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2nd Global Summit on

ADVANCES IN EARTH SCIENCE AND CLIMATE CHANGE

September 14-15, 2023 | London, UK

ADV. ESCC 2023

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PROGRAM-AT-A-GLANCE

ADV. ESCC

2023

DAY 1
SEPTEMBER 14, 2023

Scientific Program

Moderator: Carlos Sousa Oliveira, *University of Lisbon, Portugal*

Chair: Bouchra El Omari, *Institute for Alpine Environment, Italy*

08:00-08:45	**Registrations**
08:45-09:00	**Opening Ceremony**

Topics: Agriculture and Food Security | Climate Change | Earth Science | Ecology | Environmental Science | Geology | Green Energy | Hydrology | Natural Hazards | Plant Science and Biotechnology | Pollution Control | Recycling | Remote Sensing | Renewable Energy | Soil Science | Waste Management

Distinguished Speaker Talks

09:00-09:20	**Title: Eco-physiological responses of alpine plant species to low air pressure** **Bouchra El Omari,** *Institute for Alpine Environment, eurac research, Italy*
09:20-09:40	**Title: Video cameras as a new world of looking to disasters** **Carlos Sousa Oliveira,** *University of Lisbon, Portugal*
09:40-10:00	**Title: Digital surveillance of mosquitoes to increase resilience to climate change induced outbreaks of Arboviral diseases** **João Miguel F. R. Encarnação,** *IRIDEON SL, Spain*
10:00-10:20	**Title: Application of neutron-gamma technologies for soil elemental content determination** **Aleksandr Kavetskiy,** *USDA-ARS National Soil Dynamics Laboratory, USA*
10:20-10:40	**Title: Microplastic: A less imperceptible threat on the Peruvian coast** **Alberto Huiman Cruz,** *Universidad Nacional Mayor de San Marcos, Peru*

Group Photo 10:40-10:50

Refreshment Break 10:50-11:10

11:10-11:30	**Title: Blockchain-based IoT enabled health-monitoring system** **Poonam Rani,** *Netaji Subhas University of Technology, India*
11:30-11:50	**Title: Circular economy for municipal solid waste to resources symbiosis network development** **Woon Kok Sin,** *Xiamen University Malaysia, Malaysia*
11:50-12:10	**Title: Adaptive capacity and community-based earthquake disaster management** **Bih-Chuan Lin,** *National Dong Hwa University, Taiwan*
12:10-12:30	**Title: Measuring and mapping subsurface soil elemental distribution using neutron-gamma analysis** **Galina Yakubova,** *USDA-ARS National Soil Dynamics Laboratory, USA*
12:30-12:50	**Title: Economics in game theory for hotel unemployment** **Xuan Tran,** *University of West Florida, USA*
Group Photo	
Lunch Break 12:50-13:30	
13:30-13:50	**Title: Geochemical and Geomechanical aspects of chemical, CO_2 and hydrogen injection in porous rocks** **Gbenga Folorunso Oluyemi,** *Robert Gordon University, UK*
13:50-14:10	**Title: A review of the internationalization of state-owned firms and sovereign wealth funds: Governments' nonbusiness objectives and discreet power** **William L. Megginson,** *The University of Oklahoma, USA*
14:10-14:30	**Title: Rehabilitation of footing Using Anchored Micropiles on Sand- An experimental study** **Mohit Talwar,** *IK Gujral Punjab Technical University, India*
14:30-14:50	**Title: Sustainable approaches for climate change mitigation** **Shweta Rana,** *FLAME University, India*
14:50-15:10	**Title: A new method for extractive text summarization using neural networks** **Sohini Roy Chowdhury,** *Jadavpur University, India*

15:10-15:30	**Title: Addressing the climate action and the sustainable development** **T P Surekha,** *Vidyavardhaka College of Engineering, India*
15:30-15:50	**Title: Application of system dynamics technique for water resource management in the urban system** **Varuvel Devadas,** *Indian Institute of Technology, Roorkee, India*

Refreshment Break 15:50-16:05

16:05-16:25	**Title: The effect of green technology adoption in entrepreneurial innovation and human resource on bank risk and returns in Europe** **Ayesha Afzal,** *Lahore School of Economics, Pakistan*
16:25-16:45	**Title: Sensitivity of gravity-wave momentum flux to moisture in the mei-yu front systems** **Yuan Wang,** *National University of Defense Technology, China*
16:45-17:05	**Title: Agricultural land resources of Uzbekistan: Management and future tendency** **Kamola Khaitova,** *The State Scientific and Design Institute "Uzdavyerloyikha", Republic of Uzbekistan*
17:05-17:25	**Title: Climate issues from the planetary perspective and insights for the Earth** **Athena Coustenis,** *Paris Observatory, CNRS, PSL University, France*
17:25-17:45	**Title: Geosynthetics against liquefaction induced geohazard for resilient foundations** **Rajiv Chauhan,** *IK Gujral Punjab Technical University, India*

Panel Discussion

End of Day 1

DAY 2
SEPTEMBER 15, 2023

Scientific Program

Topics: Agriculture and Food Security | Climate Change | Earth Science | Ecology | Environmental Science | Geology | Green Energy | Hydrology | Natural Hazards | Plant Science and Biotechnology | Pollution Control | Recycling | Remote Sensing | Renewable Energy | Soil Science | Waste Management

Chair: Athena Coustenis, *Paris Observatory, CNRS, PSL University, France*

Introduction

Distinguished Speaker Talks

09:00-09:20	**Title: Nano-interventions of different nanoparticle in medicinal herbs: Enhancing Therapeutic Efficacy -A Renatus wellness study** **Rajdeep Datta,** *Renatus Wellness, India*
09:20-09:40	**Title: Deep Learning-Based potato defect detection under ambient light condition** **Slim Hamdi,** *EUROCELP SAS, France*
09:40-10:00	**Title: Reasons for the good reservoir properties (porosity and permeability) of Upper Triassic clayey sandstones in the X oil field, eastern Algerian Sahara** **Merzouk Zatout,** *Kasdi Merbah University, Algeria*
10:00-10:20	**Title: Understanding silt sized particles in archaeological materials through petrographic research** **Wen Yin (Elaine) Cheng,** *University of Toronto, Canada*
10:20-10:40	**Title: Effects of SiO_2 and CO_2 absorptions on the structural, electronic and optical properties of (6, 6) Magnesium Oxide Nanotube (MgONT) for optoelectronics applications** **Abdussalam Balarabe Suleiman,** *Federal University Dutse, Nigeria*

Refreshment Break 10:40-11:00

11:00-11:20	**Title: Operational forecasting of short-term changes in the level of the Sea of Azov with seasonal correction based on coastal station observations** **Sergey Popov,** *Hydrometeorological Research Center of the Russian Federation, Russia*

11:20-11:40	**Title: A bibliometric analysis on the global research trends of climate change** **Camila Lorenz,** *Institute of Advanced Studies at the University of São Paulo, Brazil*
11:40-12:00	**Title: Kriging, regression and machine learning for predicting forest floor carbon content in a temperate managed forest** **Martha Elva Ramírez Guzmán,** *Colegio de Postgraduados, Mexico*
12:00-12:20	**Title: Nature-inspired algorithms for optimizing AI** **Subhrakanta Panda,** *BITS PILANI, Hyderabad, India*
12:20-12:40	**Title: Prediction of mustard yield using different machine learning techniques: A case study of Rajasthan, India** **Ananta Vashisth,** *ICAR-Indian Agricultural Research Institute, India*
12:40-13:00	**Title: The relationship of airflow limitation with lung squamous cell carcinoma: Evidence from Mendelian Randomization Analysis** **Qing Zhang,** *The First Affiliated Hospital of Guangzhou Medical University, China*

Closing Remarks

Lunch Break 13:00-13:45

End of the Conference

PEERS ALLEY MEDIA

SCIENTIFIC ABSTRACTS

DAY 1

2nd Global Summit on

ADVANCES IN EARTH SCIENCE AND CLIMATE CHANGE

September 14-15, 2023 | London, UK

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Eco-physiological responses of alpine plant species to low air pressure

Bouchra El Omari[1], Silvia Lembo[1,2], Georg Niedrist[1], Paul Illmer[2], Nadine Präg[2], Andreas Meul[2] and **Matteo Dainese[3]**

[1]Institute for Alpine Environment, eurac research, Italy
[2]Department of Microbiology, Universität Innsbruck, Austria
[3]Department of Biotechnology, University of Verona, Italy

Alpine ecosystems are experiencing high rates of warming due to climate change which, is resulting in a significant upward shift of plant species in elevation as an attempt to track their thermal niches. The shift in the distribution of some species upwards sites of higher altitudes could imply broad changes ranging from the physiological response of individuals to alterations in the ecosystem functioning. In fact, plant species will be exposed to new environmental and geographical constraints together with the establishment of new biotic interactions. The objective of the present work is to elucidate the direct effects of low air pressure on the ecophysiology and performance of several plant species.

For this purpose, three plant species (*Trifolium pratensis*, *Hieracium pilosella* and *Arabidopsis thaliana*) were grown in a controlled chambers with different air pressure conditions (100, 85, 75 and 60kPa). Diurnal variation of temperature, relative humidity, and light intensity were kept similar between chambers. The duration of the experiment was one month after which, some eco-physiological parameters were determined and compared (growth, leaf gas exchange, chlorophyll fluorescence, C/N ratio and stable carbon isotope composition ($\delta^{13}C$)).

Preliminary results showed that low air pressure decreases gas exchange rate, transpiration, stomatal conductance and growth parameters of the three species studied. Furthermore, low air pressure increases specific leaf area at 75kPa, whereas it decreases total carbon, C/N ratio and above plant biomass at 60kPa. We conclude that the upshift in the distribution of plant species in alpine environment could result in the appearance and development of new traits that will be of decisive importance in their adaptation process, distribution ranges and survival which, might have high evolutionary and ecological consequences.

Biography

My name is Bouchra El Omari, I am plant eco-physiologist, I did my Ph.D on the eco-physiological responses of holm oak after fire at the university of Barcelona. I worked as a postdoctoral researcher at the Smithsonian Tropical Research Institute and at the University of Barcelona. I have the experience working with plant species from both the tropical and Mediterranean areas. I studied the responses to excess light, drought and nitrogen deficiency and the susceptibility to the infection by several pathogens. I worked also as a Professor of Biology at the University of Sidi Mohamed ben Abdallah (Morocco). Actually, I am working as a senior researcher at the eurac Research (Italy). My research subject is the effect of low air pressure on the physiology of alpine plant species. My area of expertise is leaf gas exchange, resource storage and allocation, stable isotopes, plant hydraulics and chlorophyll fluorescence. Almost all my experimental results are published in international journals of high impact.

Video cameras as a new world of looking to disasters

Carlos Sousa Oliveira

CERIS/Instituto Superior Técnico, University of Lisbon, Portugal

In a recent paper, Oliveira et al. (2021) presented a large selection of video and personal camera footage of various earthquakes and tsunamis. As the use of video surveillance cameras is increasing in recent years due to the monitoring of spaces in either the urban setting, building´s interior, etc., and the number of occurrences is keeping its trend, if not increasing, much more information is getting available in the Internet or assembled in earthquake agencies.

