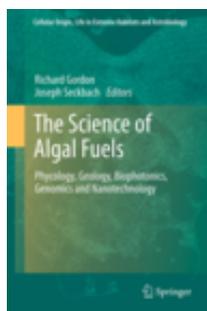# MPE 2013

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R. Gordon, Embryogenesis Center, Gulf Specimen Marine Laboratory, Panacea, FL, USA; J. Seckbach, The Hebrew University of Jerusalem, Israel (Eds.)

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This volume, The Science of Algal Fuels (volume 25 of COLE), contains 26 chapters dealing with biofuels contributed by experts from numerous countries and covers several aspects of algal products, one being "oilgae from algae," mainly oils and fuels for engines. Among the prominent algal groups that participate in this process are the diatoms and green algae (Chlorophyceae). Their metabolism and breeding play an important role in biomass and extraction of crude oil and algal fuel. There is a strong relation between solar energy influencing algal culture and the photobiology of lipid metabolism. Currently, many international meetings and conferences on biofuel are taking place in many[...]
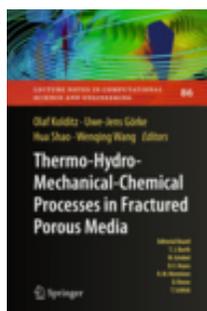
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O. Kolditz, Helmholtz Centre for Environmental Research UFZ, Leipzig, Germany; U.-J. Görke, Helmholtz Centre for Environmental Research UFZ, Leipzig, Germany; H. Shao, Federal Institute for Geosciences and Natural Resources,

Hannover, Germany; W. Wang, Helmholtz Centre for Environmental Research UFZ, Leipzig, Germany (Eds.)

## Thermo-Hydro-Mechanical-Chemical Processes in Porous Media
### Benchmarks and Examples

The book comprises an assembly of benchmarks and examples for porous media mechanics collected over the last twenty years. Analysis of thermo-hydro-mechanical-chemical (THMC) processes is essential to many applications in environmental engineering, such as geological waste deposition, geothermal energy utilisation, carbon capture and storage, water resources management, hydrology, even climate chance. In order to assess the feasibility as well as the safety of geotechnical applications, process-based modelling is the only tool to put numbers, i.e. to quantify future scenarios. This charges a huge responsibility concerning the reliability of computational tools. Benchmarking is an[...]
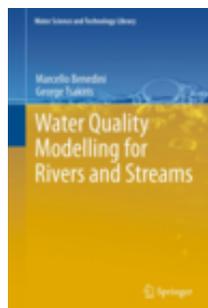
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M. Benedini, Rome, Italy; G. Tsakiris, National Technical University of Athens, Greece

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which will fulfil future quality requirements in water resources management. This[...]
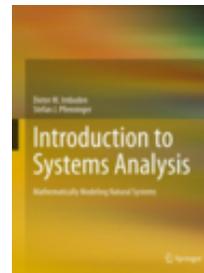
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D.M. Imboden, ETH Zurich, Department of Environmental Systems Sciences, Switzerland; S. Pfenninger, International Ist. for Applied Systems Analysis, Laxenburg, Austria

## Introduction to Systems Analysis
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Systems and their mathematical description play an important role in all branches of science. This book offers an introduction to mathematical modeling techniques. It is intended for undergrad students in applied natural science, in particular earth and environmental science, environmental engineering, as well as ecology, environmental chemistry, chemical engineering, agronomy, and forestry. The focus is on developing the basic methods of modeling. Students will learn how to build mathematical models of their own, but also how to analyze the properties of existing models. The book neither derives mathematical formulae, nor does it describe modeling software, instead focusing on the[...]

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**Forthcoming**

M. Majumder, National Institute of Technology Agartala, Jirania, India; R. Nath Barman, National Institute of Technology Agartala, India (Eds.)

## Application of Nature Based Algorithm in Natural Resource Management

This book highlights the application of nature-based algorithms in natural resource management. The book includes the methodologies to apply what natural flora or fauna do to optimize their survival. The same technique was used to optimize renewable energy generation from water resources, maximization of profit from crop harvesting, forest resource

management and decision-making studies. These studies can be used as an example for finding solutions of the other maximization or minimization problems which are common in natural resource management.
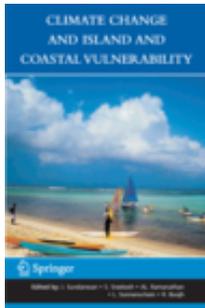
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## Climate Change and Island and Coastal Vulnerability

