



Editors:

Prof. Ernst D. Schmitter, University of Applied Sciences Osnabrueck, GERMANY

Prof. Nikos Mastorakis, Technical University of Sofia, BULGARIA

Water & Geoscience

***Proceedings of the 5th IASME/WSEAS International Conference on
Water Resources, Hydraulics & Hydrology (WHH '10)***

***Proceedings of the 4th IASME/WSEAS International Conference on
Geology and Seismology (GES '10)***

University of Cambridge, UK, February 23-25, 2010

***Energy and Environmental Engineering Series
A Series of Reference Books and Textbooks***



**ISBN: 978-960-474-160-1
ISSN: 1790-5095**

**Published by WSEAS Press
www.wseas.org**

Water & Geoscience



WATER AND GEOSCIENCE

**Proceedings of the 5th IASME / WSEAS International Conference on
WATER RESOURCES, HYDRAULICS & HYDROLOGY (WHH
'10)**

**Proceedings of the 4th IASME / WSEAS International Conference on
GEOLOGY and SEISMOLOGY (GES '10)**

**University of Cambridge, UK
February 23-25, 2010**

Energy and Environmental Engineering Series
A Series of Reference Books and Textbooks

Published by WSEAS Press
www.wseas.org

ISSN: 1790-5095
ISBN: 978-960-474-160-1

WATER AND GEOSCIENCE

**Proceedings of the 5th IASME / WSEAS International Conference on
WATER RESOURCES, HYDRAULICS & HYDROLOGY (WHH
'10)**

**Proceedings of the 4th IASME / WSEAS International Conference on
GEOLOGY and SEISMOLOGY (GES '10)**

**University of Cambridge, UK
February 23-25, 2010**

Energy and Environmental Engineering Series
A Series of Reference Books and Textbooks

Published by WSEAS Press
www.wseas.org

Copyright © 2010, by WSEAS Press

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.
See also: <http://www.worldses.org/review/index.html>

ISSN: 1790-5095
ISBN: 978-960-474-160-1



World Scientific and Engineering Academy and Society

WATER AND GEOSCIENCE

**Proceedings of the 5th IASME / WSEAS International Conference on
WATER RESOURCES, HYDRAULICS & HYDROLOGY (WHH
'10)**

**Proceedings of the 4th IASME / WSEAS International Conference on
GEOLOGY and SEISMOLOGY (GES '10)**

**University of Cambridge, UK
February 23-25, 2010**

Editors:

Prof. Ernst D. Schmitter, University of Applied Sciences Osnabrueck, GERMANY

Prof. Nikos Mastorakis, Technical University of Sofia, BULGARIA

International Program Committee Members:

