DAY 1 SESSIONS
MAY 22, 2019

Astronomy & Space Science | Geology & Earth Science | Recycling & Solid Waste Management | Recycling: Pollution Control | Climate Change | Space Engineering | Chemical Waste Recycling

SESSION CHAIR
Y Cengiz Toklu
Beykent University, Turkey

SESSION CO-CHAIR
Bronco Simona
Istituto per i Processi Chimico-Fisici CNR, Italy

SESSION INTRODUCTION

Title: Decadal variations in the Earth's shape from SLR and GRACE
Minkang Cheng, University of Texas at Austin, USA

Title: Concentration of cathode materials from post-consumer Lithium-ion battery by roasting, selective grinding and physical-physicochemical separation
Shuji Owada, Waseda University, Japan

Title: Food waste valorization in biofilms and biocomposite productions
Bronco Simona, Istituto per i Processi Chimico-Fisici CNR, Italy

Title: Approaches aiming at providing sustainability in design of university campus electricity energy supply and distribution
Süleyman Altan, Hitit University, Turkey

Title: Factors affecting the climate change adaptation in agriculture in Central and Western Nepal
Maharjan SK, Hiroshima University, Japan

Title: Influence of compatibilizer on mechanical properties of pristine and recycled PP/PE blends
Alejandra Costantino, INTEMA, UNMDP/CONICET, Argentina

Title: Recovering of gold from WEEE by using froth flotation and leaching
G Dodbiba, The University of Tokyo, Japan

Title: RECYBETON: The French national R&D project on complete recycling of concretes
Horacio Colina, Technical Association of the Hydraulic Binder Industries, France

Title: The technology behind this smart water device, to change your water change your life
Mabel B Casyao, Enagic Europe GmbH-Global Independent Distributor, United Kingdom

Title: Someone in the world should prohibit the incomplete inventions of science
Luigi Antonio Pezone, Private Inventor, Italy

Minkang Cheng, J Environ Waste Management and Recycling 2019, Volume 2

DECADAL VARIATIONS IN THE EARTH'S SHAPE FROM SLR AND GRACE

Minkang Cheng
University of Texas at Austin, USA

For over three decades, Satellite laser ranging (SLR) has recorded the global nature of the long-term and long-wavelength climate induced hydrological mass redistribution within the Earth system, which results in significant variations in the Earth's shape and gravity field. The Earth's shape (geoid) can be approximately represented by a triaxial ellipsoid defined by six parameters, including the polar (or the dynamic oblateness) and equatorial flattering (or equatorial ellipticity, b) and the orientation (e) of the equatorial principal axis. Those fundamental parameters can be determined by the degree-2 Stokes coefficients C20, C22 and S22. Study the variations in the gravity coefficients can improve our understanding of the long and short-term climate forcing on the Earth system. Analysis of satellite Laser ranging and data over four decades has shown that significant quadratic variation and decadal variations in the Earth's dynamic oblateness (characterized by geo-potential zonal coefficients, C20) are well correlates with the short and decadal tropical variability characterized by the El Niño-Southern Oscillation Index. The quadratic variation is combination of a GIA-induced linear decrease and a slowly increasing rate due to global mass redistribution associated with the melting of the glaciers and ice sheets. Earth's equator is flattering with a rate of 0.014 mm/year and a significant drift of the equatorial principal axis shifted from westward to eastward during ~2000 based on the 35 year SLR and 15 year GRACE data. Those variations are results of both the on-going global isostatic adjustment (GIA) following the last ice age and climate-induced mass transport as well as the changes in the dynamic pressure loading on the core-mantle boundary (CMB). Detail analysis will be presented.

BIOGRAPHY

Minkang Cheng did his PhD in Aerospace Engineering, University of Texas at Austin, USA in August 1988. He has Research experience in satellite dynamics and geodesy for gravity and earth rotation. He published his papers recently entitled as "Decadal variation in Earth's oblateness (J2) from satellite laser ranging data" in *Geophysical Journal International*; "The unexpected signal in GRACE estimates of C20" in Journal of Geodesy and "Deceleration in the Earth's oblateness" in *Journal of Geophysical Research*.

