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- Proceedings of the 1st International Conference on Monitoring and Management of Air Pollution (MMAP '13)
- Proceedings of the 8th International Conference on Continuum Mechanics (CM '13)
- Proceedings of the 8th International Conference on Water Resources, Hydraulics & Hydrology (WHH '13)
- Proceedings of the 1st International Conference on Hydrology and Ecology (HYEC '13)

Rhodes Island, Greece, July 16-19, 2013

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An Analysis of Flow Mechanics through Packed-Fluidized Beds of a Variety of Solid Particles: A Methodology for the Determination of Flow Modes in Pneumatic Conveying



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Abstract: Clear insight to the modes of flow of solid particles in a pneumatic conveying system is a critical fact. In design and operation of a particular system optimum conditions in terms of system and transportation characteristics are directly related to so-called modes of flow. It is generally known that dense(fluidized dense phase or plug) and dilute phase flows are well- defined. In the available literature determination of flow modes is either through the utilization of particle parameter –based or air-particle based techniques. The utilized techniques have their own superiorities. However the need for further experimental data is apparent in both techniques. In this presentation the related state of art is outlined with the major conflicting statements. An analysis based upon the previous experimental measurements (through fixed packed beds simulating fixed plugs and inside fully suspended flow of solid particles for dilute phase flows) of the author is presented. An experimental measurement system which is currently in operation in the content of a research project MF12-15 on the determination of flow modes in pneumatic particle transport is discussed through the proposed methodology.

Brief Biography of the Speaker: Melda Özdinç Çarpınlıoğlu was born in Gaziantep, Turkey. She received B.Sc., M.Sc. and Ph.D. degrees in Mechanical Engineering from Middle East Technical University METU –Turkey in 1983, 1986 and 1992. She worked as a Research Assistant in 1983-1986 at METU, as an Instructor in 1987-1992 at University of Gaziantep-Turkey. She worked as an Assistant Professor and an Associate Professor in 1992-1997 and 1997-2003 at University of Gaziantep. She has been working as a Professor at University of Gaziantep since 2003. She was the Chairman of the Mechanical Engineering Department and Dean of the Faculty of Engineering in the periods of 1998-2007 and 2006-2009 at University of Gaziantep.

Her main research interests are Boundary Layer Flow, Boundary Layer Transition, Two-Phase Flow Fields, Unsteady-Pulsatile Flow Dynamics, HVAC Systems, Flow Dynamics in Packed Beds, Flow through Collapsible Tubes, Flow Measurement - Calibration ,Flowmeters, and Thermodynamic Analysis. She has several research articles and completed a variety of experimental research projects. She has been directing M.Sc. and Ph.D. studies in her research fields. Her research project on Pulsatile Flow was awarded as the second successful research in 2001 by The Scientific and Technological Research Council of Turkey –TUBITAK (H.TUGAÇ FUND). She is the author of 24 Journal Papers with 178 citations (ISI Web of Science) currently. She has been the acting head of Thermodynamics Branch of Science in Department of Mechanical Engineering since 2004.

Rainfall-Runoff Modeling Based on Self Organizing Map and Wavelet Pre-Processing Techniques



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Abstract: The precise rainfall-runoff model provides vital information for water resources planning and watershed management. Since the spatial and temporal selection of input data is a key element for accurate modeling, data screening and preprocessing become the main concern in any data driven modeling. To this end, this paper combined multi techniques to introduce an optimal Feed Forward Neural Network (FFNN) rainfall-runoff model. In this way, self-organizing map (SOM) clustering technique was applied to identify spatially homogeneous clusters of precipitation obtained from satellite data. Besides, the wavelet transform (WT) was utilized in order to extract dominant temporal features from runoff non-stationary time series. The comparison of proposed hybrid model (SOM-WT-FFNN) with single SOM-FFNN model and conventional auto regressive integrated moving average with exogenous input (ARIMAX) model, proved the efficiency of the developed methodology. Satellite data as a source of daily precipitation and runoff data from Gilgel Abay watershed in Ethiopia were applied for calibration and validation purposes. The results of the study provide promising evidence for combining spatial and temporal data preprocessing methods in forecasting runoff values specifically peak records using the FFNN method.

