduction to the theory of scattering

**Contents**

- Introduction
- Heterogeneity in the Lithosphere
- Phenomenological Approaches to Seismogram Envelopes in short-periods
- Born approximation for Wave Scattering in Random Media
- Attenuation of High-Frequency Seismic Waves
- Synthesis of Three-Component Seismogram Envelopes for Earthquakes Using Scattering Amplitudes from the Born Approximation
- Envelope Synthesis Based on the Radiative Transfer Theory
- Multiple Scattering Models
- Parabolic approximation and Envelope Synthesis based on the Markov Approximation

**Fields of interest**

- Geophysics/Geodesy
- Statistical Physics
- Dynamical Systems and Complexity
- Engineering, general

**Target groups**

- Research

**Product Category**

- Monograph

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**Jeju Island Geopark - A Volcanic Wonder of Korea**

This book will deal with geological as well as cultural, historical, archaeological and biological aspects in Jeju Global Geopark. It will start with introduction of Jeju Global Geopark, geographic setting, habitats, history and tourism, management, general geology and geosites, future geosites, other significant heritage sites, economically sustainable tourism, education and promotion and management plan.

**Features**

- The only book dealing with Global Jeju Geopark
- Unique insight covering all aspects from economy to geology
- Invaluable for planning future geoparks

**Contents**

1. Introduction
2. Geographic Setting
3. Habitats
4. History
5. Geology of Jeju Island
6. Present Geosites - Sohn
7. Future Geosites - Sohn
8. Other Heritage Sites
9. Economy and Development of Sustainable Tourism
10. Education and Promotion
11. Management Plan
12. References

**Fields of interests**

- Geology
- Landscape
- Regional and Urban Planning
- Nature Conservation

**Target groups**

- Lower undergraduate

**Product Category**

- Contributed volume

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**Due November 2011**

2nd Ed. 2012. XX, 480 p. 248 illus. Hardcover
- approx. $199.00
- ISBN 978-3-642-23028-8

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**Due January 2012**

2012. VI, 100 p. 30 illus. in color. (Geoparks of the World, Volume) Hardcover
- $129.00
- ISBN 978-3-642-20563-1

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**Due November 2011**

Softcover
- approx. $69.95
- ISBN 978-3-0348-0233-8

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**Birkhäuser**

Due November 2011

2012. 250 p. (Pageoph Topical Volumes, Volume)

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**News 9/2011**

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**Earth Sciences**

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Earth Sciences

S. Valcke, CERFACS, Toulouse, France; R. Redler, R. Budich, Max-Planck-Institut für Meteorologie, Hamburg, Germany

Earth System Modelling - Volume 3
Coupling Software and Strategies

Collected articles in this series are dedicated to the development and use of software for earth system modelling and aims at bridging the gap between IT solutions and climate science. The particular topic covered in this volume addresses the major coupling software developed and used in the climate modelling community.

Features
► A unique review of existing coupling software used in Earth System Modelling ► Includes detailed technical descriptions written by the software developers themselves ► Covers the two main coupling approaches, the non intrusive one and the integrated one

Contents

Fields of interests
Computer Applications in Earth Sciences; Mathematical Applications in Earth Sciences; Software Engineering

Target groups
Research

Product Category

M. Vithanage, Institute of Fundamental Studies, Kandy, Sri Lanka
Tsunami and Groundwater Contamination

Features
► Basic theory and applications of the density-dependent flow and transport in coastal regions ► Particular application to tsunami like situations which has not been covered in other text books ► Very few books available on the subject explained in a manner that graduate students and practitioners can understand ► Actual pictures from the December 2004 tsunami

Contents

Fields of interests
Meteorology/Climatology; Waste Water Technology / Water Pollution Control / Water Management / Aquatic Pollution; Mathematical Modeling and Industrial Mathematics

Target groups
Professional/practitioner

Product Category
Monograph

Due November 2011
2011. 70 p. 12 illus., 2 in color. (SpringerBriefs in Earth System Sciences) Softcover ► $49.95
ISBN 978-3-642-23359-3

Due December 2011
2012. X, 200 p. 25 illus. in color. (Environmental Earth Sciences) Hardcover ► approx. $139.00
ISBN 978-3-642-17834-4

Due October 2011
2012. XI, 519 p. 4 illus. Hardcover ► $229.00
ISBN 978-94-007-2274-3
Permafrost Hydrology systematically elucidates the roles of seasonally and perennially frozen ground on the distribution, storage and flow of water. Cold regions of the World are subject to mounting development which significantly affects the physical environment. Climate change, natural or human-induced, reinforces the impacts. Knowledge of surface and ground water processes operating in permafrost terrain is fundamental to planning, management and conservation. This book is an indispensable reference for libraries and researchers, an information source for practitioners, and a valuable text for training the next generations of cold region scientists and engineers.

Features
- The book provides comprehensive treatment of physical hydrology in permafrost areas. It offers
- Standard reference source for libraries
- A reference for practitioners and professionals including consulting engineers, infrastructure designers, resource developers, government agents
- Source materials for researchers including environmental and earth scientists
- Information for managers, planners, operators and administrators who are stakeholders in cold regions
- Instructional text for the training of highly qualified personnel including graduate and senior undergraduates, and technical staff

Contents
Introduction – background to permafrost hydrology.
- Basic principles – definitions, frozen ground and hydrologic processes.
- Groundwater in permafrost terrain.
- Active layer dynamics.
- Runoff.
- Catchment behaviour.
- Channel hydrology.
- Water balance.
- Climate change and permafrost hydrology.

Fields of interests
Hydrogeology; Climate Change; Physical Geography

Target groups
Professional/practitioner

Product Category
Reference work