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Developments in Multidimensional Spatial Data Models

This book presents the latest research developments in geoinformation science, which includes all the subdisciplines of the subject, such as: geomatic engineering, GIS, remote sensing, digital photogrammetry, digital cartography, etc.

More on [link to book page]

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Palaeobiology of Middle Paleozoic Marine Brachiopods

A Case Study of Extinct Organisms in Classical Paleontology

Fossil species appear to persist morphologically unchanged for long intervals of geologic time, punctuated by short bursts of rapid change as explained by the Ecological Evolutionary Units (EEUs). Here, morphological variation in Paleozoic atrypid morphology at the subfamily level (Atrypinae and Variatrypinae) from the Silurian and Devonian time intervals in the third Paleozoic EEU (~444-359 my) were investigated using relatively new techniques of quantitative modeling. The study explains how a group of closely related taxa in atrypide subfamilies exhibit morphological conservatism through time in P3 EEU within the Eastern North America region.

More on [link to book page]

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Characterization of an Upper Permian Tight Gas Reservoir

A Multidisciplinary, Multiscale Analysis from the Rotliegend, Northern Germany

"The thesis of Philipp Antrett is focused on reservoir properties, petrography, lithofacies and sedimentology, core analysis and nanoporosity studies. It will be of major interest for colleagues involved in the exploration and production of tight gas reservoirs in Northern Europe and elsewhere."

François Roure, August 2012
This thesis describes a multidisciplinary, multiscale approach to the analysis of tight gas reservoirs. It focused initially on the facies architecture of a Permian tight gas field in the Southern Permian Basin (SPB), East Frisia, northern Germany. To improve field development, 3D seismic data, wireline and core data were compared to a reservoir analogue in the[...]

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On the Frontiers of Climate and Environmental Change

Vulnerabilities and Adaptations in Central Vietnam

This book is intended to fill a gap in climate-change literature by providing a comprehensive regional study and identifying the overall adaptation challenges in a real-life context. The way in which possible climate impacts interact with a range of other challenges in agriculture, forestry, disaster planning, health care, general economic development, and common livelihoods are presented, and it is argued that greater realism and broader vision are needed in order to address the climate challenge. For instance, unsuitable land-use changes in both coastal and highland regions may increase the vulnerability of rural people, many of whom are already living on the fringes. The author(s)[...]

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Teide Volcano

Geology and Eruptions of a Highly Differentiated Oceanic Stratovolcano

Teide Volcano has many different meanings: For the Guanche aborigines, who endured several of its eruptions, it was Echeide (Hell). Early navigators had in Teide, a lifesaving widely visible landmark that was towering over the clouds. For the first explorers, Teide was a challenging and dangerous climb, since it was thought that Teide’s peak was so high that from its summit the sun was too close and far too hot to sur-
vive. Teide was considered the highest mountain in the world at that time and measuring its height precisely was a great undertaking and at the time of global scientific significance. For von Buch, von Humboldt, Lyell and other great 18th and 19th century naturalists,[...]

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Organizations’ Environmental Performance Indicators: Measuring, Monitoring, and Management

The book provides a collection of individual chapters from the participants in the OEPI project, which represent a mix of academic and practical chapters and contributions. The first part of the book is dedicated to a theoretical introduction to Organizations’ Environmental Performance Indicators and to a state-of-the-art overview in literature and practice. The second part of the book contains several chapters describing information systems and their components supporting the management of Environmental Performance Indicators, especially in inter-organizational contexts. The third part is dedicated to three case studies from practice, and the book concludes with part four, in which[...]

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Phytoremediation: Role of Aquatic Plants in Environmental Clean-Up

Contamination of the different components of environment through industrial and anthropogenic activities have guided new eras of research. This has lead to development of strategies/methodologies to curtail/minimize environmental contamination. Research studies conducted all over the globe established that bioremediation play a promising role in minimizing environmental contamination. In the last decade, phytoremediation studies have been conducted on a vast scale. Initial research in this scenario focused on screening terrestrial plant species that remove contaminants from soil and air. Later, scientific community realized that water is a basic necessity for sustaining life on earth[...]


Observation of the System Earth from Space - CHAMP, GRACE, GOCE and future missions

Significant advances in the scientific use of space based data were achieved in three joint interdisciplinary projects based on data of the satellite missions CHAMP, GRACE and GOCE within the R&D program GEOTECHNOLOGIEN. It was possible to explore and monitor changes related to the Earth’s surface, the boundary layer between atmosphere and solid earth, and the oceans and ice shields. This
Erscheinungstermin: April 2014

Planning Support Systems for Sustainable Urban Development

This book collects a selection of the best articles presented at the CUPUM (Computers in Urban Planning and Urban Management) conference, held in the second week of July 2013 in Utrecht, the Netherlands. The articles included were selected by external reviewers using a double blind process.