Brief Biography of the Speaker: Vahid Nourani was born in Tabriz, Iran in 1975 and received his B.Sc. and M.S. degrees in Civil Engineering from University of Tabriz, Iran in 1998 and 2000, respectively. He then continued his graduate study in Civil and Environmental Engineering in the field of Hydrology at Shiraz University, Iran and Tohoku University, Japan and was graduated in 2005. Nourani was with the Faculty of Civil Engineering, University of Tabriz as an Assistant Professor from 2005-2009; as Associate Professor from 2009-2012 and with Dept. of Civil Eng., University of Minnesota, USA at 2011 as visiting associate professor. In this period, 45 Ph.D. and M.Sc. students were graduated under his technical supervision. His research interests include rainfall-runoff modeling, Artificial Intelligence applications to water resources engineering, Hydroinformatics and computational hydraulics. His researches outcomes have been published as 51 Journal articles, 1 book, 2 book chapters and more than 55 papers presented in international and national conferences. He is currently researching on hydrological models generated via satellite data as well as pre-processing methods such as Self Organizing Maps and wavelets for developing optimum models.

Studies and Researches Regarding the Use of a Water Mill for Irrigations



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Abstract: In the paper are shown the recent researches regarding the use of a water mill in irrigations. Because it is happened to don't rain long period of time, many crops are compromised. For this reason we made researches to use a type of water mill that is easy to build and that help to obtain good result in agriculture even in the years with small quantity of rain. It is necessary to use this water mill only one condition, to have a river in the area from where it takes the water.

Brief Biography of the Speaker: Badea Lepadatescu is currently an Associate Professor at the Faculty of Technological Engineering and Industrial Management of Transylvania University of Brasov, Romania. He obtained his doctoral degree in 1998 in the area of machining through superfinishing process. After he graduated he worked five years as design engineer at Roman truck factory in the field of manufacturing processes where he designed many devices and special machine tools especially for superfinishing process. Started on 1982 he worked as research engineer at Transilvania University of Brasov, and after 1997 he is teaching at Department of Manufacturing Engineering. His main academic interests include Tolerance and Dimensional Control, Manufacturing Engineering Processes, Automation Processes, and Renewable Energy Sources. The research accomplishments are reflected through publications in a five books and authored or co-authored over 120 papers published at international conferences. He has extensive experience in both experimental and theoretical research work having more than 50 contracts with factories to design and produce machine tools for machining processes. Also in the field of Renewable Energy Sources together with a team he made two wind turbines, one with horizontal axis for taking water, and one with vertical axis to produce electric energy. He has been speaker to international conferences, has moderated forums, organized symposia, workshops and sessions at major international conferences.

Flows of Dissolved Organic Substances and Factors Controlling It



Professor Maris Klavins Department of Environmental Science University of Latvia Riga, Latvia E-mail: maris.klavins@lu.lv

Abstract: The impact on sea and coastal areas is influenced by chemical composition of waters and loads of dissolved substances to the sea. Of importance in this respect are flows of natural organic substances – humic substances (major part of dissolved organic carbon DOC). Transfer from adjacent areas, but also industrial effluents and non-point pollution sources can be sources of increased fluxes of DOC. The number of studies of dissolved organic carbon (DOC) during the last few years is very much growing and the interest is more and more moving from sum parameters (colour, COD, TOC, DOC, BOD) towards parameters describing composition of dissolved organic matter (DOM). As far as dissolved organic matter is composed from a large number of individual molecules, their isolation and characterisation seems to be too complex task. Instead of that, the sum of parameters describing properties of majority of organic substances can be used.