Video cameras are becoming essential tools to obtain real-time information on the mechanical performance of structures during seismic events, as well as on wave propagation properties causing tsunamis, landslides, water sloshing, etc. Their recorded images also provide essential clues on human behavior during shaking. It is like solving the inverse problem during its entire duration, not only by inspecting the final stage of its trajectory (animated versus fixed image).

We will be looking at cases created by earthquakes but not described. In many instances, we could estimate motion associated with the movement in analysis, and we accompanied the presentation with analytical formulations to explain the real-time information qualitatively.

For example, video images were a fundamental tool in investigating the collapse of two structures during the 2015 Nepal earthquake: the Dharahara Tower and the Tetrastyle Canopy. We can understand their time evolution from the onset of shaking to total collapse by accessing the video footage.

Video footage does not replace laboratory static tests or tests on shaking table, pseudo-dynamic walls, etc., and instrumental networks to monitor Earth and buildings. Still, as long as well-used, the information collected over time is of great value as it shows the "reality" and complements other sources of information. They can serve as an "inspiration" and a random visual health monitoring system.

Biography

C.S. Oliveira got his PhD from the University of California, Berkeley, in 1975 and a Full Professor Position at Instituto Superior Tecnico, University of Lisbon, Portugal, in 1992, after 20 years of research at the National Civil Engineering Laboratory in Lisbon. He retired in 2016 and got Emeritus Tittle from Universidade de Lisboa in June 2022. His main field of interest is earthquake engineering, emphasizing engineering seismology, namely strong motion, seismic hazard and risk mitigations. His "scientific hobby" deals with *in-situ*/analytical vibrations of various types of civil engineering structures, and currently, he is preparing a book on his findings. He is an Associate Editor of the Bulletin of Earthquake Engineering and a Member of the Portuguese Academy of Sciences and the Academy of Engineering.

He was awarded the "Nicholas Ambraseys Distinguished Lecture Award" by the "European Association of Earthquake Engineering" in 2021, recognizing his contribution to developing his area of expertise.

Digital surveillance of mosquitoes to increase resilience to climate change induced outbreaks of Arboviral diseases

J. Encarnação, B. Faulhaber, M. Williams and **P. Villalonga**

IRIDEON SL, Spain

An increasing resilience problem, even in the northern hemisphere, is the climate change driven colonization of cities by disease carrying mosquitoes. These tiny insects kill almost 1 million people every year and account for 17% of the estimated global burden of infectious diseases.

In 2018 an outbreak of West Nile Virus affected 12 European countries, infecting more than 1,500 people and provoking almost 200 deaths. Now in 2023, Peru is facing an unprecedented outbreak of Dengue, with more than 110,000 probable cases and at least 121 deaths, only until the end of May.

State-of-the art in mosquito surveillance consists on manual inspections of traps. We have developed an IoT sensor that automatically detects and counts mosquitoes, and identifies species, sex and age with Artificial Intelligence (all the data required by Public Health Authorities). The data is wirelessly sent to a cloud server, enabling for the first time remote and automated surveillance of mosquitoes. The same information can be used to enhance reactive actions such as the control and suppression of the vector of transmission, as well as to monitor the effectiveness of the actions to improve the resilience of citizens in effected areas.

The technology has been tested by public health professional under real operational conditions, in different countries and urban settings. Traps and sensors were deployed and samples were collected periodically. The inspection of the samples was performed manually and compared with the estimations done by the sensor. A correlation analysis was done to examine the association between the real and estimated counts. Correlations were significant for all cases (p-value < 0.001) and Pearson's coefficients were close to 1 which indicated a positive strong linear relationship between the estimations made by the sensor and the real values found in inspections of the traps.

Biography

CEO and co-founder of IRIDEON SL. Biotech Engineer, with PhD in Sensors and executive education in Business Administration and Marketing & Sales. Experience in analytics and sensor applications in Chemical Industry, Health, Environment and Agro-Food sectors.

Application of neutron-gamma technologies for soil elemental content determination

A. Kavetskiy, G. Yakubova, S.A. Prior and **H.A. Torbert**

USDA-ARS National Soil Dynamics Laboratory, USA

Knowledge of subsurface soil elemental content distribution over agricultural fields is important for optimizing modern agricultural practices and enhancing soil science knowledge. For example, soil carbon is a strong determinant of soil quality, crop productivity, and farm profitability. Thus, accurate field mapping of soil carbon can be beneficial in assessing modern agricultural practices and management decisions for enhancing carbon sequestration and has potential relevance to emerging carbon credit markets. Such soil carbon determinations are desirable since traditional chemical analysis of primary soil elements (particularly carbon) is laborious and time consuming due to the large sample numbers required (to account for landscape variability) and extensive laboratory processing. The neutron-stimulated gamma analysis method can be used for *in-situ* measurements of primary elements in agricultural soils (e.g., Si, Al, O, C, Fe, and H). This is a non-destructive method that requires no sample preparation and can perform multi-elemental analyses of large soil volumes. Measurement results are negligibly impacted by local sharp changes in elemental contents. Neutron-gamma soil elemental analysis is based on registration of gamma rays issued from nuclei upon interaction with neutrons; gamma rays are issued due to different processes of neutron-nuclei interactions. For primary soil elements, characteristic gamma lines can be used for content determinations in soil. To attain suitable accuracy, elemental content measurements should continue for ~15 minutes per site. Paired with GPS, our developed scanning methodology acquires data that can be directly used for creating soil elemental distribution maps (based on ArcGIS software) in a reasonable time frame (~20-30 hectares per working day). Created maps are suitable for both agricultural purposes and carbon sequestration estimates. In this presentation, recent USDA-ARS NSDL developments concerning neutron gamma analysis applications will be discussed in more detail.

Biography

Graduate of the Institute of Technology (Leningrad, USSR) and majored in Radiation Chemistry and Nuclear Physics. Approximately 30 years of experience in Applied Radiation Chemistry and Applied Nuclear Physics. Beginning in 2013, worked at the National Soil Dynamics Laboratory (USDA-ARS, Auburn, AL, USA) on applying nuclear methods (primarily neutron-gamma analysis) for soil elemental analysis.

Microplastic: A less imperceptible threat on the Peruvian coast

Alberto Huiman Cruz

Universidad Nacional Mayor de San Marcos, Peru

The purpose of the study was the identification of the presence of microplastics in the Agua Dulce Beach, city of Lima - Peru, therefore samples of sandy sediments were collected in order to evaluate the concentration of microplastics particles and identify their abundance, typology and possible sources of income. In order to obtain a representative sample, 20 sampling points (supra-coastal and high tide) were determined, from an area of 3.5 ha, in triangular transects.

The result was the identification of 43 pieces per m^2, it was also observed that the predominance of the type of microplastics found is of secondary origin (polystyrene and polypropylene); however, 20.9% correspond to primary microplastics (pellets). Despite the restrictions by COVID-19 with the closure of beaches to bathers between the period 2020 and 2021, there was an increase of 7.5% of microplastics on the beaches of the Peruvian coast.

The identification of microplastics of primary (181 pieces) and secondary (683 pieces) origin in the sampled area confirms that we are facing a scenario with polluting agents that cause negative impacts on the environment and affect marine species by altering the food chain (including human health).

The traceability analysis of the plastic found is: (1) Plastic processing plants located on the coast itself; (2) Artisanal fishing (buoys, fishing nets, waterproof suits, among others) where plastic waste is thrown into the sea, it erodes, fragments, and is deposited in the beach area, affecting the marine ecosystem; (3) Bathers, and (4) Drag by marine currents.

In Peru, beach cleaning campaigns, as the main measure applied by the Peruvian government, however, preventive policies, regulation, education and the creation of alternative materials must constitute the system that allows reversing the adverse situation.

Biography

- Doctor in Environmental Science - Master in Environmental Science, majoring in Management and Environmental Regulation of Land Use - Geographer Engineer.
- Panellist at the ISWA World Solid Waste Congress: Singapore (2022), Athens – Greece (2021), Bilbao – Spain (2019), Kuala Lumpur – Malaysia (2018), Baltimore – USA (2017), Novi Sad – Serbia (2016), Antwerp – Belgium (2015), São Paulo – Brazil (2014), and Florence – Italy (2012).
- International speaker on solid waste representing Peru in: Turkey, Italy, Switzerland, Cuba, Paraguay, Ecuador, Costa Rica, El Salvador, Colombia and Argentina.

- Best Presentation Award, of the XVI. International Conference on Solid Waste Recycling Technologies, Estambul – Turquía (2022).
- Best Scientific Paper Award at the «World Resources Forum in 2016», San Jose – Costa Rica.
- Awarded Best Oral Paper at the «V Inter-American Solid Waste Congress in 2013», Lima – Peru.
- In 2023 he was recognized by the College of Engineers of Peru for «Outstanding professional work as a Geographical Engineer».
- University Teacher.

Blockchain-based IoT enabled health-monitoring system

Poonam Rani

Netaji Subhas University of Technology, India

With the evolution of the Internet of Things, our health-monitoring systems are advancing day by day. We explore this emerging technology and propose an advanced security framework that comprises a four-layer architecture health-monitoring system. We collect patient data using smart and intelligent devices. We categorize this collected information into different medical classes. Maintaining privacy and security while collecting this information from patient's wearable smart and intelligent sensing devices is today's major challenging task. Our main aim is to address this challenging task. So, We propose a lightweight and secure communication framework that is based on blockchain architecture for decentralized IoT networks. We use the concept of transfer learning for classification into different classes. We develop a model, which uses blockchain for security and takes an advantage of transfer learning that uses multiple pertained models. The presented routing methodology incorporates parameters viz. probability, credibility rating, node left energy to forward the data to its target station so that the network overhead and energy usage is minimized. For the classification of the collected patient information, we use 4 different pre-trained convolutional neural networks model: InceptionV3, ResNet50, SqueezeNet, and VGG19. After the simulation of the proposed routing protocol and we compare it with other benchmark protocols on different performance metrics. The experimental results give 92.24% classification accuracy better than earlier models.

Biography

Dr. Poonam Rani is an Associate Professor in the Computer Science and Engineering department at Netaji Subhas University of Technology (NSUT), formerly NSIT, Dwarka, New Delhi, India. She has done her Ph.D. in the Computer Engineering department at Delhi University, India, in Jan 2021. Her research interest includes Block chain, IoT, Social networks Analysis, Soft Computing, and Machine learning. She has published several papers in reputed international journals including SCIE and international Scopus conferences and book chapters. She is invited as a Faculty Resource Person/Session Chair/Reviewer/TPC member in different FDP, conferences, and journals. She has reviewed several research articles in reputed international journals. Currently, she is a member of ISTE, IETE, and IEEE. She has worked in the timetable committee and admission committee. She is currently working as chairperson of DTCRC (CSE), Departmental NBA coordinator, Departmental Library coordinator, and member of AAI (Alumni Affairs Interim). She has guided several B.Tech. and M.Tech. students in their major projects. She is also teaching and guiding Ph.D. students in the CSE department of NSUT.