"Climate Change and Island and Coastal Vulnerability" is the outcome of a selection of peer reviewed edited papers presented at the International Workshop on Climate Change and Island Vulnerability (IWCCI) held at Kadmat Island, Lakshadweep, India in October 2010. Marine and coastal biodiversity, sea level rise vulnerability, fisheries, climate change impact on livelihood options, water and sanitation in island ecosystem and mitigation, adaptation and governance are the focal themes. The basic concept conveyed in the book is that biodiversity of islands is to be protected as a natural mechanism to mitigate climate change. Probability recurrence of mass coral bleaching and the[...]
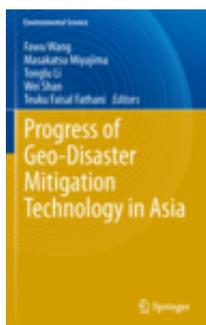
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## Progress of Geo-Disaster Mitigation Technology in Asia

This book includes the recent 10-year achievement of geo-disaster mitigation by leading Asian scientists from Japan, China, Indonesia, Korea, Iran and Far East of Russia. Case studies on recent occurred geo-disasters in Asian region have been presented. The forming mechanics of hazards such as earthquake and landslide are deeply discussed, and the disaster mitigation technology for building and pipeline safety, landslide hazard assessment and risk management are introduced.

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# Engineering

G. Lee, Information Engineering Research Institute, Newark, DE, USA (Ed.)

## Advances in Computational Environment Science

**Selected papers from 2012 International Conference on Environment Science (ICES 2012), Australia, Melbourne, 15#16 January, 2012**

2012 International Conference on Environment Science and 2012 International Conference on Computer Science (ICES 2012/ICCS 2012) will be held in Australia, Melbourne, 15#16 March, 2012.Volume 1 contains some new results in computational environment science. There are 47 papers were selected as the regular paper in this volume. It contains the latest developments and reflects the experience of many researchers working in different environments (universities, research centers or even industries), publishing new theories and solving new technological problems on computational environment science. The

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# Environment

M. Ali, North South University, Dhaka, Bangladesh

## Climate Change Impacts on Plant Biomass Growth

This book offers a methodical explanation of our biomass-driven ecosystem, the undeniable uncertainties posed by the response of vegetation to changes in environmental conditions and the fact that humans everywhere have an interest, even an obligation, to cooperate in a global campaign to combat climate change.

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P. Baveye, SIMBIOS Centre, Abertay University, Dundee, UK; J. Mysiak, Foundation Eni Enrico Mattei, Venice, Italy; M. Laba, Cornell University, Ithaca, NY, USA (Eds.)

## Uncertainties in Environmental Modelling and Consequences for Policy Making

Mathematical modelling has become in recent years an essential tool for the prediction of environmental change and for the development of sustainable policies. Yet, many of the uncertainties associated with modelling efforts appear poorly understood by many, especially by policy makers. This book attempts for the first time to cover the full range of issues related to model uncertainties, from the subjectivity of setting up a conceptual model of a given system, all the way to communicating the nature of model uncertainties to non-scientists and accounting for model uncertainties in policy decisions. Theoretical chapters,

providing background information on specific steps in the[...]
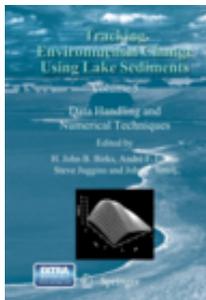
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H.J.B. Birks, University of Bergen, Norway; A.F. Lotter, University of Utrecht, The Netherlands; S. Juggins, Newcastle University, UK; J.P. Smol, Queen's University, Kingston, ON, Canada (Eds.)

## Tracking Environmental Change Using Lake Sediments
### Data Handling and Numerical Techniques

Numerical and statistical methods have rapidly become part of a palaeolimnologist's tool-kit. They are used to explore and summarise complex data, reconstruct past environmental variables from fossil assemblages, and test competing hypotheses about the causes of observed changes in lake biota through history. This book brings together a wide array of numerical and statistical techniques currently available for use in palaeolimnology and other branches of palaeoecology. Visit http://extras.springer.com the Springer's Extras website to view data-sets, figures, software, and R scripts used or mentioned in this book.

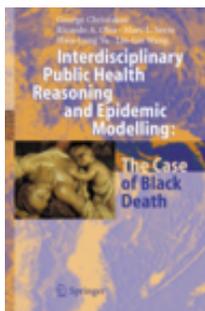More on www.springer.com/978-94-007-2744-1

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G. Christakos, Athens, Greece; R.A. Olea, Lawrence, KS, USA; M.L. Serre, Chapel Hill, NC, USA; H.-L. Yu, Chapel Hill, NC, USA; L.-L. Wang, Cary, NC, USA

## Interdisciplinary Public Health Reasoning and Epidemic Modelling: The Case of Black Death

This book introduces a novel synthetic paradigm of public health reasoning and epidemic modelling, and then implements it in the study of the infamous 14th century AD Black Death disaster that killed at least one-fourth of the European population. The book includes the most complete collection of interdisciplinary information sources available about the Black Death epidemic, each one systematically documented, tabulated, and analyzed. It also presents, for the first time, a series of detailed space-time maps of Black Death mortality, infected area propagation, and epidemic centroid paths throughout the 14th century AD Europe. Preparation of the maps took into account the uncertain[...]