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Shuji Owada et al., J Environ Waste Management and Recycling 2019, Volume 2

CONCENTRATION OF CATHODE MATERIALS FROM POST-CONSUMER LITHIUM-ION BATTERY BY ROASTING, SELECTIVE GRINDING AND PHYSICAL-PHYSICOCHEMICAL SEPARATION

Shuji Owada, Takahiro Suwa and **Nozomi Sasai**
Waseda University, Japan

This study describes a concentration process of cathode materials, Co, Ni and Mn from post-consumer lithium-ion battery by applying roasting, selective grinding followed by various physical and physicochemical separation methods. Nowadays vast amount of lithium-ion batteries (LIBs) has been used for electric/electronic devices and various pyro- and hydro-metallurgical processes was developed for the recovery of the cathode materials from them but the concentration process from post-consumer batteries is still under the development. Roasting is one of the most radial method not only to discharge remaining electricity but also to achieve the phase transition of compositional materials in order to facilitate the recovery of valuable components and the rejection of useless/hazardous ones. Selective grinding and size classification divide the various materials into several characteristic size fractions. Flotation removes fine hydrophobic carbon particles and magnetic separation concentrates the cathode materials which were transformed into magnetic oxides and/or metal phases in the above roasting. Gravity separation such as wet tabling also concentrate on the heavy cathode materials from other light fractions. In this paper, author compares the various combinations of the above methods and proposes the best concentration flow, which could be economically feasible.

BIOGRAPHY

Shuji Owada has completed his Doctor of Engineering from Waseda University, Japan in 1984. After being Research Associate, Lecturer, Associate Professor, he became a Professor of Waseda University in 1995. He was assigned to the posts of President of Research Collaboration and Promotion Center, Vice-President of Environmental Research Institute, and Vice-Dean of School of Science and Engineering twice in the university. Outside the university, he experienced many roles in academic institutes, such as President of the Mining and Materials Processing Institute of Japan (MMIJ), President of the Resources Processing Society (RPSJ) of Japan and many governmental committee members in the field of recycling and environmental science and engineering. He is also visiting Professor of The University of Tokyo, Tohoku University and Akita University, Japan. He published over 100 original papers and over 700 presentations in domestic and overseas in the field of resources recycling and mineral processing.

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20 YEARS OF EXCELLENCE IN INTERNATIONAL MEETINGS
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7th International Conference on
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Bronco Simona et al., J Environ Waste Management and Recycling 2019, Volume 2

FOOD WASTE VALORISATION IN BIOFILMS AND BIOCOMPOSITE PRODUCTIONS

Bronco Simona[1], Bertoldo Monica[2], Bramanti Emilia[3], Cinelli Patrizia[4], De Monte Cristina[1], Diciotti Marco[1], Lazzeri Andrea[4] and **Ricci Lucia[1]**
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[2]Istituto di Sintesi Organica e Fotoreattività CNR, Italy
[3]Istituto di Chimica dei Composti Organometallici CNR, Italy
[4]Dipartimento Ingegneria Civile ed Industriale, Università di Pisa, Italy

The roadmap to a resource-efficient Europe identified food as a key sector needing improvements. Indeed, approximately one third of all food produced globally is wasted every year throughout the whole food chain-from farmers to consumers. To extract the significant amounts of valuable compounds contained in those wastes that are not currently valorised, the research is focused on a possible combination of affordable and flexible processing technologies for the extraction and the use of traditional transformation approaches to reduce the amounts normally discarded with costs of disposal and generating a significant environment impact. In the last five years in our research group, researchers are focusing the attention on the processing of on cellulosic-fibres, proteins and other molecules extracted from different food wastes such as tomato and potato leaves, legumes in the framework of two European projects, specifically LEGUVAL during the 7FP e AGRIMAX founded by BBI-2016 still in progress. Our activities inside LEGUVAL project concerned firstly the denaturation of protein extracted from legumes to be used as a starting compounds for the preparation of materials in a dry process (in mixture with polymer matrices). The residual fraction resulting from the extraction process, which is enriched in fibers, was used as an additive in the production of compostable composites. The same approach was continued in AGRIMAX project with the aim to demonstrate the technical and economic feasibility of these new applications for the agricultural value chains by applying biorefinery processes. In the project, they carried out a deep characterization of potato juice extracted from potato peels. This work was then combined with a detailed investigation of the denaturation behavior of proteins from peas and the denaturated material was used as matrix for the preparation of composites in the presence as potato juice as filler.