Laszlo Garbai, HUNGARY

Dorde Kozic, SERBIA AND MONTENEGRO

Darko Goricanec, SLOVENIA

A. C. Benim, Germany

Abul-Fazal M. Arif, SAUDI ARABIA

Agis Papadopoulos, GREECE

Ahmed Hassan, EGYPT

Ahmed Mohammadein, EGYPT

Alexander Kuzmin, RUSSIA

Ali J. Chamkha, KUWAIT

Aly Elshamy, EGYPT

Ana Sirviente, USA

Andrei G. Fedorov, USA

Aroudam El Hassan, MAROCCO

Asad Salem, USA

Aura L. Lopez de Ramos, VENEZUELA

Aydin Misirlioglu, TURKEY

Beghidja Abdelhadi, FRANCE

Bodo Ruck, GERMANY

Boris Ushakov, RUSSIA

Bouhadeb Khedidja, ALGERIA

Bouhadeb Malek, ALGERIA

Bozidar, Liscic, CROATIA,

C. J. Ho, TAIWAN

C. Trevino, MEXICO

C.W. Leung, HONG KONG

Chang Kyun Choi, KOREA

Chin-Hsiang Cheng, TAIWAN

Chun-I Chen, TAIWAN

Claudia del Carmen Gutierrez-Torres, MEXICO

David Katoshevski, ISRAEL

Domenico Guida, ITALY

Dragoljub Mirjanic, BOSNIA AND

HERZEGOVINA

Falin Chen, TAIWAN

Federico Mendez, MEXICO

Fereydoun Sabetghadam, IRAN

Florin Popescu, ROMANIA

Fotis Sotiropoulos, USA

Francoise Daumas-Bataille, FRANCE

Gareth Thomas, USA

Gennaro Cardone, ITALY

Gunter K. F., GERMANY

H. S. Takhar, UK

Hany Mohamed, EGYPT

Haris Catrakis, USA

Henar Herrero, SPAIN

Hossein Shokouhmand, IRAN

Hyung Hee Cho, KOREA

Ivan Kazachkov, SWEDEN

Jean-Christophe Robinet, FRANCE

Jeong-se Suh Gyeongsang, KOREA

Jing Liu, P. R. CHINA

Joakim Wren, SWEDEN

Joseph T. C. Liu, USA

Junjie Gu, CANADA

K. P. Sandeep, USA

Kadir Bilen, TURKEY

Kai H. Luo, UK

Khaled Alhussan, SAUDI ARABIA

Krish Thiagarajan, AUSTRALIA

Luis Cortez, BRAZIL

M. Abu-Zaid, JORDAN

Mahmoud Jamiolahmady, UK

Mario Misale, ITALY

Md Anwar, BANGLADESH

Mehdi Azhdary Moghaddam, IRAN

Mehmet C. Ece, TURKEY

Michiharu Narazaki, JAPAN,

Mohd Al-Nimr, JORDAN

Mostafa Mahmoud, EGYPT

Muthukumaran Packirisamy, CANADA

Nabil Moussa, EGYPT

Nicolas Galanis, CANADA

Nikolaos Markatos, GREECE

Oh-hyun Rho, KOREA

Oleg V. Vasilyev, USA

Olga Mazhorova, RUSSIA

Omar Abdel-hafez, EGYPT

P. V. S. N. Murthy, INDIA

Pablo S. Casas, SPAIN

Pascal Roubides, USA

Pavel Krukovsky, UKRAINE

Pradip Majumdar, USA

Pradipta Panigrahi, GERMANY

Rafael Royo, SPAIN

Ramil Sharafutdinov, RUSSIA

Roger Grimshaw, UK

Ryszard Tadeusiewicz, POLAND

Serkan Ozgen, TURKEY

Shabaan Abdallah, USA

Shoaib Usman, USA

Siavash Sohrab, USA

Slawomir Smolen, GERMANY

Somchai Wongwises, THAILAND

Sujoy Kumar, INDIA

Suman Chakraborty, INDIA

Tahira Haroon, PAKISTAN

Tamas Reti, HUNGARY,

Tatsuo Inoue, JAPAN

Valeri Bubnovich, CHILE

Viorel Stoian, ROMANIA

Vitoriano Ruas, FRANCE

Yinping Zhang, P. R. CHINA

Yizhen Huang, CHINA
Marco Mucciarelli, ITALY
Chris Cramer, USA
Tom Rockwell, USA
John Carranza, THE NETHERLANDS
Levent Yilmaz, USA
Hong-Kai Chen,, CHINA
David Gomez, SPAIN
Stefano Gresta, ITALY
Shiyong Zhou, CHINA
Shaofeng Liu, CHINA
Mandal Prantik, INDIA
Tae-Kyung Hong, SOUTH KOREA
Maria Belarmina Diaz Aguado, SPAIN
Vikrant Chitnis, INDIA
Xiyuan Zhou, CHINA
Eser Durukal, TURKEY
Alfred Stein, THE NETHERLANDS
Zengxi Ge, CHINA
Mustafa Erdik, TURKEY
Vladimir Sokolov, GERMANY
Hing-Ho Tsang, HONG KONG
Sergei Stanchits, GERMANY
David Schaff, USA
Maria Stella Giammarinaro, ITALY
Efthimios Karymbalis, GREECE
Tamaz Chelidze, GEORGIA
Gulum Birgoren Tanircan, TURKEY
Rui Pedro Juliao, PORTUGAL
Christos Chalkias, GREECE
Yanbin Wang, CHINA
Filippos Vallianatos, GREECE
Mustafa Aktar, TURKEY
Menas Kafatos, USA
Stelios Zimeras, GREECE
Renato Lancellotta, ITALY
Nam H. Tran, AUSTRALIA
Daniel E. McNamara, USA
Stefan Florin Balan, ROMANIA
Mircea Radulian, ROMANIA
Vladimir Graizer, USA
Ernst D. Schmitter, GERMANY
Constantin Ionescu, ROMANIA
Andrei Bala, ROMANIA
J. R. Kayal, INDIA
Mihaela Popa, ROMANIA