Circular economy for municipal solid waste to resources symbiosis network development

Kok Sin Woon and **June Keat Ooi**
Xiamen University Malaysia, Malaysia

Municipal solid waste (MSW) is a universal issue affecting all countries. The current MSW handling process by mainly disposing into open landfills has adverse environmental effects and is economically unfavorable. Due to the heterogeneous characteristics of MSW, a combination of different waste processing facilities with simultaneous cost and greenhouse gas (GHG) minimization needs to be performed for developing circular waste management. Taking Malaysia as a case study, a multi-objective MSW management model is established using the mixed-integer linear programming with augmented ε-constraint method version 2 to circumvent the limitation of the conventional weighting method. The model determines the optimum MSW allocation on seven waste processing facilities, including open landfills, material recycling facilities, sanitary landfills, anaerobic digestion, composting, incineration, and plasma gasification. Compared to the current scenario in Malaysia, the least-cost solution shows a 26% reduction for both cost and GHG emissions, while the least GHG emissions solution indicates a 159% reduction of GHG emissions with a 15% increase in cost. The sensitivity analysis demonstrates that plasma gasification is more favorable when electricity prices increase. A change in waste separation rate from 30% to 90% reduces total MSW management cost and the net GHG emissions by 18.24 MYR/tonne MSW and 0.30 tonne CO_2-eq/tonne MSW, respectively. This study aligns with SDG 12 and SDG 13 and provides quantitative information to policymakers in developing a resilient and resource-efficient MSW management system in Malaysia. While the study takes Malaysia as a case study, the developed model can apply to other places facing a similar MSW disposal dilemma.

Biography

Dr. Woon is an Associate Professor and Head of PhD Program of New Energy Science and Engineering at Xiamen University Malaysia, a Professional Technologist by the Malaysia Board of Technologists, and a Green Building Accredited Professional by REHDA Malaysia. He advocates achieving transformative resilience for climate and environmental sustainability in waste and wastewater management, green building, renewable energy, and green mobility. He is passionate about utilizing systems-analytical approaches such as life cycle assessment, multi-objective optimization, artificial intelligence, pinch analysis, material flow analysis, and P-graph analysis on issues related to the environment-economic-social well-being nexus. He has published 50 papers, with over half in WoS Q1/Q2 journals as the first/corresponding author. He serves as the editorial board member of *Green and Low-Carbon Economy,* and guest editor of several WoS/Scopus-indexed journals such as *Cleaner Engineering and Technology, Frontiers in Sustainability, Sustainability,* and *Energies*. He received his PhD in Environmental Engineering from the Hong Kong University of Science and Technology.

Adaptive capacity and community-based earthquake disaster management

Bih-Chuan Lin[1] and **Chun-Hung Lee**[2]

[1]Department of Natural Resources and Environmental Studies, National Dong Hwa University, Taiwan
[2]Center for Interdisciplinary Research on Ecology and Sustainability, College of Environmental Studies, National Dong Hwa University, Taiwan

The frequency and intensity of natural disasters have been increasing in recent decades, especially earthquakes are one of the causes of major natural disasters. Improving community adaptive response to disasters based on community capacity has gradually become an effective means of coping with disaster risks and improving residents' well-being and community participation in disaster planning and management. We integrate community resilience and disaster management to establish an evaluation framework for community-based earthquake disaster management (CEDM) based on community perspectives under the importance-performance analysis (IPA) method and identify the factors affecting community adaptive behavior. Features that affect the differentiation of community residents' adaptive behavior in the CEDM program are classified into risk perception, learning earthquake knowledge, the ability to earthquake prevention, and creating a platform on CEDM. The results identify that the CEDM has to integrate the higher community education plan, the stronger flexibility to disaster preparedness, the higher the residents' awareness of disaster prevention, the stronger the ability to adapt to disasters; the higher the ability of the government and non-profit organizations to cooperate with the community to deal with disasters, and the stronger the community's ability to manage disasters. These findings provide valuable insights into the construction of CEDM systems and related policymaking.

Biography

Education

- 2023-08 – NDHU, Ph.D. of Natural Resources and Environment Studies
- 2009 NCKU, Institute of Architecture, Ph.D. Candidate
- 2004 KSU, Master of Architecture

Experience

- 2013-present Jingsi Temple & Tzu Chi Foundation, Architecture Designer
- 2010-2012, University Visiting Lecturer
- 2005-2009, CECI Engineering Division

Publication

- 2022 International Journal of Natural Hazards (Springer)
- 2023 International Journal of Disaster Risk Reduction (Elsevier) will be published
- 2021 AAERE International Conference
- 2021 13th Annual Conference on Development Studies
- 2011 IEEE Published
- 2009 CIB Published

Recent Research Project

- 110-111 Hualien east coast ecosystem service function value evaluation research.
- 111 Research on social acceptance and economic impact assessment of ground-based photoelectric development on changes in land use patterns.
- Resilient urban and rural areas, disaster prevention and adjustment under extreme disasters

Award

- 2021 13th Annual Conference on Development Studies won the Excellent
- 2002 International Competition Excellent Work
- 1998 Construction Award Scholarship

Measuring and mapping subsurface soil elemental distribution using neutron-gamma analysis

G. Yakubova, A. Kavetskiy, S.A. Prior and **H.A. Torbert**

USDA-ARS National Soil Dynamics Laboratory, USA

Due to potential effects on climate change, assessing impacts of modern agricultural practices on soil carbon sequestration requires exact knowledge of critical elemental content (primarily carbon) over large soil surface areas (several hectares). Collecting and processing representative field soil cores for traditional laboratory chemical analysis is labour intensive and time consuming. Our neutron-stimulated gamma analysis system(paired with GPS) is a good alternative to the traditional soil elemental method. Neutron-stimulated gamma analysis can be used for simultaneous *in-situ* measurements of primary elements(e.g., C, Si, O, H, Fe, and K) in agricultural soils. Neutron-gamma analysis is based on detecting gamma lines that appear due to neutron nuclei interactions. Many nuclei can be detected and quantified by the presence of their characteristic gamma lines. State-of-the-art nuclear physics methodologies and instrumentation, combined with commercial availability of portable pulse neutron generators, high-efficiency gamma detectors, reliable electronics and measurement and data processing software, have currently made the application of neutron-gamma analysis possible for routine measurements in various fields of study. Long-range trends of changing elemental content are of interest when mapping soil elemental distribution for agricultural purposes. Elemental distribution can be represented as isolines overlaying a geographical map of a studied field. Data suitable for mapping should be prepared as datasets of geographical coordinates and corresponding elemental contents. Isolines across the field can be created from such datasets by different methods (e.g., kriging, local polynomial interpolation) using available software (e.g., Arc Map). All steps required for creating soil elemental distribution maps will be presented on the poster in more detail. This will include the scheme and cart design for neutron gamma analysis, means of primary data processing and converting acquired gamma signals to elemental content and field surveying methodology for map creation. Example elemental (primarily carbon) maps of real agricultural fields suitable for use for both assessing agricultural practices and for the carbon credit market will also be discussed.

Biography

Graduate of the University of Illinois (Urbana-Champaign IL, USA) and majored in Nuclear Engineering. Approximately 20 years of experience in Applied Nuclear Physics. Beginning in 2013, worked at the National Soil Dynamics Laboratory (USDA-ARS, Auburn, AL, USA) on applying neutron-gamma analysis for soil elemental analysis and mapping.

Economics in game theory for hotel unemployment

Xuan Tran
University of West Florida, USA

This study uses the game theory to find a Nash equilibrium of price elasticities of hotel demand in the United States before and during the COVID-19 pandemic to interpret the decrease in hotel unemployment rate. The sample selected is the Oahu, Hawaii market due to its higher room rate and higher unemployment rate compared to those in the mainland US. Findings indicate that to increase hotel revenue and decrease unemployment rate, the price elasticity of hotel demand in the mainland US would be higher than the one in Oahu, Hawaii. While the government has built more value into hotels by financially supporting unemployed hotel employees, established hotel brands have maintained their excellent service for their guests during the pandemic.

Using game theory to find the Nash equilibrium of the price elasticities of demand between Oahu and the mainland US, the study has contributed to (1) Marshall's neoclassical economics when using price "elasticity" of demand to identify the "marginal" of labour, (2) Keynes' theory when using optimal benefits between Oahu and Mainland US to identify "effective demand" to decrease unemployment rate, (3) Slutsky's equation when using additional "income" from the Government supports to identify "substitute" leisure travel in mainland US for Oahu in the "total effects" of the hotel price strategy in the COVID-19 pandemic and finally, the study has proved the US government financial supports have increased the gross domestic product, hotel demand and decreased unemployment in the US in the pandemic era when using the Auto-Regressive Distributed Lag and Structure Equation Modelling to reduce spurious regression of the STR time-series data.

The research provides insights that can be valuable in evaluating the connections between climate change acceleration, government, hotel demand, and hotel unemployment through Nash equilibrium.

Table 2. Long-run Oahu/Mainland US coefficients using ARIMAX models (Table view)

Cointegrating Equation	PED Oa/Main	STD Oa/Main	t Oa/Main	Crisis 2020	Constant
$\Pi_{OahuOIUI}/\Pi_{USOIUI}$	−0.49/-0.53	0.12//0.13	3.9*/3.8*	1.79*	−14.89
$\Pi_{OahuOIUD}/\Pi_{USOIUD}$	−6.75/-7.28	0.5/0.6	11.4**/11.4**	1.71*	−15.55
$\Pi_{OahuODUI}/\Pi_{USODUI}$	-1.02/-1.13	0.4/0.3	7.1*/7.0*	1.64*	−14.82
$\Pi_{OahuODUD}/\Pi_{USODUD}$	-1.6/-1.7	0.5/0.6	2.7*/2.6*	1.83*	−14.85