BIOGRAPHY

Bronco Simona received her Master's in Chemistry at the University of Pisa in 1994 and her PhD on Natural Science/Chemistry at ETH Zurich in Switzerland in 1997 in Homogeneous Catalysis. She has a permanent position as Researcher at Institute for the Chemical and Physical Processes at CNR in Pisa, Italy. She has over 20 years of international experience in polymer science including design, synthesis and characterization of polymeric materials with controlled architecture, morphology and composition on a nano or micrometric scale. One of the main topics of her research is focused on the valorisation of food wastes for the development of biofilms and biocomposites to be used in agricultural and packaging application. She is author of more than 50 scientific papers, chapters in books and has three patents.

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Süleyman Altan et al., J Environ Waste Management and Recycling 2019, Volume 2

APPROACHES AIMING AT PROVIDING SUSTAINABILITY IN DESIGN OF UNIVERSITY CAMPUS ELECTRICITY ENERGY SUPPLY AND DISTRIBUTION

Süleyman Altan and **Hasan Baylavli**
Hitit University, Turkey

Effect of energy failures may vary according to sectors like manufacturing, hospitals, polyclinic services, call centers and shopping markets. Point of view about energy failure is certainly different for all of the above. In universities education, public services, scientific researches and applications, national and international educational, social, cultural and sportive activities etc. are being performed. In Hitit University campus energy infrastructure planning, apart from above services it was considered that labs in which high priority scientific studies which require continuity and especially after establishment of medical faculty, health services and many others should also be taken into consideration. In campus electricity energy planning, common point for each unit is continuity. Authors handled electricity energy planning fewer than three main headlines; physical design, production-supply, distribution and support systems. For continuity, from this point of view, they defined the risks and their approaches for each of them. In energy supply trigeneration system was planned so that it will primarily operate in case of urban network failure risk. There are some different cases and smart rules for each case. There is also categorization of the loads priority and load disposal system is designed. In case the energy consumption of campus is more than what is produced by gas generator when gas generator is online, additional energy will be supplied from urban network. In case of urban network failure again diesel generators and load disposal automation will be online. The reason-result relations of the failures that may be occurred system project was designed with approaches aiming at maintaining continuity. The aim was to prevent failures with a percentage of 95% and to reduce the area of effect in the campus below a percentage of 5% and accordingly priority was given to continuity and quality of education and scientific activities.

BIOGRAPHY

Süleyman Altan works in Hittite University Directorate of Construction & Technical Works Department, in Çorum, Turkey as Director of Investments. He was graduated from Department of Electrical–Electronical Engineering, Pamukkale University, Turkey in 2000. He did his Master's degree in same university. He works in the subject's related to university campus networks, co-generation systems, solar power systems, green campus, designing energy networks and systems, renewable energy systems and recycling. In addition, he has studied in the fields of university campus planning, energy-efficiency in buildings and campus.

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Maharjan SK, J Environ Waste Management and Recycling 2019, Volume 2

FACTORS AFFECTING THE CLIMATE CHANGE ADAPTATION IN AGRICULTURE IN CENTRAL AND WESTERN NEPAL

Maharjan SK
Hiroshima University, Japan

Climate change impacts are observed in all livelihood sectors primarily in agriculture and forestry. Multiple factors have influenced the climate vulnerabilities and adaptations in agricultural at the household level. This study focused on the factors affecting adaptation in agriculture in Madi and Deukhuri valleys of Central and Western Nepal. The systematic random sampling technique was applied to select 154 households in Madi and 150 households in Deukhuri. The main purpose of the study was to analyze the socio-economic factors that either influence or restrain the farmer's adaptation to climate change at the household level by applying linear probability model. Based on analysis, it is revealed that crop diversity, education, training and total land holding (acre) were positively significant for adaptation choices the study sites. Rest of the variables were not significant though indicated positive as expected except age, occupation, ethnicity, family size and access to credit.