Preface

This year the 5th IASME / WSEAS International Conference on WATER RESOURCES, HYDRAULICS & HYDROLOGY (WHH '10) and the 4th IASME / WSEAS International Conference on GEOLOGY and SEISMOLOGY (GES '10) were held at the University of Cambridge, UK, February 23-25, 2010. The conferences remain faithful to their original idea of providing a platform to discuss water resources management, wetland creation and restoration, watershed planning, management and restoration, agriculture conservation practices and programs, endangered species habitat assessment, water pollution control and water systems, computational hydraulics, flood control and disaster assessment, extreme weathers, mineralogy and petrology, palaeontology, rock mechanics applied to geology, tectonics and geological mapping, earthquake engineering, seismotectonics etc. with participants from all over the world, both from academia and from industry.

Their success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of these conferences are published in this Book that will be indexed by ISI. Please, check it: www.worldses.org/indexes as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

Conferences such as these can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

Table of Contents

<u>Plenary Lecture 1: Wave Propagation Modeling</u>	13
<i>Asu Inan</i>	
<u>Plenary Lecture 2: Low Frequency Radiation Processes Around the Earth - Phenomena and Numerical Modeling</u>	14
<i>Ernst D. Schmitter</i>	
<u>Overview of a New Method for Designing High Efficiency Small Hydro Power Plants</u>	15
<i>Milun Babic, Kazimir Darijevic, Davor Koncalovic, Dubravka Jelic, Dobrica Milovanovic, Dusan Gordic, Nebojsa Jovicic, Milan Despotovic, Vanja Sustersic</i>	
<u>Geochemical Cycles of Atmospheric Organic Acids and Aldehydes</u>	26
<i>Puja Khare, B. P. Baruah</i>	
<u>Characterizing Subsurface Structures Using Very Low Frequency Electromagnetic Radiation - A Modeling Approach</u>	36
<i>Ernst D. Schmitter</i>	
<u>The Application of Discrete Tikhonov Regularization Inverse Problem in Seismic Tomography</u>	41
<i>Kambiz Teimoorneghad, Neda Poroohan</i>	
<u>Permeability Change Driving Effect on Embankment Dams Case Study: The Zonouz Embankment Dam</u>	47
<i>V. Nourani, B. Fatehi Nobarian</i>	
<u>Fuzzy Approach for Water Desalination Plants Selection</u>	53
<i>Mohammed A. Hajeeh</i>	
<u>Numerical Modelling of Oil Spill</u>	62
<i>Asu Dnan, Lale Balas</i>	
<u>Genetic Potential of the Histria Petroliferous Basin</u>	68
<i>Saramet Mihai, Raducanu Razvan, Catuneanu Octavian, Chirila Gabriel</i>	
<u>Data Generation for Murat River with Artificial Neural Networks</u>	73
<i>Albostan Aslihan, Barutcu Burak, Onoz Bihrat</i>	
<u>Modelling of Marina Forced Flushing</u>	78
<i>Lale Balas, Asu Inan</i>	
<u>Water Resources in Upper Ialomita River Basin (Carpathians, Subcarpathians, Romania)</u>	84
<i>Ovidiu Murarescu, Gica Pehoiu</i>	
<u>Environment and Water Resources in Targoviste Plain (Romania)</u>	90
<i>Gica Pehoiu, Ovidiu Murarescu</i>	
<u>Characterizing Groundwater Dynamics Using Transfer Function-Noise and Auto-Regressive Modeling in Western Victoria, Australia</u>	96
<i>Yohannes Yihdego, John A. Webb</i>	