**: $p < .001$, *: $p < .05$, $t > 2.0$

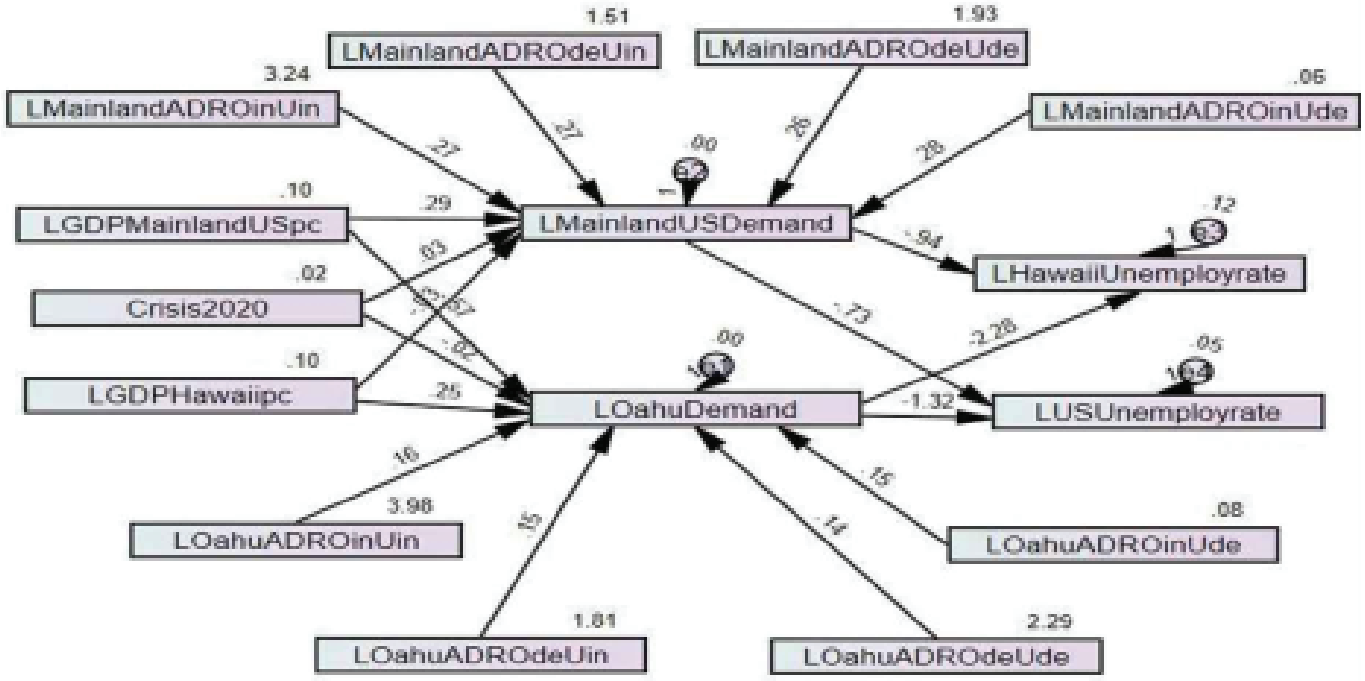

Figure 3. *Hotel demand and unemployment rate in Oahu and Mainland US*
Source: *Author's calculation*

Biography

Dr. Xuan V. Tran is a professor at the University of West Florida (UWF) specializing in microeconomics, macroeconomics, and consumer behavior psychology in the hospitality and tourism industry. His research focuses on various topics such as the economic impact on luxury hotel demand, hotel brand personality and service quality, and customer price sensitivity in upscale lodging. Additionally, he has explored areas including crime and tourism, financial decision-making, and tourism issues in Asia, Europe, and the United States. Tran's work has been published in respected journals such as Annals of Tourism Research, Anatolia, International Journal of Electronic Finance, Journal of Vacation Marketing, and Tourism Analysis. He obtained his Ph.D. in Hospitality, Recreation, and Tourism from the University of Utah and has taught at several institutions in Japan, China, and Vietnam before joining the UWF faculty.

Geochemical and Geomechanical aspects of chemical, CO_2 and hydrogen injection in porous rocks

G. F. Oluyemi
School of Engineering, Robert Gordon University, UK

Chemical injection in composite production systems is commonplace in oil and gas field development. Injection of chemicals is often targeted towards treating a range of flow assurance and production related problems in the composite production systems such as scale formation in reservoir and process systems, corrosion of process systems, Asphaltene precipitation, etc. Similarly, the current global drive to reduce CO_2 emission of fossil fuel-based energy and shift the balance of the world energy mix to have renewable energy sources supplying the largest proportion of world energy need has largely promoted carbon capture and sequestration (CCS) technology and hydrogen-based energy production in the last few years. CCS and large-scale hydrogen energy production are highly dependent on injection and storage of CO_2 and Hydrogen respectively in porous media.

Chemical injection into production systems and injection and storage of CO_2 and Hydrogen will lead to some form of interaction between the porous rocks, injected fluids, and the reservoir native fluids which will directly lead to chemical disequilibrium and initiation of a range of chemical reactions. These reactions may lead to the formation of new fluid and rock products. The new fluid products may be incompatible with the reservoir rock and may cause further alteration of the rock mineralogies in the near wellbore area and the formation of new lithologies. This time-dependent phenomenon will propagate deeper with time and may have geochemical and geomechanical implications for the reservoir rock.

This work investigates the geochemical effects of some oilfield chemicals and their impact on the geomechanical properties of reservoir rock to appraise the potential for rock failure and solids production and the mechanism of failure. A combination of rock mechanical testing, grain size distribution analysis, and analytical techniques are used to establish and define the effects of these chemicals on grain dissolution and unconfined compressive strength (UCS).The work further explores the opportunities to extend the approach developed to define and establish the interaction between formation rocks and CO_2 and Hydrogen in the context of storage in porous rocks.

Biography

Dr. Gbenga Oluyemi is an Associate Professor of Petroleum Geomechanics at Robert Gordon University, UK, and the Chair of Sand Management Network UK. He has more than 20 years of experience spanning academia, the oil and gas industry, and water/environmental engineering. Dr. Oluyemi's research interests are in process optimisation, life cycle cost and impact analysis, oil and gas production optimisation, formation evaluation, geomechanics, oilfield chemistry, and value of information. He has worked as PI and Co-PI on a range of projects funded by the UK government, EU, and oil companies over the last 14 years and has published more than 70 peer reviewed journal and conference papers.

PEERS ALLEY MEDIA

2nd Global Summit on
Advances in Earth Science and Climate Change
September 14-15, 2023 | London, UK

A review of the internationalization of state-owned firms and sovereign wealth funds: Governments' nonbusiness objectives and discreet power

William L. Megginson[1,2], Alvaro Cuervo-Cazurra[3] and **Anna Grosman[4]**

[1]Michael F. Price College of Business, The University of Oklahoma, USA
[2]University of International Business and Economics, China
[3]D'Amore-McKim School of Business, Northeastern University, USA
[4]Loughborough University London, UK

We review and bridge the literature on the internationalization of state-owned firms and sovereign wealth funds to provide a novel understanding of how government ownership affects foreign investments in three ways. First, we explain how state-owned firms and funds behave differently from private ones because they need to balance governments' nonbusiness objectives and firms' business goals. This results in competing predictions on whether government ownership helps or hinders internationalization due to particular nonbusiness objectives. Second, building on the review, we provide suggestions on how to extend research topics and theories of the firm by incorporating these nonbusiness objectives in the internationalization decisions in four areas: home government's endowments, characteristics and attitudes; host-country expansion's support, influence, and impact; home- and host-country relationship conflicts, mediation, and disguising; and management's orientation, opacity, and arbitrage. Third, we capture how governments may use state-owned multi nationals and sovereign wealth funds to nudge host-country governments by introducing the concept of discreet power and the use off our strategies (recognition, values, development and supremacy) to achieve it. This helps to outline the beginning of a unified approach to how governments use their foreign investments to achieve nonbusiness goals.

Biography

Bill Megginson is Professor and Price Chair in Finance at the University of Oklahoma's Michael F. Price College of Business. He is also Visiting Professor at the University of International Business and Economics (Beijing), Finance Area Editor for the Journal of International Business Studies and a Consultant for the World Bank. From 2002 to 2007, he was a voting member of the Italian Ministry of Economics and Finance's Global Advisory Committee on Privatization, and from 2013 to 2019 he was the Saudi Aramco Chair Professor in Finance at King Fahd University of Petroleum and Minerals in Dhahran, Saudi Arabia. Professor Megginson's research interest has focused in recent years on private equity and venture capital, the privatization of state-owned enterprises, state owned investors, energy finance, and investment banking. He has published refereed articles in several top academic journals, including the Journal of Economic Literature, the Journal of Finance, the Journal of Financial Economics, the Review of Financial Studies, the Journal of Law and Economics, the Journal of Financial and Quantitative Analysis, and the Journal of International Business Studies. Professor Megginson's research has been frequently cited in academic and professional publications. His articles have been downloaded over 73,000 times from the Social Sciences Research Network, and his books and articles have been cited over 25,000 times (according to Google Scholar). He has visited 85 countries during his lifetime, and has lived in Spain, Pakistan, France, and Saudi Arabia, in addition to the United States. He has been a Visiting Professor at Duke University, Vanderbilt University, the University of Zurich, the University of Amsterdam, Bocconi University, Université-Paris Dauphine.

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Rehabilitation of footing using Anchored Micropiles on Sand- An experimental study

Mohit Talwar[1], Rajiv Chauhan[2] and **Arvind Kumar Agnihotri[3]**

[1]Assistant Professor, Department of Civil Engineering, IK Gujral Punjab Technical University, India
[2]Associate Professor, Department of Civil Engineering, IK Gujral Punjab Technical University, India
[3]Professor, Department of Civil Engineering, National Institute of Engineering and Technology, India

Micropiles are deep foundation elements that have been used in ground improvement to enhance the bearing capacity, reduce the settlement of soil, and strengthen the foundation of structures. The frictional resistance between the micropile surface and the ground soil is considered to be a feasible mechanism for improvement. The most common reasons behind the foundation underpinning are seismic retrofit and prevention of settlement. Micropiles are generally used for underpinning, where different load-transferring structures are implemented between the existing structure and the micropiles. The classification of different kinds of load-transferring structures is introduced in this paper. In the present years, the pile foundation is not dependent on the load-bearing piles that are being used in Japan, such as friction pile foundations and piled raft foundations. The authors have been researching the support structures caused by friction between the earth and soil around the surface of the piles. Various sizes of pile foundations have been used in this study. Micropiles consist of piles with a small diameter, which is usually under 12 inches, driven piles, or cast-in-place drilled piles, which are a mixture of steel reinforcement and grout. It can be adapted over conventional piles, the reason being that they can be drilled under hard subsoil conditions. On the other hand, conventional pile foundations cannot be constructed in such conditions and can be used to strengthen existing foundations.

Sustainable approaches for climate change mitigation

Shweta Rana
Associate Professor of Biology and Environmental Studies, FLAME University, India

Anthropogenic activities have influenced the environment and climate in the ongoing Anthropocene epoch. It is crucial to explore and utilize sustainable alternatives that provide vital solutions to combat climate change and enhance overall environmental health.

I discuss this larger issue which is central to majority of environmental problems and so demands global attention. I will substantiate it with a focus on two of my studies on hemp and scavengers. Hemp plant needs less water to grow, sequesters more carbon and cleanses air & soil. Scavengers reduce escape of carbon dioxide and methane from the dead decaying organisms and hence both can help mitigate the climate change. I investigate Hemp plant as a sustainable alternative to Indian Businesses and the role of scavengers in providing sustainable remedies in maintaining public health. Examination of why and how Indian businesses can exploit industrial hemp in their commerce and the perception of the hemp plant especially in Indian context will be discussed. I also scrutinize ecological and economical importance of scavengers to keep the environment clean. They play a major role in curbing environmental contamination through scavenging on carcasses. The viable links in the transmission of few zoonotic diseases from the infected dead and alive animals to humans and their possible exacerbation in the absence scavengers will be established. Their role as natural and effective cleaners of the environment in the Indian health scenario is of importance because they can reduce the expenses of the government in waste management and maintenance of public health.

Utilization of these flora and fauna examples to mitigate climate change are aligned with sustainable development goals; 6 (clean water and sanitation), 13 (climate action) and 15 (biodiversity) directly.

