

Editors:

Prof. Roberto Revetria, Univ. Degli Studi di Genova, Italy
Prof. Valeri Mladenov, Technical University of Sofia, Bulgaria
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Recent Advances in Remote Sensing

Proceedings of the 5th WSEAS International Conference on
Remote Sensing (REMOTE '09)

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University of Genova, Genova, Italy, October 17-19, 2009

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Preface

This year the 5th WSEAS International Conference on REMOTE SENSING (REMOTE '09) was held in the University of Genova, Genova, Italy, October 17-19, 2009. The conference remains faithful to its original idea of providing a platform to discuss sensor design and calibration, data acquisition and processing, image processing, pattern recognition, photogrammetry, GIS, defense and security, environmental monitoring concepts, geological applications and climate, urban planning and development, remote sensing for energy and environmental systems etc. with participants from all over the world, both from academia and from industry.

Its 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 this conference 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.

A Conference such as this 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

The Investigation of Meandering and Braiding Rivers with RS and GIS

Professor Levent Yilmaz

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Technical University of Istanbul
Maslak, 80626, Istanbul, Turkey
E-mail: lyilmaz@itu.edu.tr

Abstract: An analytical model is developed for free-surface flow over an erodible bed and is used to investigate the stability of the fluid-bed interface and the characteristics of the bed features by measuring the shear stress distribution with hot-film sensors. The model is based on the potential flow over a two-dimensional, moving, wavy bed with a sinusoidal profile of varying amplitude, and a sediment transport relation in which the transported rate is proportional to the power of the fluid velocity at the level of the meandering bed. Consideration is given to the factors involved in determining the shear stress distribution at the flow boundary layer. The experimental results are presented in two parts. Experimental observations of meander evolution described qualitatively. The most important parameter is the shear stress distribution, because of the inhomogeneous distribution of boundary layer meander features. At the wavy boundary layer, the shear stress distribution, measured with WTG-50 hot – film –anemometer is given graphically and theoretically. In prototype, natural rivers are also investigated in meandering and braiding point of view with RS and GIS by using the ground truth data.

Brief Biography of the Speaker:

Studies:

Technical University Of Istanbul

Academic Positions:

Associate Professor Dr. and Research Assoc. At The Hydraulic Laboratory At Technical University Of Istanbul

Scientific Activities:

Project To North Cyprus Between Turkey Water Supply Project

Project Of Environmental Effects Of Waterway At The Bosphorus In Istanbul

Project Of Hydropower Projects At Ungauged Basins At Northeast Turkey

Plenary Lecture 2

Monitoring the Vertical Mean and Turbulent Structure of the Lower Atmosphere Over Sea and Land using SODAR Measurements



Professor Costas G. Helmis

Department of Environmental Physics and Meteorology
Faculty of Physics

National and Kapodistrian University of Athens
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Abstract: The ability of the Acoustic Sounder (SODAR) to measure the mean and turbulent characteristics of the wind flow as well as the thermal structure of the Atmospheric Boundary Layer (ABL), that extends up to the first 1500m of the atmosphere, with high time and space resolution is well known. The SODAR provides information on the horizontal wind speed and direction, the temperature structure parameter (CT2), the surface heat flux (Q0) as well as the atmospheric stability and the mixing height. Furthermore, the estimation of the vertical and the two horizontal wind components, the standard deviations of the three wind components, the Turbulent Kinetic Energy (TKE) and the momentum flux profiles is possible. The spatial and time average of the above mentioned atmospheric parameters is often more appropriate than single point measurements for ABL studies while this real-time information is valuable in a wide range of meteorological and air pollution applications or in environmental policy planning.

In this invited talk a review on the operating parameters, the advantages and disadvantages of SODAR systems and the estimation and evaluation of important atmospheric parameters will be given. Results from previous studies demonstrating the feasibility of SODARS operating over the land, the ocean, a small island or on the shore-line, giving information on the main characteristics of the mean and turbulent vertical structure of the ABL, under different conditions will be presented. This information reveals the variation and the evolution of the ABL, its vertical turbulent characteristics, the shear forcing and the development of wind maxima as well as the transport of momentum, heat and TKE, in response to the background flow and the topography of the experimental area. Finally the evaluation between the estimated mixing height, CT2, heat and momentum fluxes from the SODAR and the corresponding atmospheric parameters which are estimated using in-situ methods will be given and discussed.

Brief Biography of the Speaker:

Studies First Degree: BSc, University of Athens, Faculty of Physics, 1972

Post Graduate Titles: MSc in Electronics, University of Athens, 1975

MSc in Automation, University of Athens, 1976

PhD in Physics, University of Athens, 1981

Academic Positions:

Head of the Dept. of Applied Physics, Faculty of Physics, University of Athens.

Assoc. Professor, Dept. of Applied Physics, Faculty of Physics, University of Athens.

Fields of Scientific activities:

- Atmospheric Physics
- Development of instrumentation for remote and in-situ measurements
- Air Pollution meteorology
- Indoor and Outdoor Air Pollution

He has 92 publications in journals, 167 announcements in conference proceeding, 86 participations in technical reports and 20 other publications. He has participated in the EEA on air quality (ETC/AQ) during 1996-2001 and in 89 research projects, in 37 of the above he acted as the Principal Investigator.

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