<u>Water Resources, Present Scarcity and Future Prospects: Challenges in Terms of Nothing Rest for Management-Micro Watershed Approach of a Kumaun Lesser Himalayan Catchment of Western Ramganga River (Almora) Uttarakhand, India</u>	102
<i>Manisha Tripathi</i>	
<u>Performance Evaluation of LLR, SVM, CGNN and BFGSNN Models to Evaporation Estimation</u>	108
<i>Alireza Moghaddamnia, Mohsen Ghafari Gosheh, Mehrdad Nuraie, Mohammad Alizadeh Mansuri, Dawei Han</i>	
<u>Earthquake-Triggered Violent Landslides</u>	114
<i>Nikos Gerolymos</i>	
<u>Investigation of Catchment Areas Migrations Through a Sinistral and Dextral Strike Slip Faults: The Case Study of Zerka Ma'in and Al Hasa Catchment Areas, East of the Dead Sea in Jordan</u>	120
<i>Taleb Odeh, Richard Gloaguen, Mario Schirmer, Stefan Geyer, Tino Rodiger, Christian Siebert</i>	
<u>Local Scouring Due to Flow Jet at Downstream of Rectangular Sharp-Crested Weirs</u>	127
<i>Amir Ahmad Dehghani, Hamid Bashiri, Mohammad Ebrahim Meshkati Shahmirzadi</i>	
<u>Experimental Investigation of Pressure Flushing Technique in Reservoir Storages</u>	132
<i>M. E. Meshkati Shahmirzadi, A. A. Dehghani, T. Sumi, A. Mosaedi, M. Meftah H.</i>	
<u>Special Laboratory Test for Landslides Modelling - The Case of Stoze and Lokavec Landslides</u>	138
<i>Stanislav Lenart, Karmen Fifer Bizjak</i>	
<u>Lead Contamination of Streambed Sediments in Veysian River Basin, Lorestan Province, Iran</u>	144
<i>Shahab Varkouhi</i>	
<u>An Analysis of Correlations of Seismotectonic Parameter and Fractal Dimension Preceding Roudbar-Tarom Earthquake (Northwest of Iran)</u>	148
<i>Neda Poroohan, Kambiz Teimournegad</i>	
<u>Estimation of Hydraulic Modeling Parameters of Poorly Gauged Basins Using Remote Sensing and GIS</u>	154
<i>H. Gonca Coskun, Sezel Karayusufoglu, Ebru Eris, Ugur Alganci</i>	
<u>Comparison of Groundwater Quality Chemograph Between Observation And Production Wells in Zarghan Plain, South of Iran</u>	166
<i>Fardin Boustani, Mohammad Hosein Hojati</i>	
<u>Adsorption of Molybdate onto Hematite: Kinetics and Equilibrium</u>	170
<i>Myoung-Jin Kim, Mijeong Jang</i>	
<u>Time Series Modeling for Forecasting the Earthquake Behavior in Indonesia</u>	174
<i>Md. Mahmudul Alam</i>	
<u>Weight of Evidence Model Based on GIS to Evaluate Landslides Susceptibility in Central Rif of Morocco</u>	180
<i>Ahmed Nasr-Eddine El Fahchouch, Lahcen Ait Brahim, Mohamed Mastere, Abdllah Abdelouafi</i>	