Biography

Shweta Rana has over twenty years of experience in teaching and research in various academic institutes and universities of repute in India. Her areas of research interest are in the fields of Plant Sciences, Sustainability Studies, Sustainable Food production, Environmental Health, Heavy metals and Citizen Science. She has been associated with FLAME University for the last 14 and a half years where she has immensely contributed in developing programs, curricula, and teaching resources in the department. She enjoys designing workshops, practicals and scientific activities that enhance the conceptual understanding of the subject matter. She has initiated activities that resonate with the university's core value of Ecological Balance.

A new method for extractive text summarization using neural networks

Sohini Roy Chowdhury and **Kamal Sarkar**
Jadavpur University, India

Summarization aims at extracting the salient information from a document and presenting the extracted information in a condensed form. Most existing methods for extractive text summarization generate a summary from a document using a two stage process. In the first stage, the sentences are ranked based on their saliency scores and, in the second stage, the summary generation process starts with the top-ranked sentence and selects the next sentences one by one from the ranked list. To improve summary diversity, a sentence is included in the summary if the sentence is sufficiently dissimilar from the already selected sentences. Sentence selection is continued until the summary of the desired length is reached. The second stage is greedy in nature and it uses a predefined similarity threshold value to check the dissimilarity of a sentence with the already selected sentences. Due to this fixed similarity threshold which is manually tuned, in most cases, this approach fails to manage the diversity in a summary. This article proposes a summarization approach that uses a neural network-based learning model that learns to include a sentence in a summary by taking into account both the saliency of the sentence and the diversity in the summary. For this purpose, the model is trained using two types of features—saliency features and diversity features. We have evaluated the proposed approach using two open benchmark datasets—the DUC dataset and the Daily Mail dataset. Experimental results show that the proposed neural summarization approach is effective in producing better non-redundant informative summaries and outperforms many existing summarization approaches to which it is compared.

Biography

Sohini Roy Chowdhury has pursuing her PhD from Jadavpur University, KOLKATA INDIA. She has completed her M. Tech in Computer Science and Engineering form University Of Kalyani. She is graduated with B.Tech in Computer Science and Engineering form RCC Institute Of Information Technology, kolkata, INDIA. She is presently serving as faculty of Jadavpur University in Computer Science and Engineering department. She has published three springer journals and five IEEE and springer conference papers. She served as Junior Research Fellow (JRF) in the SERB (Science and Engineering Research Board, under DST) funded project. Her work areas include machine learning, deep learning.

Addressing the climate action and the sustainable development

T P Surekha[1] and **Nachiketh Rayapura**[2]
[1]*Vidyavardhaka College of Engineering, India*
[2]*Cranfield University, UK*

Climate change is one of the most challenging sustainable development goals to be addressed by all the citizens of the world. There are different ways to meet sustainable development policies that contribute to the mitigation of climate change. Education is one of the most important factors which can achieve sustainable development to help an individual to think logically and inculcate the habit of questioning and finding solutions to the societal problems which affect the economic development of our country. Adoption of cost-effective energy-efficient technologies in electricity generation, transmission distribution, and end-use can reduce costs and local pollution. The United Nations Framework Convention on Climate Change (UNFCCC) struck a major agreement to tackle climate action and accelerate and intensify the actions and investments required for sustainable low carbon. Climate change refers to a rise in average surface temperatures on Earth. Volcanic eruptions emit some gases and particles that can cause sunlight to be reflected away from the Earth, resulting in global cooling. When sunlight reaches the surface of the Earth, some of it is absorbed, which warms the ground, and some bounces back to space as heat. The purpose of the present study is to review the status of research on the subject, which is based on "Global Climate Change Impacts, adaptation, and sustainable mitigation measures". The scope of climate action is complex and includes science and encompasses both the politics and the economics of climate change. Finally, to conclude, the major aim of education is to create happy and healthy citizens who are sensitized by the social, environmental, and economic problems of a country. Thus, education is the only means which can help in uplifting the economic status of the poor by raising the standard of living and helping everyone to understand the importance of a healthy and hygienic environment.

Biography

Dr. T P Surekha did her UG in ECE and PG in Bio Medical Signal Processing Respectively. She completed her doctoral degree in the field of Communication systems from VTU, Belgavi, Karnataka. She has vast experience in teaching and research. Presently she is working as a Professor in the ECE department and Dean–Student Welfare at Vidyavardhaka College of Engineering, Mysuru, Karnataka, India. She has published 50 papers in various national and international journals and 30 International conferences. Her interest in research areas are wire & wireless Communication Systems, Power system, Modeling & Simulation of Communication systems, Biomedical Signal Processing and Engineering Education System.

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2nd Global Summit on
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September 14-15, 2023 | London, UK

Application of system dynamics technique for water resource management in the urban system

Varuvel Devadas[2] and **Kaaviya.R**[1]

[1]*Vellore Institute of Technology, India*
[2]*Indian Institute of Technology, Roorkee, India*

Water stress would intensify as rapidly growing urban areas place heavy pressure on the available water resources. Both El Nina and El Nino effects are functioning in India, and as a consequence floods and draughts are occurring periodically in the study area, Chennai City (the system). The present study employs System Dynamic (SD) Modelling Technique-a decision aid tool in enhancing the water supply system by exhibiting interrelationships between the associated variables in the system. Chennai City, India, is continuously affected by water-related issues. This paper examines (i) water security, water demand and supply, and sewerage indices involving groundwater, seawater, and surface water systems in the study area; (ii) analyses the current and future behaviour of the developed indices to understand the water demand and supply systems; and (iii) evolve plausible scenarios under alternative conditions to decide upon the policy interventions and phase-wise recommendation by considering the climate changes. Different sub-models pertaining to water demand and supply, infrastructure, water security, surface water, seawater, sewerage water, etc., are developed by employing System Dynamics Technique; integrated together; and thereby an integrated water resource management model is developed. This model is validated for enhancing the model's reliability. The model highlights the necessity of reinforcing the water infrastructure system to comply with the city's future water demand. The simulation runs demonstrated that improving water availability and water use efficiency is crucial in enhancing water security. Phase-wise projection of the selected policy scenario exhibited the effectiveness of the thrust parameters in enhancing the indices. This model can also be applied to any city by considering locally available control parameters, which decide the functions of the system (with a necessary alteration).

Biography

Varuvel Devadas, Indian Research Scientist, and Educator. Achievements include research in evolving an urban, rural system concept. Winner, Khosla Research Prize, Indian Institute of Technology, Roorkee, 1998. Member, Parish Council, Sacred Heart Church, Roorkee, India, 1996; Member, Indian Engineering Continuing Education Society (life), IIT-Roorkee; Member, Systems Dynamics Society of India (life), IIT-Kharagpur; and Member, System Dynamics Society of U.S.A. (a Year).

The effect of green technology adoption in entrepreneurial innovation and human resource on bank risk and returns in Europe

Ayesha Afzal and **Ramsha Noor**
Lahore School of Economics, Pakistan

Climate change encompasses physical and transition risks for the economy's financial stability and requires a fundamental shift in business strategies to support the environment. Incorporating the adaptation of green technology in entrepreneurial innovation, human resource and bank financing instruments in the form of a bank's production model implies effects on bank risks and returns. This study considers 26 European countries for the analysis by developing a framework inspired by Sustainable Banking Business Model (SBBM), materializing the climate change risks for European Banks while integrating green human resources, green entrepreneurial innovation and green banking. Structural equation modelling technique analyzes data from the period 2013 to 2022. The results indicate that conventional methods of determining bank performance lack an explanation for the profitability of sustainable banks in today's times. Climate change, via adaptation of green technology, increases bank profitability. However, a weak association between climate change, managerial practices and financial performance calls for attention to green practices and product innovation to secure future returns. Governments may consider incentivizing alignment with green laws to encourage commitment to green banking agenda. Capital requirements depending on the sustainability risks should reflect climate risks. Financial regulators and Central Banks should consider including climate risks in regulatory and asset eligibility assessment frameworks.

Biography

Dr. Afzal is a Professor and member of permanent faculty at Lahore School of Economics. She has been a fellow at the University of Oxford where she has worked on issues in growth and social policy under modern financial paradigm in comparative studies of South Asian economies. Dr. Afzal's research interests include various aspects of development with special focus on sustainable development, financial system, and risk management. She is currently conducting collaborative research with renowned international researchers on Blue Economy, Sustainable development and Green finance. Along with academic research, Dr Afzal is also consulting with various organizations for projects on sustainable development and finance. Currently, she is working as "Project Coordinator" with World Bank Project Building Energy Efficiency Opportunities Study and as a "Project Economist" with HIMAˆVerte on a Pilio carbon Inserting project.

Sensitivity of gravity-wave momentum flux to moisture in the mei-yu front systems

Yuan Wang

College of Meteorology and Oceanography, National University of Defense Technology, China

Differing from the typical midlatitude polar front, the Mei-Yu front in the East Asian monsoon region is characterized by a weak temperature gradient but strong moisture gradient and persistent precipitation, and is strongly affected by moisture and diabatic heating. A previous study showed that gravity waves generated in the Mei-Yu front are distinct from those generated in a traditional dry front due to the moisture and resulting moist convection. In this study, by performing sensitivity experiments, we further investigate the detailed effects of varying moisture content on momentum flux induced by gravity waves in the Mei-Yu front systems. It is found that gravity waves in the systems induce net northward momentum flux and drag forcing. The drag on the background flow is indistinctive in the lower stratosphere but strengthens with height, and the influence of moisture on the drag also increases with height. The increase of moisture in general intensifies the momentum flux, but the strongest flux is still found at relatively large scales and specific phase speeds. The fanlike waves excited by the front are strongly coupled with the convective wave excited by the prefrontal convection at slow phase speeds, which leads to the weakening of local wave flux.

Biography

Yuan Wang has completed his PhD at the age of 27 years from College of Meteorology and Oceanography, National University of Defense Technology, and postdoctoral studies from School of Atmospheric Sciences, Nanjing University, China. He has published 16 internationally peer-reviewed papers on reputed journals such as Geophysical Research Letters, Journal of the Atmospheric Sciences, and Journal of Geophysical Research: Atmospheres as first/corresponding author, and such as Remote Sensing as contributing author.

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2nd Global Summit on
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September 14-15, 2023 | London, UK

Agricultural land resources of Uzbekistan: Management and future tendency

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[1]The State Scientific and Design Institute "Uzdavyerloyikha", Republic of Uzbekistan
[2]"Farvilyerloyikha" Branch of the State Scientific and Design Institute "Uzdavyerloyikha", Republic of Uzbekistan

The Republic of Uzbekistan is located between the Amudarya and Syrdarya rivers and covers an area of 448.9 thousand sq. km. As of January 1, 2023, the agricultural land of the republic is 20,236.3 thousand hectares, that is, more than 45% of the total area of the country's land fund. Agriculture is an important sector of Uzbekistan's economy, accounting for approximately 25% of GDP and employing about 26% of the labour force. The majority of agricultural land in the country is located in the basins of the Amu Darya and the Syr Darya rivers, which provide about 70% of the irrigation water for the region. Agriculture in Uzbekistan is based on irrigated agriculture, only 5-7% of cultivated agricultural land is non-irrigated. The use of agricultural land is carried out by the following entities: farms, dekhkan farms, agricultural clusters and agricultural cooperatives on the basis of long-term lease, life-long inheritable possession and other forms of ownership and use. Small-scale technologies have been imported from abroad for processing fruits and vegetables over the past five years by farmers, agricultural companies, processors, and entrepreneurs. The amount of processed goods grew nearly five-fold as a result. Additionally, in the degraded land areas, gardens and diverse farms are being rapidly developed for intense farming production (intensive gardens). Cotton and grain are the country's principal crops, but the elimination of quotas and price controls in 2020-2023 is facilitating a shift to higher-value fruit and vegetable cultivation. During the year 2022, Uzbekistan's export earnings from agricultural products accounted for approximately 8.3% of the country's total foreign earnings. Through intensive development programs, application of advanced scientific achievements, digitalization, and adoption of new technology, the government expects to double farmers' income by 2022-2026 and ensure a 5% annual growth in agriculture.

