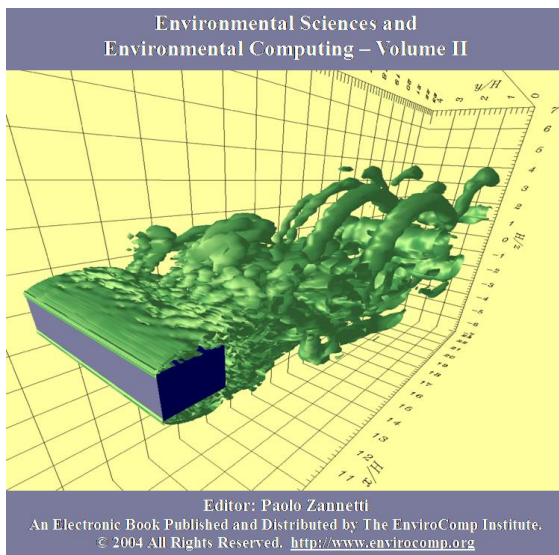


An Electronic Book from



Environmental Sciences and Environmental Computing Vol. II

Edited by P. Zannetti



This electronic book presents a peer-reviewed collection of chapters in Environmental Sciences and Environmental Computing (ESEC). This is the second volume of a series of electronic books in this field published by the EnviroComp Institute¹.

The EnviroComp Institute has pioneered the production of electronic books in environmental sciences². This format allows the incorporation of features not available in printed books, such as hypertext, text search capabilities, Internet pointers, high-resolution color pictures, and animations. Another new, and hopefully

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This book series aims at presenting review papers and case studies on subjects related to environmental sciences and environmental computing. Most of the chapters deal with

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environmental pollution in all media (air, water, soil, groundwater, and biota), with particular emphasis on the computational aspects, such as data analysis, simulation modeling, numerical forecasting, optimization, and computer visualization.

In Volume I of the series⁴, we presented a set of five technical chapters and three special chapters. The table of contents of Volume I can be examined at <http://www.envirocomp.org/html/publish/CDROM/envmod/flyer.pdf> . The five technical chapters dealt with: air pollution issues in Madrid, Spain, and Mexico City; ecodynamics models for oceanic studies; soil and groundwater pollution in Australia; and global climate change. The three special chapters provided a survey and available information on the Internet for the following environmental topics: technical disciplines, government institutions, professional societies, ecological modeling, atmospheric sciences, and air pollution modeling.

This Volume II presents 13 technical chapters discussing:

1. The use of computational fluid dynamics (CFD) to simulate air pollution among complex urban geometries.
2. Empirical models for short-term forecasting of air pollution episodes.
3. The application of a reactive transport model to simulate water pollution in a river.
4. A discussion on brine disposal from inland desalination plants.
5. A review of recent solute transport models for soil and groundwater contamination.
6. A case study of modeling nutrient dynamics in cultivated soils.
7. A hazard assessment study using a numerical model to simulate debris flow.
8. A simulation of ocean iron enrichment using ocean modeling techniques.
9. A simulation and animation of global marine Chlorophyll using ocean modeling techniques.
10. A study of the statistical properties of extreme sea waves.
11. A large eddy simulation (LES) study of environmental flows.
12. A decision support system (DSS) for the management of environmental emergencies.
13. A discussion on artificial intelligence (AI) techniques to deal with uncertainties in environmental studies.

This electronic book is distributed on CD-ROM and can be read, examined, searched, and printed with any computer system (PC/Mac/Unix) using the free software (Adobe Acrobat Reader) included as part of the CD-ROM. The book is fully hyper-texted and contains a large number of color pictures and pointers to Internet Web sites.

⁴ <http://www.envirocomp.org/html/publish/CDROM/envmod/flyer.pdf>

Table of Contents for Volume II

Preface

About the Editor

About the Publisher

About the Chapter Authors

Chapter 1

Using CFD to Study Air Quality in Urban Microenvironments

J.D. McAlpine and Michael Ruby

Chapter 2

Short Term Forecasting of Air Pollution Episodes

Héctor Jorquera, J. Ricardo Pérez-Correa, Aldo Cipriano and Gonzalo Acuña

Chapter 3

Evaluating Remedial Alternatives for the Alamosa River and Wightman Fork, near the Summitville Mine, Colorado: Application of a Reactive-Transport Model to Low- and High-Flow Simulations

James W. Ball, Robert L. Runkel, and D. Kirk Nordstrom

Chapter 4

Brine Disposal from Inland Desalination Plants: Current Status, Problems, and Opportunities

Mushtaque Ahmed, David Hoey, Walid Shayya, and Mattheus F.A. Goosen

Chapter 5

A Review of Recent Solute Transport Models and a Case Study

Lakshmanan Elango, Frank Stagnitti, D. Gnanasundar, Natarajan Rajmohan, Scott Salzman, Marc LeBlanc and John Hill

Chapter 6

Understanding Spatial and Temporal Solute Transport: Case Study: Nutrient Dynamics in Cultivated Pastures

Frank Stagnitti and Gerrit Huibert de Rooij

Chapter 7

Debris-flow Hazard Assessment Using Numerical Models and GIS: Case Studies in Central Italian Alps and Spanish Pyrenees

Mario Aristide Lenzi

Chapter 8

Southern Ocean Iron Enrichments Simulated in a Global, Eddy Permitting GCM

Shaoping Chu, Scott Elliott, Mathew Maltrud and Fei Chai

Chapter 9

Animation of Global Marine Chlorophyll Distributions from Fine Grid Biogeochemistry Transport Modeling

Scott Elliott, Shaoping Chu, Mathew Maltrud and Allen McPherson

Chapter 10

On the Prediction of Extreme Sea Waves

Felice Arena

Chapter 11

Perspectives for Large Eddy Simulation of Bluff Body Turbulent Flows and Environmental Flows

Carlo Benocci and Marcello Manna

Chapter 12

SINERGIE, A Decision Support System for Environmental Emergencies Management

Nicola Quaranta, Roberto Bellasio, Roberto Bianconi, Gogio Corani, Giuseppe Maffei and Maurizio Molari

Chapter 13

Applying Qualitative Modelling to Environmental Problems

Simon Parsons

Author Index

Subject Index

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