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A.B. Hawkins, University of Bristol, Bristol, United Kingdom

Implications of Pyrite Oxidation for Engineering Works

The book highlights and analyses the distress to buildings caused by sulphate-induced heave, with particular reference to the recent problems in the Dublin area of Ireland. It describes the formation of pyrite, the processes involved in its oxidation and the various ways in which consequent expansion takes place. For the first time in the literature it discusses the way that buildings can be raised above their supporting foundation walls by the expansion of pyritiferous fill which has been used beneath ground-bearing floor slabs in Ireland. The significance of fractures through the iron sulphide microcrystals for the rate and extent of oxidation is discussed. Photographs and...]

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L. Hanyk, Faculty of Mathematics and Physics, Prague, Czech Republic; D.A. Yuen, University of Minnesota, Minneapolis, Minnesota, USA; C. Matyska, Faculty of Mathematics and Physics, Prague, Czech Republic; H. Abd-Elmotaal, Minia University, Minia, Egypt

Viscoelastic Initial-Value Problems on GPU

The main purpose of the book is to introduce GPU programming to geoscience students by means of a well-known geophysical phenomenon with immense societal relevance. We will use this strategy to introduce the basic rudiments of GPU computing to ambitious geophysicists or geological students by way of initial-value problems. The initial-value problems associated with viscoelasticity (VIP) in the geosciences are postglacial rebound, post-seismic deformation, tidal dissipation, seismology and rotational dynamics. These will illustrate very well the basic usage of GPU in geosciences and help to communicate to the readers the current knowhow of GPU technology in terms of general background.[...]

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T. Hukusima, Tokyo University of Agriculture & Techno, Tokyo, Japan; T. Matsui, Forestry and Forest Products Research In, Toyohira-ku, Sapporo, Japan; T. Nishio, Utsunomiya University, Utsunomiya, Japan; S.-Y. Lu, Taiwan Forestry Research Institute, Taipei, Taiwan (R.O.C.); M.-H. Kim, Cheju National University, Jeju, Korea (R.P.); M. Yoshikawa, Tokyo University of Agriculture & Techno, Fuchu-shi, Japan; H. Honma, Tokyo University of Agriculture & Techno, Fuchu-shi, Japan; Y. Wang, Yunnan University, Kunming City, China (P.R.)

Phytosociology of the Beech (Fagus) Forests in East Asia

This book describes the mountain forests of East Asia (Korea, Japan, China and Taiwan), the tree layers of which contain different species of the genus Fagus. The vegetation is primarily deciduous in the northern regions, whereas in South China evergreen trees can also be found: a total of 21 plant communities are described, with data on species composition, dominance, geographical distribution and ecology. A general comparison is provided by synoptic Table 1, which details the frequencies of ca. 1500 species growing in the Fagus forests; biodiversity and evolution are discussed. The book, which is the fruit of a major international collaboration, presents a synthesis of extended[...]

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H. Imura, Yokohama City University, Yokohama, Japan

Environmental Issues in China Today

A View from Japan

Economic development and environmental issues in China are attracting more and more attention internationally as the country’s large population and vast demands for food, energy, water, minerals, and other resources play an increasingly important role in deciding the fate of the world. There is great interest in learning more about environmental issues in China, but it is not easy to obtain accurate, relevant information because the issues are diverse and complex phenomena resulting from the interconnections among natural resource constraints and political, social, and institutional systems. This book originally was published in Japanese with the aim of providing Japanese readers[...]

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Mitigating Climate Change
The Emerging Face of Modern Cities

With ever increasing trends in urban consumption and production practices, a call for action to mitigate Climate Change is often seen as a way to foster sustainable development. Considerable attention is now being paid to determine what urban sustainability would include. Today there is a pressing need to broaden our knowledge and apply new concepts and frameworks to development of modern cities. Building on the foregoing, this book attempts to bring together and discuss concepts, tools, frameworks and best practices to cope with the emerging challenges faced by cities today. The book will be of use to policy makers, city planners, practitioners and academics who are starting to [...] More on www.springer.com/978-3-642-37029-8

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Non-fickian Solute Transport in Porous Media
A Mechanistic and Stochastic Theory