Biography

Kamola Khaitova is a PhD researcher in Agricultural Sciences in The State Scientific and Design Institute "Uzdavyerloyikha" under the Ministry of Agriculture of the Republic of Uzbekistan. Topic of her dissertation is "Improvement of land management of foothill pastures". The main focus of her research is organization of effective and rational use of pasture land resources. She has published over 20 papers in reputed journals and 2 guide books related to land management.

Climate issues from the planetary perspective and insights for the Earth

A. Coustenis
Paris Observatory, CNRS, PSL University, France

Terrestrial planet climate studies provide insights on the climate changes currently affecting the Earth, which have generated wide concern about a decline in habitability as the population grows with increasingly harmful effects on the environment.

Dramatic changes in climate and potential habitability, have also taken place on Mars, and probably on Venus and Titan as well (although the timescales there remain uncertain).

Modelling of Venus and Mars climate not only allows us to develop detailed scenarios and possible histories for those extreme variants of the terrestrial situation, it shows up deficiencies in our understanding that could make important differences to climate forecast for the near future of life on Earth.

Model inter-comparisons that work quite well for present-day Earth, Venus, Mars and Titan raise the prospect of extrapolating the model descriptions of climate into the past, and into the future. The study of planetary environments can help us to better understand our own planet, and vice versa.

Biography

Athena Coustenis is Director of Research with the French Center for Scientific Research (CNRS) at Paris Observatory, specializing in Astrophysics and Planetology. She contributes to the development of space missions and analyzes the acquired data to investigate the atmospheres and surfaces of planets, satellites and exoplanets (examples are the NASA-ESA Cassini-Huygens mission and the upcoming JUICE and ARIEL ESA missions). She is currently the President of the COSPAR Panel on Planetary Protection and of the Science evaluation committee of the French National Center for Space Studies (CNES-CERES). She is a member of several other international advisory bodies (NASA, ESA, and national agencies, etc). Her production record includes about 300 scientific articles, several books or chapters and more than 750 presentations.

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September 14-15, 2023 | London, UK

Geosynthetics against liquefaction induced geohazard for resilient foundations

R. Chauhan[1] and **S. Mittal**[2]

[1]*Department of Civil Engineering, IKG Punjab Technical University, India*
[2]*Department of Civil Engineering, Indian Institute of Technology Roorkee, India*

The soil liquefaction is the complex phenomenon responsible for geohazard. The construction of embankments, roads on such liquifiable soil fails due to large settlements during seismic activity. The cost-effective disaster mitigation techniques are needed for developing countries, where resilient infrastructure is still in scanty. The present paper has been planned to evaluate soil reinforcement as anti-liquefaction measure for foundations of embankments. To study the effect of surcharge and behavior of soil particles during liquefaction at deeper layers, tests had been conducted by applying surcharge. Therefore, surcharge load of 5.94 kN /m^2 & 8.79kN /m^2 was applied on unreinforced sand and reinforced sample. The shake table tests were done for unreinforced and reinforced sand (4 and 5 geogrid layers), at 35%, 50% and 65% densities and 0.1g to 0.3g acceleration at 4Hz frequency. The densities of the sample were varied from 35% to 65% to study the effect of density. The average excess pore pressure ratio r_u i.e., liquefaction resistance factor dropped from 1.185 (for unreinforced sand) to 0.85 and 0.794 (for sand reinforced with 4 and 5 geogrid layers) respectively at 0.3g for 35% relative density in shake table tests, which shows reduction in liquefaction potential. The rigid boundary effect of shake table was also studied by conducting field tests. The values of excess pore pressure for unreinforced sand were observed as 3.1 and 2.45 at 35% and 50% density respectively in field conditions. The results of vibration table and field tests exhibits close agreement.

Biography

Dr. Rajiv Chauhan has done PhD from one of premiere institute of India i.e., Indian Institute of Technology, Roorkee and 19 years of teaching experience. He is working as Associate Professor and Head of Department of Civil Engineering, at IKG Punjab Technical University, Main campus Since Jan 2017. Dr. Rajiv have done research in area of Soil Liquefaction behavior of Reinforced sand. The research area broadly associated in geohazards i.e., soil liquefaction with Geosynthetics in risk assessment and management. Dr. Rajiv is also guiding PhD research scholars. One of research scholar Mr. Parveen Chander submitted thesis on the topic "Analysis of Soil Investigation Data and Development of Soil Design Charts of Punjab State Using GIS." This work comprised of taking SPT bore hole log data of entire Punjab state. Another PhD scholars has done research on "Study on Behavior of Bituminous Concrete Mix With Use of Waste Plastic and Scrapped Rubber".

Lastly, other PhD scholar worked on Stabilization and Strength Behavior of Black Cotton Soil Using MSW Ash and Calcium Carbide Residue i.e., waste utilization in improving the expensive soils (Black Cotton soils) for highway subgrade. Dr. Rajiv Co-authored book on Engineering Estimating and Costing for Diploma students. He has more than 28 publications in journal and conferences (National and International).

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SCIENTIFIC ABSTRACTS

DAY 2

2nd Global Summit on

ADVANCES IN EARTH SCIENCE AND CLIMATE CHANGE

September 14-15, 2023 | London, UK

ADV. ESCC 2023

Nano-interventions of different nanoparticle in medicinal herbs: Enhancing Therapeutic Efficacy -A Renatus wellness study

Gopaldatta Rajdeep Datta[1], Vishal Maurya[2] and **Subrata Dutta[1]**
[1]Renatus Wellness, India
[2]University of Lucknow, India

Herbal medicines have been widely implicated all over the world to treat spectrum of diseases. Usage of phyto-therapeutics has been discussed by ancient medicine practisers, it was and is highly suggested because of lesser side effects and more acceptability. Renatus has launched itself in herbal therapeutics with the interventions of nano-materials. Renatus has discovered, developed and marketed esteemed products like Renatus nova with supremacy of nanoxanthene as its product entity, Renatus Kadhayu and Pé xanthpro as demarcations of improved therapeutic response. Renatus has implicated AgNPs in its immunoboosters improvising its efficacy at substantial rates. The interest in silver has been mostly driven by the element capacity to kill pathogens, when assayed on cancerous cell lines they showed deteoriating effects, wound healing, anti–diabetic. Renatus has tried multidimensional approach for usage of AgNPs in medicinal field. The success rate of AgNPs in renatus drugs are under-mentioned in the journal laced with experimentations and their results.

Biography

Chief Product formulation adviser & scientist of Renatus wellness pvt ltd. Previously working with West Bengal university of technology as a OIC (Officer-in-charge) and full time professor and head of the department of Advance Institute of Modern Management of Technology (code 132), West Bengal, INDIA

Awards:

1. "SCIENTIST OF THE YEAR 2015" By International Foundation for Ecology & Environment
2. "EDUCATION ENTREPRENUARSHIP AWARD 2016" By International Benevolent Research Foundation
3. Academic Excellence Award by ATN BANGLA, BANGLADESH

PATENTS: 6 Patents applied

1. Neutraceutical and Antioxidant formulation and the process of preparation thereof
2. A Herbal Tooth Gel Composition and the process of manufacturing and using the same
3. Neutraceutical product for child/kids and the process of manufacturing the same
4. Vitamin and Herbal Riched Neutraceutical product and the process of manufacturing thereof
5. A neutritional Ayurvedic herbal product and method of manufacturing thereof
6. Neutraceutical product and the process of manufacturing thereof

Deep Learning-Based potato defect detection under ambient light condition

S. Hamdi[1,2,3], K. Loukil[2], M. Cherif[4], D. Petit[1], H. Snoussi[3] and **M. Abid[3]**

[1]EUROCELP SAS, France
[2]CES Laboratory ENIS National Engineering School University of Sfax, Tunisia
[3]LM2S University of Technology of Troyes, France

Potato defect detection is a complex task that requires a large and diverse dataset for training deep learning models. In this article, we not only propose a novel deep learning method for potato defect detection and segmentation under ambient light conditions, but we also describe the best practices for building a high-quality dataset with various natural lighting conditions. Specifically, we explain how we collected and labeled images of potatoes under different lighting conditions, and how we used this dataset to evaluate the effectiveness of our deep learning approach.

Biography

Dr. Ing Slim Hamdi was born on May 11, 1992, in Kairouan, Tunisia. He is an electrical engineer and holds a master's degree in Embedded Systems from the National School of Engineering of Sfax in Tunisia. He obtained a Ph.D. in artificial intelligence from the University of Technology of Troyes in France, in collaboration with the National School of Engineering of Sfax in Tunisia. During his doctoral studies, he specialized in the field of deep learning and published several research papers on the subject. Dr. Hamdi has contributed significantly to the field of artificial intelligence and computer vision. He has developed novel deep learning approaches for object detection in complex environments and his research has led to the improvement of the efficiency and accuracy of detection methods in several domains. His expertise in the field of deep learning has made him a highly sought-after researcher in the industry.

Currently, Dr. Hamdi is a researcher in AI at Eurocelp, where he specializes in the detection of potato defects using deep learning techniques. His work has contributed to the development of highly effective and efficient detection methods for potato defects, which have significant implications for the potato industry.

Dr. Hamdi has received numerous awards and accolades for his work in the field of deep learning, and his research has been published in several prestigious academic journals. He is a highly respected expert in the field of artificial intelligence and continues to drive significant advancements in the field.

