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

**Prof. Nikos Mastorakis, Technical University of Sofia, BULGARIA**

# Water & Geoscience

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

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

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

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A Series of Reference Books and Textbooks**



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**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](http://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





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## 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](mailto: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.

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