The advection-dispersion equation that is used to model the solute transport in a porous medium is based on the premise that the fluctuating components of the flow velocity, hence the fluxes, due to a porous matrix can be assumed to obey a relationship similar to Fick’s law. This introduces phenomenological coefficients which are dependent on the scale of the experiments. This book presents an approach, based on sound theories of stochastic calculus and differential equations, which removes this basic premise. This leads to a multiscale theory with scale independent coefficients. This book illustrates this outcome with available data at different scales, from experimental laboratory[...] More on www.springer.com/978-3-642-34984-3

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Human - Wildlife Conflicts in Europe
Fisheries and Fish-eating Vertebrates as a Model Case

This book is about conflicts between different stakeholder groups triggered by protected species that compete with humans for natural resources. It presents key ecological features of typical conflict species and mitigation strategies including technical mitigation, policy instruments and the design of participatory decision strategies involving relevant stakeholders. The book provides not only case studies from various European countries, it also presents a framework for the development of biodiversity conflict reconciliation action plans that can be used globally.

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Diversity, Biominalization and Rock Magnetism of Magnetotactic Bacteria

Magnetotactic bacteria (MTB) synthesize intracellular nano-sized minerals of magnetite and/or greigite magnetosomes for magnetic orientation. They play important roles in global iron cycling and sedimentary magnetism, and have a broad range of potential applications in both biotechnological and biomedical fields. However, because the majority of MTB in nature remain uncultur able, our understanding of these specific bacteria remains fairly limited. This thesis describes the development of a novel approach for effectively collecting, purifying and characterizing uncultivated magnetotactic bacteria. The diversity, genomic information and rock magnetic properties of various uncultivated[...] More on www.springer.com/978-3-642-38261-1

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improves the results of GPS data analysis, while the temporal correlation of GPS observation noise can be efficiently[...]

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Climate Change, Agriculture and Rural Livelihoods in Developing Countries
This book is about climate change and its relation to agriculture and rural livelihoods. It starts by providing a basic understanding of climate change science followed by the relation of climate change to agriculture, the impact of which is discussed based on the particular impact of climate change on plant and animal physiology. The book further discusses the inclusion of the agriculture sector in various international climate change negotiations. It also reviews the cost and opportunities for agricultural projects through international climate change regimes, specifically the Clean Development Mechanism under the Kyoto Protocol. With this background, the book finally proceeds to an[...]

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Quintessential Cities, Accountable to the Future
Sustainability, Innovation and Citizenship
This book can be seen as the third part of an unofficial trilogy on Sustainable Cities of the Future with the author’s previous books ‘Sustainable Development, Energy and the City’ and ‘Sustainable Cities for the third millennium: The Odyssey of urban excellence’, both prefaced by Prof. Sir Peter Hall. All three books follow the evolving forefront of innovations towards Sustainable Cities. They collectively try to respond to the questions: What future cities wish to build (with their scarcities and capacities) on a finite planet? What do they do to achieve this? How do they contribute to redesign the world? The third book adopts, first and foremost, a strategic foresight approach[...]

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Environmental Leadership Capacity Building in Higher Education
Experience and Lessons from Asian Program for Incubation of Environmental Leaders
The Graduate Program in Sustainability Science under the Department of Urban Engineering of The University of Tokyo has been running an environmental leadership education program at the graduate student level since 2007 called the Asian Program for Incubation of Environmental Leaders (APIEL). This book describes the University’s experiences in establishing and organizing that program and provides some lessons learned for those who are considering starting environmental leadership education programs. APIEL’s curriculum includes the classroom topic “Environmental Challenges and Leadership in Asia.” As well, the APIEL program has field units to provide experience in problem solving[...]

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include theoretical advances in conceptualization and modeling of hydrogeologic problems. Conceptual advances are further tempered by insights arising from observations from both field and laboratory work.