Reasons for the good reservoir properties (porosity and permeability) of Upper Triassic clayey sandstones in the X oil field, eastern Algerian Sahara

Merzouk Zatout

Kasdi Merbah University, Algeria

Parallelly to the petrophysical study, both petrographic and diagenetic studies are carried out on the Upper Triassic Clayey Sandstone (UTCS) reservoir of the X oil field, located in the Eastern Algerian Sahara. The reservoir properties are very good qualities. The porosity is excellent and reaches locally 0.24. Likewise, the permeability oscillates between 0.8 to 400 millidarcies and increases near faults. The petrographic study has revealed that the UTCS reservoir is composed of two lithological facies. The first lithofacies consists on sandstone beige-to-whitish, coarse-to-medium-grained, intercalated by soft-microconglomeratic levels. They start with an erosional basal surface, finning upward trend with cross-stratified structures. The second consists of sandstone beige and brown, fine, sometimes clayey with wave ripples and thin parallel laminations. These two lithofacies can be locally more or less silicified or with carbonate cement. Towards the top, cementation becomes anhydritic, locally abundant. The diagenetic study shows that grains are frequently subangular to subrounded with floating to tangential contacts, reflecting the low compaction they have undergone. In addition, tardive feldspars dissolution phenomena have also been also observed. The diagenetic sequence conducted is as follows: Early cementation, carbonate, and dolomitic, during the early diagenesis phenomena of the vadose and phreatic zones → quartz overgrowths cement probably related to the circulation of silica-rich waters → Late dolomitic and anhydrite cementations due to deep brine circulation. This establishes the low compaction of sandstones, resulting in weak degradation of initial good reservoir properties. In addition, the late dissolution of feldspars contributed also to increasing the reservoir's properties. Then, the good reservoir properties of the UTCS reservoir are characteristic of high-energy deposits of the braided stream fluvial deposits and well conserved because of low compaction and diagenesis. Moreover, permeability seems to be positively controlled by tectonic movements, since it increases in the vicinity of faults.

Biography

Graduated as a geologist engineer in geological exploration, at Algerian Petroleum Institute in 1995. I have been a petroleum geologist for 12 years at the national petroleum company of Algeria (Sonatrach). I worked on datasets validation, normalization, and databank management. In 2012, I obtained a Master's degree diploma in surface geochemistry and changed my employer to become a university teacher in geology at Ouargla University. My background in petroleum geology, sedimentology, and organic geochemistry is strong. So, I have been teaching all petroleum geology-related courses since I joined the university, and I am a thesis supervisor for several Master's theses in petroleum geology. I obtained a Ph.D. in geology in 2017. My field research focuses on brine geochemistry, arid and hyperarid climates, and lithium. My findings confirm the lithium occurrence in chott brines and highlight the effective mining potential of Algerian brines in terms of useful salts.

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Understanding silt sized particles in archaeological materials through petrographic research

Wen Yin (Elaine) Cheng[1] and **Chen Shen**[2]

[1]*University of Toronto, Canada*
[2]*Royal Ontario Museum, Canada*

Past artisans worked with various materials in the landscape to produce the many cultural artifacts we discover in archaeology. The geographical spheres in which the artisans interacted and were available to them played a significant role in the type of artifacts they could create. The research on the bronze vessel casting moulds of the late Shang dynasty capital on Royal Ontario Museum artifacts, dated to the 14th to 11th century, could differentiate between loess and fluvial deposit particles used by the artisans within the casting moulds.

The bronze vessel casting moulds used to produce famous bronze vessels by the Shang elites (Figure 1) were created with high silt particles of 70% to 80% quartz for the casting surface due to their superior heat resistance and fine motif retention (Figure 2). The answers to where the artisans derived these silt-sized particles and what processes the artisans used to refine these particles were hiding in a coarser layer found in the exterior surface of some casting moulds (Figure 3).

Petrographic analysis, a method used to identify soil particles adapted from petrology, looked at materials within the artifacts produced by artisans in the past. This research used petrographic analysis to determine better the type of soil the ancient artisans used to produce bronze vessel casting moulds by combining grain descriptions with the band counting method to determine the likely origin of the raw materials and the processes the artisans made to the natural material. This research combined the two petrographic methods and detected three different fabrics within the casting moulds and their relationships between the casting moulds, and how the artisans worked with the soils they chose.

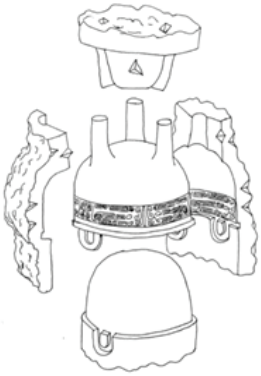

Figure 1. *Bronze vessel casting mould assemblage with bronze vessel ding in centre.*

Figure 2. *Fine motif of the casting mould surface.*

Figure 3. *Coarse fabric on top left and fine fabric on bottom right half of image.*

Biography

Wen Yin (Elaine) Cheng is a Ph.D. candidate in East Asian Studies at the University of Toronto. She received her MSc from University College London. She has 20 years of archaeological experience as a field archaeologist, lab technician, and artifact analyst.

During her MSc research at the Institute of Archaeology, University College London, she had the opportunity to expand her archaeological knowledge to incorporate scientific research techniques in archaeometry.

She is currently researching the artisans of the Shang bronze vessel casters through the moulds housed at the Royal Ontario Museum. Her research incorporates archaeological theory, archaeometry, and area study to comprehend the past artisans. Her current goal is to expand and bridge her research on past artisans to include the voices of the descendants of these ancient cultures.

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Effects of SiO_2 and CO_2 absorptions on the structural, electronic and optical properties of (6, 6) Magnesium Oxide Nanotube (MgONT) for optoelectronics applications

Abdussalam Balarabe Suleiman[2], Yahaya Saadu Itas[1], Chifu E. Ndikilar[2], Abdullahi Lawal[3], Razif Razali[4] and **Mayeen Uddin Khandaker[5]**

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[3]Department of Physics, Federal College of Education, Nigeria
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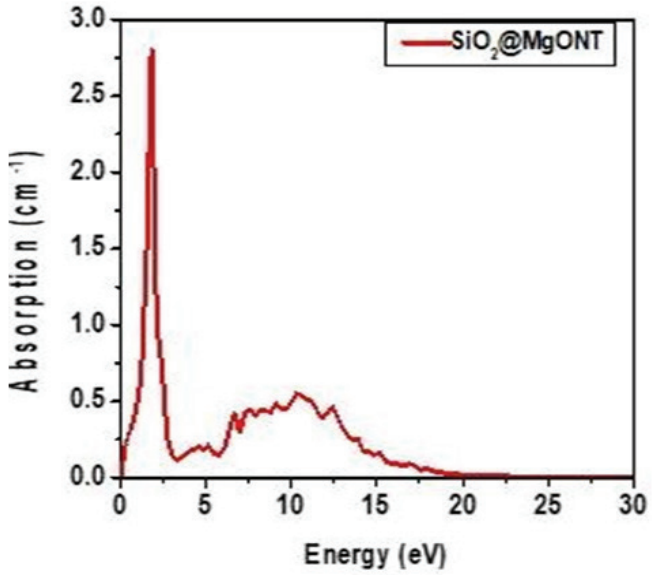
Studies of the effects of SiO_2 and CO_2 absorption on pristine single walled magnesium oxide nanotube (SWMgONT) were done by means of density functional theory. This research considered SiO_2 and CO_2 gases as our case study because literature studies revealed that SWMgONT acted against CO and NO gases. Based on the results calculated, it has been found that the band gap of SWMgONT is closed as a result of absorption of either SiO_2 or CO_2 which transformed it from semiconductor state to conductor state. The general decrease in the HOMO-LUMO energy gap of SWMgONT upon absorption of these gases exposes SWMgONT as a promising candidate for sensor applications. In terms of optical absorption, the calculated optical band gap of 2.5 eV which fell in the range 1.2 eV – 2.8 eV exposed the pristine SWMgONT as better photocatalyst. SWMgONT showed higher absorptions with SiO_2 and CO_2, higher optical refractions and transmissions were also observed as a results of interactions with these gases. So there are significant differences in the absorption spectra for SWMgONT, SiO_2MgONT and CO_2@MgONT even though they have the same geometric configurations. The presence of absorption peaks above 2 eV revealed that SiO_2@MgONT and CO_2@MgONT are potential candidates for the next generations UV-Vis sustainability science and technology such as LED, TMTs and optical lens applications.



Biography

Abdussalam Balarabe Suleiman born on 29th November, 1967 is a professor of theoretical condensed matter physics, he earned BSc, MSc Physics from Bayero University, Kano and his PhD in Physics from the Prestigious Ahmadu Bello University, Zaria Nigeria in 2012. He is in to research of determining the structural, electronic, optical and thermo dynamic properties of advanced materials under the context of the famous Density Functional Theory using different computational approaches. Abdussalam Balarabe Suleiman is now presently supervising 4 PhD students undertaking their research in the above mentioned field of which 2 are at their concluding status. He has over 60 publications ranging from Q1, Q2, Q3 and some other relevant journals. He has attended workshops, seminars and conferences on computational physics in Nigeria, South Africa and Germany. This paper is one of his PhD's student work whom he is giving guidance and support.

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Operational forecasting of short-term changes in the level of the Sea of Azov with seasonal correction based on coastal station observations

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Hydrometeorological Research Center of the Russian Federation, Russia

The three-dimensional hydrodynamic model was developed by Sergey Popov and is operationally used at the Hydrometcenter of Russia, where it is applied to simulate the level of the Sea of Azov. Short-range forecasts of variations in the level of the Sea of Azov with a lead time of 48 hours are computed twice a day at 00:00 and 12:00 using wind speed and air pressure fields on the sea surface from the COSMO model. It was found that the operational model for short-range sea level prediction simulates well downsurges and upsurges but cannot compute seasonal variations in the level of the Sea of Azov, since this requires taking into account precipitation, evaporation, river run off, and water exchange with the Black Sea. The objective of the paper is to eliminate differences between simulations and observations by introducing a correction of the mean sea level, which is calculated as a difference in the mean level of the Sea of Azov between observations and model simulations. After introducing the correction, the operational model simulates in automatic mode not only surges but also seasonal sea level variations, which significantly improves the forecasting skill. The correction of the mean sea level had the smallest effect on the calculation of sea level in Taganrog: the correlation coefficient increased from 0.90 to 0.91, and the forecast accuracy increased from 88.7 to 92.8%. Located at the top of the bay, Taganrog is characterized by the highest sea level variability, caused by surges. As approaching the open Sea of Azov, the sea level variability decreases, and in Berdyansk the forecast accuracy increases from 31.9 to 72.9%, and the correlation coefficient from 0.55 to 0.80, which indicates a high degree of influence of the mean sea level on the sea level at this station.

Biography

Sergey Popov, born in 1959, graduated from the Moscow Institute of Physics and Technology in 1982 with a degree in aerodynamics and thermodynamics. From 1982 to 1984 he worked at the Marine Hydrophysical Institute in Sevastopol. Since 1984 he worked at the State Oceanographic Institute in Moscow. He defended his PhD thesis "Modelling of circulation and heat transports in North Atlantic" in 1989. Since 1999 he has been working at the Hydrometeorological Center of Russia, where he developed and implemented into operational practice the technology of short-term hydrodynamic forecasting of sea level and currents in Russian seas. He defended his dissertation for the degree of Doctor of Physical and Mathematical Sciences "Modelling and forecasting changes in the level and speed of currents in the seas of Russia" in 2019. Currently, he is developing a technology for predicting marine circulation based on the Sea of Okhotsk water circulation model.