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M. Hersh, University of Glasgow, UK

## Mathematical Modelling for Sustainable Development

This book aims at providing both a basic introduction and advanced technical details of some of the available mathematical and computing methods, thus closing the exisiting gap in this field, as well as illustrating their use through case studies and examples. The methods presented here are targetted at sustainable development and the case studies and examples are all in this area, although they have a wide range

of other applications, including economics, medicine and control systems

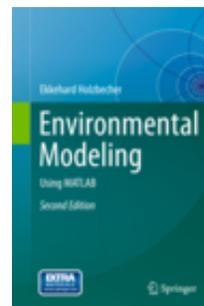More on www.springer.com/978-3-540-24216-1

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E. Holzbecher, Georg-August University, Göttingen, Germany

## Environmental Modeling
### Using MATLAB

The book has two aims: to introduce basic concepts of environmental modelling and to facilitate the application of the concepts using modern numerical tools such as MATLAB. It is targeted at all natural scientists dealing with the environment: process and chemical engineers, physicists, chemists, biologists, biochemists, hydrogeologists, geochemists and ecologists. MATLAB was chosen as the major computer tool for modeling, firstly because it is unique in it's capabilities, and secondly because it is available in most academic institutions, in all universities and in the research departments of many companies. In the 2nd edition many chapters will include updated and extended material.[...]

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A. Mendes, Azores University, Portugal; E. L. D. G. Soares da Silva, Azores University, Portugal; J.M. Azevedo Santos, The University of Évora, Portugal (Eds.)

# Efficiency Measures in the Agricultural Sector

## With Applications

The editors draw on a 3-year project that analyzed a Portuguese area in detail, comparing this study with papers from other regions. Applications include the estimation of technical efficiency in agricultural grazing systems (dairy, beef and mixed) and specifically for dairy farms. The conclusions indicate that it is now necessary to help small dairy farms in order to make them more efficient. These results can be compared with the technical efficiency of a sample of Spanish dairy processing firms presented by Magdalena Kapelko and co-authors.
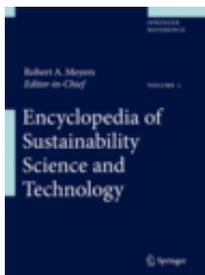
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R.A. Meyers, RAMTECH Ltd., Larkspur, CA, USA (Ed.)

# Encyclopedia of Sustainability Science and Technology

Sustainability in environmental usage refers to the potential longevity of vital human ecological support systems, such as the planet's climate system, systems of agriculture, industry, forestry, fisheries and the ocean, and fresh water, together with the impact of human communities, transportation systems, and the built environment in general on these natural services. Although definitions of "sustainable development" are often stated without reference to the number of people to be supported and at what standard of living, it is clear that we face something like a 50% increase in food demand as early as 2030, while global energy

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Forthcoming

T. Mino, The University of Tokyo, Japan; K. Hanaki, The University of Tokyo, Japan (Eds.)

# 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,[...]
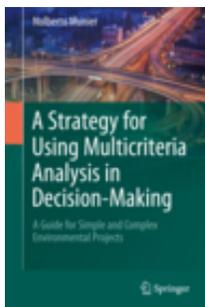
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N. Munier

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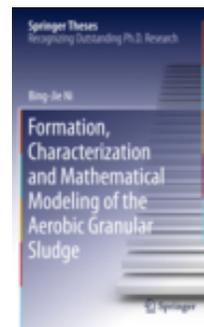More on www.springer.com/978-94-007-1511-0

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B.-J. Ni, University of Science and Technology of China, Beijing, China

# Formation, characterization and mathematical modeling of the aerobic granular sludge

Aerobic granular sludge technology will play an important role as an innovative technology alternative to the present activated sludge process in industrial and municipal wastewater treatment in the near future. Intended to fill the gaps in the studies of aerobic granular sludge, this thesis comprehensively investigates the formation, characterization and mathematical modeling of aerobic granular sludge, through integrating the process engineering tools and advanced molecular microbiology. The research results of this thesis contributed significantly to the advance of understanding and optimization of the bacterial granulation processes, the next generation of technology for[...]
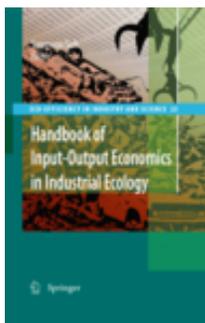
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S. Suh, University of Minnesota, St. Paul, MN, USA (Ed.)