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Deformation Microstructures in Rocks

Study of microstructures is an indispensable component of understanding structural geology of any terrain. A number of ‘new’ microscopic structures such as ‘flanking microstructures’, trapezoid-shaped mineral grains, reversal of ductile shear sense, microduplexes, V-pull aparts, and new minerals nucleating inside host minerals have recently been described in individual manuscripts. However, for the sake of brevity, microstructural papers cannot show all possible variation in their morphology. The proposed book aims to present these structures with attractive colour photographs. Each photomicrograph will have a comprehensive caption. The book also presents grain boundary migration.[…]

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Agricultural Implications of the Fukushima Nuclear Accident

Following the Fukushima nuclear accident, a large volume of monitoring data has been collected about the soil, air, dust, and seawater, along with data about an immense number of foods supplied to the market. Little is known, however, about the effect of radioactive fallout on agriculture, information about which is vital. Although more than 80% of the damaged area is related to agriculture, in situ information specifically for agriculture is scarce. This book provides data about the actual movement and accumulation of radioactivity in the ecological system—for example, whether debris deposited on mountains can be a cause of secondary contamination, under what conditions plants[…]

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Minerals of the mercury ore deposit Idria

The present work is the first comprehensive study of mineralogy of the world’s second largest mercury mine Idria. In the first chapter the readers are acquainted with the history of mining and its relation to mineralogy. Mineralogy is explained in terms of geological processes that were active during the formation of the ore deposit. Among these, hydrocarbons present in the host rocks play a very important role during crystallization. The central part of the book is dedicated to the main mineral of the ore deposit, cinnabar. It occurs in a variety of crystal forms, of which the most special are lateral interpene-
Experimental and Computational Solutions of Hydraulic Problems
32nd International School of Hydraulics

What is the progress in hydraulic research? What are the new methods used in modeling of transport of momentum, matter and heat in both open and conduit channels? What new experimental methods, instruments, measurement techniques, and data analysis routines are used in top class laboratory and field hydro-environment studies? How to link novel findings in fundamental hydraulics with the investigations of environmental issues? The consecutive 32nd International School of Hydraulics that took place in Łochów, Poland brought together eminent modelers, theoreticians and experimentalists as well as beginners in the field of hydraulics to consider these and other questions about the recent... More on www.springer.com/978-3-642-30208-4

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Disaster Risk Reduction Approaches in Bangladesh

This book outlines disaster risk reduction (DRR) approaches in Bangladesh, drawing examples and lessons from the national and community-level programs, projects, and relevant experiences of the country. The content is based on a selection of available documents, a consultative workshop with academics from different universities undertaking DRR higher education programs, and the editors’ own knowledge and experience in the field. Special emphasis is given to analyzing field experiences from academic perspectives, and to highlighting key issues and the policy relevance of disaster risk reduction. The book has three parts: Part I provides the outline and basics of DRR, with... More on www.springer.com/978-4-431-54251-3

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Capacity Building for the Planning, Assessment and Systematic Observations of Forests

With Special Reference to Tropical Countries

This book is intended to support the forestry institutions in the tropical countries in the planning, assessment and systematic observation of forests required to fulfill their obligations as laid in international conventions such as the CBD and UNFCCC. Following the Rio Conference, a number of countries, donors...
and international organizations have implemented capacity-building projects with varying degrees of success. One main reason for the varying success rates seems to lie in the design of technical assistance programs, which have been formulated on the traditional lines of mainly generating forest resources information or transferring technology; whereas Agenda 21 requires[...]

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Aerospace Robotics
Selected Papers from I Conference on Robotics in Aeronautics and Astronautics

This book presents the most important and crucial problems of space automation in context of future exploration programs. These programs could involve such issues as space situational awareness program, planetary protection, exploitation of minerals, assembly, manufacturing, and search for new habitable location for next human generations. The future exploration of Space and related activities will involve robots. In particular, new autonomous robots need to be developed with high degree of intelligence. Such robots would make space exploration possible but also they would make space automation an important factor in variety of activities related to Space.

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Asymmetric Continuum
Extreme Processes in Solids and Fluids

This book deals with a class of basic deformations in Asymmetric Continuum Theory. It describes molecular deformations and transport velocities in fluids, strain deformations in solids as well as the molecular transport, important in fracture processes. In solids, a separate problem relates to the displacements; their recording, e.g., by means of the seismometers, proves only the existence of the displacement derivatives and not a real displacement. However, the molecular displacements and new fracture criterion including the defect distributions and induced strains are defined in the book too. In fluids, the transport velocities and molecular strains describe the motion[...]

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Geographic Information Science at the Heart of Europe

For the seventh consecutive year, the AGILE promotes the publication of a book collecting high-level scientific papers from unpublished fundamental scientific research in the field of Geographic Information Science. As the agenda for Europe 2020 is currently being set, this book demonstrates how geographic information science is at the heart of Europe. The contributions open perspectives for innovative services that will strengthen our European economy, and which will inform citizens about their environment while preserving their privacy. The latest challenges of spatial data infrastructures are addressed, such as the connection with the Web vocabularies or the representation of[...]

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