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A bibliometric analysis on the global research trends of climate change

Camila Lorenz, Ana Maria de Oliveira Nusdeo and **Jean Paul Metzger**

Institute of Advanced Studies at the University of São Paulo, Brazil

Climate change poses a real threat to species and human existence, leading to biodiversity loss, extreme events like droughts and floods, socioeconomic vulnerability, increased risk of infectious diseases, and more. In this study, a bibliometric analysis was conducted on academic research articles to examine the publication trends, themes, impacts, and potential areas for future research on climate change. Both the Scopus and the Web of Science online databases were used to search for journal articles linked to climate change. A total of 522,135 papers associated with climate change research were published between 1923 and 2023 in the world; China and the USA were the countries that most published articles. Rapid development occurred over the past 25 years and the number of published papers considerably increased since the 2000s. The findings unveiled an uprising trend in publications and posited several themes, mainly climate models, exposure, sensitivity, drought, and flood by means of climate change effects that affect biodiversity and ecosystems. Research on climate change effects focuses mainly in agriculture and coastal regions. A keyword analysis showed that among the top 50 most frequently used keywords, "disasters" "floods" and "risks" exhibited increasing trends. Keywords such as "algae" and "cyanobacteria" also showed increasing trends with climate change, implied that more attention was paid to the harmful cyanobacterial blooms. Another significant increasing trend was observed between climate change and remote sensing. Our results also indicate several research gaps and offered opportunities for further studies.

Biography

Biologist from the Federal University of Paraná, Dra. Camila Lorenz has a Master's and PhD from the University of São Paulo (USP), where she studied neotropical mosquitoes. She has completed her postdoctoral studies from School of Public Health and Institute of Advanced Studies of USP. She is interested in understanding the determinants of diseases in wild and urban environments, building predictive models and how climate change affects the distribution of vectors, viruses, and diseases. She has published more than 40 papers in reputed journals and has been serving as an editorial board member of Parasites & Vectors Journal.

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Kriging, regression and machine learning for predicting forest floor carbon content in a temperate managed forest

Martha E. Ramirez-Guzman, Zaira R. Perez-Vázquez, Gregorio Angeles-Perez, Bruno Chavez-Vergara and **Rene Valdez-Lazalde**
Colegio de Postgraduados, Mexico

In most temperate forests, the forest floor is an important reservoir of carbon and nutrients that greatly influences forest productivity and soil fertility. Small changes in this store can alter the balance of the ecosystem, which is why it is essential to develop methodologies that improve estimates at the landscape level. However, precise assessments of these reservoirs represent a challenge due to their great variability and spatial dependence. In this study, three popular spatial modeling approaches (Kriging, Regression and Machine Learning) were compared to map carbon contents (CC) in the forest floor of a temperate forest. Methods include Ordinary Kriging (OK), Generalized Linear Model (GLM), Generalized Additive Model (GAM), and Random Forest (RF). The CC estimates were made for two years, 2013 and 2018. The predictor variables used represent the spatial, topographic and canopy structure. All models were evaluated by cross validation (k=10) and the mean absolute error (MAE), root mean square error (RMSE) and the coefficient of determination (R2) were determined. The results showed that the performance of the methods was, in decreasing order, RF, GAM, GLM and OK. The OK method reflected the degree of spatial dependence of the CC but the spatial estimates were unrealistic (R2<0.35). GAM and GLM showed good performance (R2>0.70), but higher levels of CC overestimation. RF obtained the best fit (R2>0.86) to model CC in both years evaluated. This study concludes that the RF model is a promising approach with great potential for improving forest floor carbon estimates at the local scale.

Biography

Martha Elva Ramírez Guzmán has completed his PhD at the age of 30 years from Reading University, UK. She is a Professor of Statistics of Colegio de Postgraduados, Mexico. She has published more than 30 papers in reputed journals.

Nature-inspired algorithms for optimizing AI

Subhrakanta Panda

Department of CSIS, BITS PILANI, Hyderabad Campus, India

All engineering applications target to optimize something, that is to either minimize or maximize one or more objective functions such as to minimize the cost and energy consumption, or to maximize profit, efficiency, etc. Nature inspired optimization algorithms have become hot topic for solving such problems, because they work on the inspiration from nature. Nature inspired agents functions on certain selection mechanisms and information sharing. It has motivated many researchers to study how these natural agents collectively perform some specific tasks, model their behavioural patterns, and using these models to achieve a new form of artificial intelligence.

Generative Adversarial Network (GAN) are preferred to generate synthetic data in many AI applications. GANs use probabilistic behavioural inference to differentiate between the real and realistic data. In conventional GANs, a generator and a discriminator update objective functions to accurately classify the data distribution belonging to a particular class as real/fake. The generator takes advantage of objective function loss by generating new samples belonging to different categories. Since the objective function is not updated, it affects the overall training process and the final performance of the model. Hence, the discriminator architecture struggles to classify the real and fake data distributions. Eventually, it negatively affects the training process. Similarly, the generator architecture will not learn the data distribution accurately and will not be competitive with the discriminator. An evolutionary algorithm is suitable for this type of scenario. It evolves a population of generators in a given environment (i.e., the discriminator D). In this population, each individual represents a possible solution in the generative network (G) parameter space during the evolutionary process. The population gradually adapts to its environment, implying that the evolved generator can generate more realistic samples and eventually learn the real-world data distribution.

Biography

Dr. Subhrakanta Panda is currently working as an Assistant Professor in the Department of Computer Science and Information Systems at the Birla Institute of Technology and Science Pilani, Hyderabad Campus. His current areas of interest and research are in Software Testing, Cloud Computing, Social Network Analysis, Blockchains and their Applications. He received his PhD (2015) in the area of Software Testing. He teaches Computer Programming, Object-Oriented Programming, Cloud Computing, and Database Systems. He is supervising the work of 4 Ph.D research scholars. He has more than 35+ published articles, papers, and book chapters in various journals, conferences and edited book volumes. He has adapted the Indian edition of the Book, "Data Structures and Algorithms in Python by Goodrich, Tamassia, Goldwasser", which is recently available in Amazon. He has delivered invited talks in reputed Organizations and Institutes like DRDO, NIT Rourkela, KIIT Bhubaneswar and others.

Prediction of mustard yield using different machine learning techniques: A case study of Rajasthan, India

Ananta Vashisth

Division of Agricultural Physics, ICAR-Indian Agricultural Research Institute, India

Mustard is the second most important edible oilseed after groundnut for India. Adverse weather drastically reduces the mustard yield. Weather variables affect the crop differently during different stages of development. Weather influence on crop yield depends not only on the magnitude of weather variables but also on weather distribution pattern over the crop growing period. Hence, developing models using weather variables for accurate and timely crop yield prediction is foremost important for crop management and planning decisions regarding storage, import, export, etc. It allows an agricultural producer to take more informed in-season corrective crop management and financial decision. Many agricultural industries are increasingly relying on crop market outlooks and yield prediction for their decision-making. Machine learning plays a significant role, to overcome the problems of predicting non-linear and non-stationary time series dataset, as it has a decision support tool for crop yield prediction. The models for mustard yield prediction for study areas were developed using long-term weather data during the crop growing period along with mustard yield data. Techniques used for developing the model were variable selection using stepwise multiple linear regression (SMLR) and artificial neural network (SMLR-ANN), variable selection using SMLR and support vector machine (SMLR-SVM), variable selection using SMLR and random forest (SMLR-RF), variable extraction using principal component analysis (PCA) and ANN (PCA-ANN), variable extraction using PCA and SVM (PCA-SVM), and variable extraction using PCA and RF (PCA-RF). Optimal combinations of the developed models were done for improving the accuracy of mustard yield prediction. Results showed that, on the basis of model accuracy parameters nRMSE, RMSE, and RPD, the PCA-SVM model performed best among all the six models developed for mustard yield prediction of study areas. Accuracy of mustard yield prediction done by optimum combinations of the models was better than the individual model.

Biography

Dr. Vashisth, working as Principal Scientist at ICAR-IARI, New Delhi. She did B.Sc and M.Sc (Physics) with First rank at the University level from H.N.B Garhwal University and Ph.D (Agricultural Physics) from ICAR-IARI, New Delhi. She has more than 26 years research experiences. She has made significant contribution in the field of Agricultural meteorology and Plant biophysics. Number of program were organized by her regarding importance of weather based agriculture, for enhancing the production and income of the farmers. As a faculty member has been involved in teaching and guiding the Ph.D and M.Sc students. She received numbers of International and National awards, best paper award in several National and International conference. She has published 75 research papers, 5 technical bulletin, 2 practical manuals, 14 extended summaries, 34 chapters in books/technical bulletin, 49 popular articles, 8 folders, 35 project report, 85 seminar abstract and more than 110 newspaper coverage.

The relationship of airflow limitation with lung squamous cell carcinoma: Evidence from Mendelian Randomization Analysis

Qing Zhang and **Guannan Cai**

Guangzhou Institute of Respiratory Health, The First Affiliated Hospital of Guangzhou Medical University, Guangzhou Medical University, China

Observational studies showed associations of smoking, airflow limitation, with lung squamous cell carcinoma (LUSC). However, the causal association of airflow limitation with LUSC and the modification by smoking status for the association remains unclear.

Genetic summary data were obtained from large genome wide association studies (GWAS). One hundred two single nucleotide polymorphisms (SNPs) for airflow limitation (i.e., FEV1/FVC < 0.7) and 153 SNPs for smoking behavior were used as instrument variables and the main MR analysis methods. The univariable and multivariable Mendelian Randomization (MR) in two-sample setting were performed to assess the association of airflow limitation, smoking behavior with LUSC.

In the univariable MR analysis, genetic predisposition towards airflow limitation [Inverse Variance-Weighted (IVW) method Odds Ratio (OR) = 4.83, 95% Confidence Interval (CI) 1.55 to 15.06, P = 0.006], age of smoking initiation (IVW method OR = 0.10, 95%CI 0.02 to 0.36, P < 0.001), cigarettes smoked per day (IVW method OR = 3.10, 95%CI 2.07 to 4.63, P < 0.001), ex-smoking (IVW method OR = 0.47, 95%CI 0.31 to 0.69, P < 0.001), current smoking status (IVW method OR = 13.08, 95%CI 2.53 to 67.84, P = 0.002), pack-years of smoking (Weighted median method OR = 11.49, 95%CI 3.71 to 35.63, P < 0.001) were associated with LUSC.

In the multivariable MR analysis, causal effect of airflow limitation was still observed on LUSC (IVW method OR = 2.97, 95% CI 1.09 to 8.04, P = 0.032 adjusted for age of smoking initiation and cigarettes smoked per day; IVW method OR = 3.24, 95% CI 1.09 to 9.58, P = 0.033 adjusted for ex-smoking, current smoking status, and pack years of smoking; IVW method OR = 2.91, 95% CI 1.01 to 8.41, P = 0.049 adjusted for 5 smoking behaviors mentioned above).

Our MR analysis demonstrated that airflow limitation is likely to be an independent predictor of LUSC.

Biography

Graduated from Flinders University in 2020. Dedicated in Primary Health care and relevant clinical/translational research. Since 2021, as a registered nurse, I have been working in the Department of thoracic Surgery of Guangzhou Institute of Respiratory Health, the First Affiliated Hospital of Guangzhou Medical University, China, serving more than 2000 lung cancer patients and devoting myself to the research of related predisposing factors of lung cancer.

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