## Handbook of Input-Output Economics in Industrial Ecology

Industrial Ecology (IE) is an emerging multidisciplinary field. University departments and higher education programs are being formed on the subject following the lead of Yale University, The Norwegian University of Science and Technology (NTNU), Leiden University, University of Michigan at Ann Arbor, Carnegie Mellon University, University of California at Berkeley, Institute for Superior Technology in Lisbon, Eidgenössische Technische Hochschule (ETH) Zürich, and The University of Tokyo. IE deals with stocks and flows in interconnected networks of industry and the environment, which relies on a basic framework for analysis. Among others, Input-Output Analysis (IOA) is recognized as a[...]

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F.V. Dolzhansky

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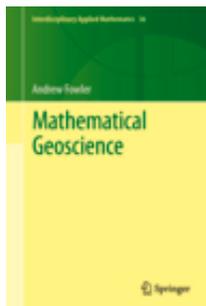
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A. Fowler, MACSI, Department of Mathematics & Statistics, University of Limerick, Limerick, Ireland

## Mathematical Geoscience

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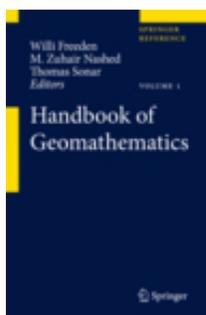
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W. Freeden, University of Kaiserslautern, Germany; M.Z. Nashed, University of Central Florida, Orlando, FL, USA; Th. Sonar, University of Braunschweig, Germany (Eds.)

## Handbook of Geomathematics

During the last three decades geosciences and geo-engineering were influenced by two essential scenarios: First, the technological progress has changed completely the observational and measurement techniques. Modern high speed computers and satellite based techniques are entering more and more all geo-disciplines. Second, there is a growing public concern about the future of our planet, its climate, its environment, and about an expected shortage of natural resources. Obviously, both aspects, viz. efficient strategies of protection against threats of a changing Earth and the exceptional situation of getting terrestrial, airborne as well as spaceborne data of better and better quality[...]

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W.W.F. Klingsch, Bergische Universität Wuppertal; C. Rogsch, Bergische Universität Wuppertal, Germany; A. Schadschneider, Universität zu Köln, Germany; M. Schreckenberg, Universität Duisburg-Essen, Germany (Eds.)

## Pedestrian and Evacuation Dynamics 2008

The international conference on "Pedestrian and Evacuation Dynamics", held on February 27-29, 2008 at Wuppertal University in Germany, was the fourth in this series after successful meetings in Duisburg (2001), Greenwich (2003) and Vienna (2005). The conference was aimed at improving the scientific exchange between scientists, experts and practitioners of various fields of pedestrian and evacuation dynamics and featured: the analysis of evacuation processes and pedestrian motion, modeling of pedestrian dynamics in various situations, experiments on pedestrian dynamics, human behavior research, regulatory action. All these topics are included in this book to give a broad and[...]

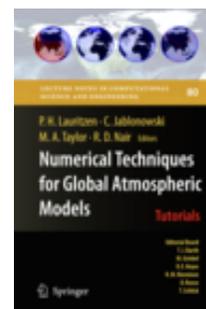More on www.springer.com/978-3-642-04503-5

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Albuquerque, NM, USA; R.D. Nair, National Center for Atmospheric Research, Boulder, CO, USA (Eds.)

# Numerical Techniques for Global Atmospheric Models

This book surveys recent developments in numerical techniques for global atmospheric models. It is based upon a collection of lectures prepared by leading experts in the field. The chapters reveal the multitude of steps that determine the global atmospheric model design. They encompass the choice of the equation set, computational grids on the sphere, horizontal and vertical discretizations, time integration methods, filtering and diffusion mechanisms, conservation properties, tracer transport, and considerations for designing models for massively parallel computers. A reader interested in applied numerical methods but also the many facets of atmospheric modeling should find this book[...]

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M.M. Resch, High Performance Computing Center (HLRS), Stuttgart, Germany; X. Wang, High Performance Computing Center (HLRS), Stuttgart, Germany; W. Bez, NEC High Performance Computing Europe, Düsseldorf, Germany; E. Jeindl, NEC High Performance Computing Europe, Stuttgart, Germany; H. Kobayashi, Tohoku University, Sendai, Japan (Eds.)

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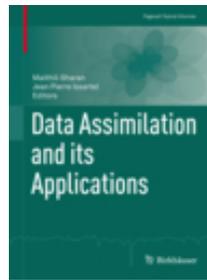


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