<u>Geological and Electrical Resistivity Tomography Surveys Applied to Model the Tectonic Environment of the Kastelli-Kissamou Basin, Northwestern Crete, Greece</u>	184
<i>Margarita Moisidi, Stephen Kershaw, Derek Rust, Philip Collins, Pantelis Soupios, Filippou Vallianatos</i>	
<u>Interpretation and Processing of ETM+ Data for Alteration Mapping - A Case Study: Behabad, Iran</u>	190
<i>Rashed Poormirzaee, Mohamad Jafar Mohamadzade, Aynur Naseri, Hamid Zekri</i>	
<u>Mail Utility of Goat Dung (Feces) as a Bio-Monitor for Geochemical Exploration and Prospecting Copper Deposits Based on a Study on Maymand Area from Kerman Province, Iran</u>	196
<i>Omid Ebrahimi Maymand, Aria Samimi</i>	
<u>Determination of Cadmium and Arsenic Pollution by Bee Honey Based on the Study on Ja'far Abad Area from Saveh City from Iran</u>	199
<i>Aria Samimi, Omid Ebrahimi Maymand, Mahdieholsadat Mehrtabatabaei</i>	
<u>Contribution of the Mediterranean Sea in the Atmospheric Moisture of Adjacent and Remote Regions from a Lagrangian Approach</u>	203
<i>R. Nieto, L. Gimeno, A. Drumond, E. Hernandez</i>	
<u>Assessment and Forecast Stability of Slopes in the Carpathian and Sub-Carpathian Area of Dambovita and Prahova. Classification and Risk Factors</u>	208
<i>Alexandru Istrate, Madalina Frinculeasa, Gica Pehoiu</i>	
<u>3D Volumetric Soft Geo-objects Data Model for Dynamic Streamflow Generating Processes</u>	214
<i>Izham Mohamad Yusoff, Alias Abdul Rahman, Ayob Katimon</i>	
<u>A More Realistic Assessment of Beach Effects of 2880 March 16 Asteroid Impact Tsunami</u>	221
<i>Dragos Isvoranu, Viorel Badescu</i>	
<u>The Relationship Between Consumption of Drinking Water and Waste Water Quality in The Residential and Tourist Areas of Split (Southern Croatia)</u>	228
<i>Nives Stambuk-Giljanovic</i>	
<u>Authors Index</u>	240

Plenary Lecture 1

Wave Propagation Modeling



Assistant Professor Asu Inan

Construction Department

Faculty of Technical Education, Gazi University

06550 Teknikokullar Besevler/ Ankara

TURKEY

E-mail: asuinan@gazi.edu.tr

Abstract: The speech is divided in four parts. In the first part, propagation and transformations of coastal waves will be told. In the second part, wave model approaches will be presented. In the third part, the development of mild slope equations will be given. Finally, UNDA07, a numerical wave model based on the extended mild slope equations, will be explained in details.

Brief Biography of the Speaker:

Dr. Asu Inan received her B.Sc. in Civil Engineering from Gazi University, Turkey. She then completed her M.Sc. and Ph.D. in Coastal Engineering at Gazi University. She worked for eight years as research assistant in Hydraulic Division of Civil Engineering Department during her graduate education. She had Ph.D. in 2007 and then she worked in the Environmental & Technical Research of Accidents Department of Institute of Science & Technology in Gazi University two years long as Assistant Professor and Vice Chair. Since August 2009, she has been working in Construction Department in the Faculty of Technical Education in the same university. Her works are focused on wave mechanics, mild slope equations and numerical modeling. She has authored and co-authored thirty scientific publications in several journals and conference proceedings.

Plenary Lecture 2

Low Frequency Radiation Processes Around the Earth - Phenomena and Numerical Modeling



Professor Ernst D. Schmitter

University of Applied Sciences Osnabrueck
Department of Engineering and Computer Sciences
Albrechtstr. 30, 49076 Osnabrueck
Germany
E-mail: e.d.schmitter@fh-osnabrueck.de

Abstract: Very low, extremely low and ultra low frequency electromagnetic radiation (VLF/ELF/ULF, i.e. 30 kHz down to some milli-Hz) generated within the earth's magnetosphere, ionosphere, atmosphere and lithosphere yields a wealth of information about extraterrestrial and terrestrial phenomena including gamma ray bursts, solar activity and thunderstorms. Furthermore because of its penetrating properties man made very low frequency radiation plays an important role in underwater and underground research and applications including submarine communication and remote sensing mineral contents of the terrestrial subsurface. Elaborate ionosphere heater experiments try to modulate the charged layers of our upper atmosphere with these frequencies. A detailed understanding of the propagation properties of this radiation in and around the earth can be gained using powerful numerical methods, for example FDTD and FEA (Finite Difference Time Domain and Finite Element Analysis) based solutions of the Maxwell equations. The talk gives a survey of the phenomena involved and discusses results of computer model calculations.

Brief Biography of the Speaker:

Dr. Schmitter is professor for mathematics and software technology at the University of Applied Sciences Osnabrueck, Germany since 1990. He is a member of the faculty of Engineering and Computer Sciences and teaches courses on applied mathematics, simulation (for example Finite-Element-Methods) and data analysis. He wrote several books in the computational intelligence area and published papers on data and signal analysis and modelling topics applied to material sciences and geophysics.