The aim of this study is to describe long term changes of DOC concentrations in surface waters, factors controlling DOC runoff, spatial variability of water chemical composition, possible impacts of pollution sources, and to analyze the character of compositional changes.

Impact of other major water ingredients on DOC budgets has been studied. The dynamics of DOC flows depending on landuse pattern and soil properties are described, including emissions by industrial and agricultural production. The water chemistry of a large number of lakes and rivers has been determined and the possible impact of water chemical composition on water quality has been evaluated.

As a tool spectral analysis of DOC has been used, for example applying fluorescence index. The changes of DOC concentrations follow a pattern common for Rivers in Northern Europe and much depends on the river discharge regime. Higher concentrations of organic carbon are observed in autumn and other maximum. In the pool of TOC, a major role is played by dissolved organic substances and only during spring and autumn seasons particulate organic carbon reaches up to 5 % of the TOC.

Brief Biography of the Speaker: Maris Klavins graduated from the University of Latvia in 1979, doctoral dissertation defended in Moscow University (Russia) in 1985, but habilitation thesis in University of Latvia in 1993. Maris Klavins (professor, dr.habil.chem.) is head of Environmental science department of Faculty of Geography and Earth sciences, University of Latvia. M.Klavins is member of editorial boards of 6 scientific journals, member of 3 societies related to environmental chemistry issues and full member of Academy of Sciences of Latvia. M.Klavins has been leader of several projects related to the environmental issues mostly doing with environmental pollution and management, and quality of water, but including also political and social sciences and sustainable development science.

Drylands, Land Degradation, Desertification - 3 Hot Topics, Many Hot Questions



Assistant Professor Rares Halbac-Cotoara-Zamfir Hydrotechnical Engineering Department "Politehnica" University of Timisoara Romania E-mail: raresh 81@yahoo.com

Abstract: We are living in a world strongly influenced by drylands. Millions of people are depending on these lands but they also exercise a high pressure on them. Drylands are complex systems, without having a single agreed definition, but in the same time they are vulnerable in challenging human living necessities. Presenting a high variability over time, many drylands are failing in facing the human pressure and after a continuous process of degradation are turning to desert.

The any factors of drylands degradation as well as the consequences of this process remain controversial and many times poorly understood creating difficulties for sciences to establish or at least to reach a consensus about a standard set of indicators used in monitoring desertification. A question rise from here: It is always desertification an outcome of land degradation? But this is not the only hot question. How we can quantify and qualify the factors leading to land degradation if they act across the scales and more than that, how we can quantify the large diversity of different combination between these factors?

It is known so far that we must work with at least two dimensions: humanity and biophysical. The process of incorporating actual knowledge in a conceptual framework developed on these two dimensions may offer some answers. The third dimension is time. During the last century we observed changes in human's number, culture, policies, mentality, all of them having a significant impact on land degradation.

This lecture will try to offer some answers at the previous questions and will present a new view on drylands degradation.

Brief Biography of the Speaker: Dr. R. Halbac-Cotoara-Zamfir holds a BSc in Civil Engineering from the "Politehnica" University of Timisoara (RO), a MSc in Environment Protection and a PhD in Civil Engineering (2010) from "Politehnica" University of Timisoara. He works as Assistant Professor at Hydrotechnical Engineering Department, Civil Engineering Faculty.

His research interests are: land reclamation and improvement, integrated water management, water scarcity, soil sciences, environment protection, urban and rural development, regional development, sustainable development, human resources.

He is involved in several research projects, as Project Manager and Working Group leader, funded by European Union through INTERREG IVC, Leonardo, COST programs. He is member of Editorial Board and reviewer for International Journals covered by EBSCO, Index Copernicus, Ulrich's Periodicals Directory, Google Scholar etc. Dr. R. Halbac-Cotoara-Zamfir published in 8 years of activity more than 40 papers from which 14 are rated in ISI Journal and conference proceedings indexed by ISI Web of Science.