BIOGRAPHY

Maharjan SK is currently pursuing his PhD in Graduate School of International Development and Cooperation, Hiroshima University, Japan. He has been studying and researching on the issues of climate change adaptation in agriculture, indigenous people's rights, participatory approaches, community-based biodiversity management for almost a decade. He has more than dozens on these issues. His publication H-index is 3 and has been learning the research and review techniques.

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Alejandra Costantino et al., J Environ Waste Management and Recycling 2019, Volume 2

INFLUENCE OF COMPATIBILIZER ON MECHANICAL PROPERTIES OF PRISTINE AND RECYCLED PP/PE BLENDS

Alejandra Costantino[1], Rosales C[1], Pettarin V[1], Bernal C[2], Palazzo G[3] and **Defacio Dutra R[4]**
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[2]ITPN, UBA/CONICET, Argentina
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One of the big challenges of recycling engineering of thermoplastics is to manufacture competitive pieces or products in terms of mechanical properties such as toughness or strength. Improved mechanical performance of recycled materials would widen their application field. One of the strategies to improve PE/PP blends performance is to add special compatibilizers. The aim of the present work is to obtain recycled PE/PP blends from industrial wastes with similar properties to those of virgin PE/PP blends. Four different pristine blends were prepared: without compatibilizer and with 11wt% of three different co-polymer based compatibilizers. Also, three recycled blends were studied: without and with two different masterbatch compatibilizers. Blends were prepared in a single screw extruder simulating industrial processing conditions and then processed via compression moulding into plaques. Microstructure and morphology of blends were analyzed by DSC and SEM. Tensile and fracture tests were carried out on mode I double edge-notched tensile specimens (DENT) at quasi-static conditions (2mm/min). Fracture surfaces were studied by SEM. It was found that the addition of compatibilizing masterbatches improves the performance of both pristine and recycled PP/PE blends.

BIOGRAPHY

Alejandra Costantino was born in 1985. She was graduated in Materials Engineering in 2010 and received her PhD in Material's Science in 2016 at the University of Mar del Plata, Argentina. She is currently working as a Researcher at Institute of Materials Science and Technology in the Polymer Science and Engineering Group at University of Mar del Plata, Argentina. She made research studies at Universidade do Minho, Portugal during 2010 to 2014, and Institut National Des Sciences Appliquées, INSA, Blois, France in 2017. In the beginning of her professional career she has worked on the structural characterization of thermoplastic injected polymers with and without fillers, establishing distinctive characteristics of their mechanical behavior and processing conditions. Lately, she has extended her studies to recycled polymers. Thus, she has become an expert in injection moulding process and impact analysis, mechanical behavior and fracture of polymers and their composites (macro, micro and nano composites). Her experience focuses on correlating structural performance in service (Fracture mechanics, impact tests, conventional mechanical tests and deformation study) processing, with the microstructural characteristics of polymers and their compounds, characterizing the components globally or detecting mechanically weak areas in the final pieces.

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G Dodbiba et al., J Environ Waste Management and Recycling 2019, Volume 2

RECOVERING OF GOLD FROM WEEE BY USING FROTH FLOTATION AND LEACHING

G Dodbiba, K Yabui, Y Kim, J Ponou and **T Fujita**
The University of Tokyo, Japan

Japan is a major consumer of precious metals. Nevertheless, it imports most of its required amount of precious metals. In order to ensure a stable supply of precious metals as well as deal with the increasing global demand, it is important to develop cost effective and environmental-friendly technologies that are able to recover the precious metals from electronic waste known as e-waste. Generally speaking, the conventional method for recovering gold (Au) from printed circuit boards involves the incineration of scarp, followed by acid leaching. In an attempt to improve the Au extraction process, the authors are putting forward a new method. The sample was first subject to carbonization in N2 atmosphere, followed by flotation in order to reduce the amount of sample subject to acid leaching as well as reduce the acid consumption. The sample recovered by flotation was then treated with aqua regia to dissolve Au. After investigating the effect of the carbonization temperature, a Cost-Benefit Analysis and a Life Cycle Assessment (LCA) were carried out in order to compare the efficiency of both conventional and suggested methods..

BIOGRAPHY

G Dodbiba obtained his Master degree in 2001 and a Doctor degree in 2004 both in Materials-process Engineering. From 2004 to March 2006, he was a Postdoctoral Research Fellow and then from 2004 to 2009, he was an Assistant Professor at the Department of Geosystem Engineering at the University of Tokyo, Japan. Currently, he is an Associate Professor at the Faculty of Engineering, Department of Systems Innovation at The University of Tokyo, Japan. He is author of more than 80 papers in the areas of environmental impact assessment, physical and chemical processing of materials.

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Horacio Colina, J Environ Waste Management and Recycling 2019, Volume 2

RECYBETON: THE FRENCH NATIONAL R&D PROJECT ON COMPLETE RECYCLING OF CONCRETES

Horacio Colina
Technical Association of the Hydraulic Binder Industries, France

France produces nearly 20Mt/year of demolished pure concrete, generally used in road works or embankments. This flow should increase in the near future, while less new roads will be built and more old buildings will be refurbish or deconstructed. Additionally, more than 50Mt of mixed demolition materials containing a good part of concrete or natural rock is available. Therefore, it is necessary to make the best use of this available material to preserve the natural aggregate resources, which are increasingly difficult to obtain and to avoid waste material landfills. Based on this reality, a national R&D project, partially sponsored by the French Ministry of Ecology was set in 2012, gathering 47 partners among which representatives of all construction stakeholders. Recently finished, RECYBETON has covered six fields of activities: Technologies and processes; materials and structures; sustainable development; standard and normative aspects; communication and promotion; natural aggregates and low rates of recycled concrete aggregates blends. The main outputs of the project, which has produced a scientific book (English and French versions), a guide of recommendations, proposals to adapt standards and regulations and five experimental demonstration sites (a car park, a small bridge, an archive room, short walls, sidewalk in an industrial premise and a slab in an office) are presented.

BIOGRAPHY

Horacio Colina did his PhD in Structure and Materials which was habilitated to supervise researches (French HDR Diploma). He is the Research Managing Director of Association Technique de l'Industrie des Liants Hydrauliques (ATILH), France and Director of the French National Project RECYBETON. He is at ATILH since 2005 and formerly he was a researcher at Ecole Nationale des Ponts et Chaussées (ENPC), France during 1999 to 2005 and at Laboratoire Environnement, Geomécanique et Structures (LAEGO), Nancy, France from 1997 to 1999. He has also been Professor at National University of Salta, Argentina from 1994 to 1997. He is author/co-author of 71 publications, where 41 peer-reviewed papers. He is co-editor of the book "CONCRETE RECYCLING: RESEARCH AND PRACTICE" a CRC Press-Taylor & Francis Group publication and co-director of the French version "LE BÉTON RECYCLE" published by Les Collections de l'IFSTTAR.

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Mabel B Casyao, J Environ Waste Management and Recycling 2019, Volume 2

THE TECHNOLOGY BEHIND THIS SMART WATER DEVICE, TO CHANGE YOUR WATER CHANGE YOUR LIFE

Mabel B Casyao
Enagic Europe GmbH-Global Independent Distributor, United Kingdom

For over four decades, these Enagic Europe GmbH Company has been producing smart water device (Kangen Water) with innovative water technology that transforms ordinary tap water into hydrating alkaline water. The technology is cutting edge and now Kangen water can be available in your personal home today. At Enagic, we believe in living a "green lifestyle" that is kind to our physical bodies ban and the environment. Thankfully, Kangen Water is here to help, to establish an eco-friendly household by offering a green alternative to cleaning, laundering and gardening etc. How smart water devices, with advance health water technology can save you and your family from toxic drinking water that is destroying your health, and how the water from smart water device can aid and support health, healing, fitness and disease prevention. You know how important it is to stay hydrated, but have you ever investigated the difference between the different types of drinking water available? The truth is that not all waters are created equal. But there's good news! Kangen Water is literally changing lives every day. Kangen Water maintains a sparkling clean home without chemicals and makes a big impact to our Earth.

BIOGRAPHY

Mabel Casyao is working as a Deputy Nurse Manager at London Road Neurological Specialist Care Unit. Also, she is working as a passionate leader in direct selling of Kangen Water at Enagic Europe GmbH company as an Independent Global Distributor as her part time job.

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Note:

Luigi Antonio Pezone, J Environ Waste Management and Recycling 2019, Volume 2

SOMEONE IN THE WORLD SHOULD PROHIBIT THE INCOMPLETE INVENTIONS OF SCIENCE

Luigi Antonio Pezone
Private inventor, Italy

Global warming has been produced by incomplete public and private inventions. The undersigned, with the experience gained in a working life to demonstrate the way in which can be designed globally as a retired person has deposited around forty public utility patents in twelve years that have not found interlocutors in the governments and in world science. These patent deposits relate to water saving, air purification, energy production in fixed and mobile versions, sustainable food production with sustainable and interactive systems that have never been created and tested on planet Earth because of the current way of working in watertight compartments of public research institutions and multinationals. The purpose of author's work was not to obtain industrial property, but to put the finger on the world sore of science and work organization, which do not close the cycles they open. Due to fortunate circumstances, he went far beyond the goals he set for himself, even trespassing in the health sector with the invention of the artificial blood oxygenator. He was sure that he didn't just put a finger in the sore of world design but a very sharp knife. If he made a few details wrong, he doesn't think it matters. If there are his mistakes, they are only virtual. The important thing is to correct the real errors that have been committed by governments and the world's scientific and economic centers of power, that cover each other by hiding behind specific competences, which exclude global responsibilities. These errors are not only technical and scientific, but also legislative and legal, precisely because of the world-wide-compartmentalized work, which prevented the identification of synergistic and interactive solutions identified by the undersigned. Unfortunately only virtually because the centers of power pretend not to know them so as not to finance them; In fact, if it proves that they work, world lawmakers are required to outlaw all anthropogenic plants that open thermal, nuclear, chemical or biological cycles that do not close perfectly. In fact, interactive solutions based on natural processes avoid opening cycles that cannot be closed at the state of the art, or it is uneconomic to close them. If legislators do not intervene, national and international judges must intervene. Until science and work organization are not applied globally and with maximum transparency, they cannot govern, legislate and judge correctly.

BIOGRAPHY

Luigi Antonio Pezone is a graduate "Industrial Mechanic expert" achieved in 1969 at the State Institute "Francesco Giordani" of Caserta. He completed his Masters at Alfa Romeo Auto Spa in 1970, related to the topics Industrial equipment, machine tools, moulding techniques, organization and industrial layout. He was in charge of the "Mechanical Systems and Plumbers" of a media installation company, certified ISO 9001: ing. A. Caccavale and C. sas di Casandrino (Na) operating in Italy and abroad from 1987 to the end of 2006, He was specialized in the areas of water pumping, water purification and technical installations of industrial plants. He was retired in October 2006 and he started developing projects and patents on mechanical and plumbing systems particularly in the environmental sector.

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DAY 2 SESSIONS

MAY 23, 2019

Earth Pollution & Treatment | Environmental Science & Technology | Metal Recycling | Environmental Sustainability | Atmospheric Chemistry | Construction & Demolition Waste Management

SESSION CHAIR	Y Cengiz Toklu Beykent University, Turkey
SESSION CO-CHAIR	Bronco Simona Istituto per i Processi Chimico-Fisici CNR, Italy

SESSION INTRODUCTION

Title:	Water reuse through the millennia globally
	A N Angelakis, Institution of Iraklion, Greece
Title:	Generation of debris flow into the Siwalik Hills of Nepal
	Bharat Prasad Bhandari, Tribhuvan University, Nepal
Title:	Preliminary study on remote sensing the relationship between the brightness temperature pulses observed with a ground-based microwave radiometer and the lightning action integral
	Wang Zhenhui, Nanjing University of Information Science and Technology, China
Title:	Quantum locking and the Meissner effect lead to the origin and stability of the Saturn rings. Particles are coming to the magnetic equator plane from the protoplanetary cloud
	Vladimir V Tchernyi, Modern Science Institute- SAIBR, Russia
Title:	Studies of Climate change impacts on vegetation index over Kachchh region of western peninsular India: Perspective of In-Situ and remote sensing satellite observations
	Parul C Trivedi, India Meteorological Department, India
Title:	Comparative planetology of martian ionosphere
	Noora A Alameri, Sharjah Center for Astronomy and Space Sciences, UAE

A N Angelakis, J Environ Waste Management and Recycling 2019, Volume 2

WATER REUSE THROUGH THE MILLENNIA GLOBALLY

A N Angelakis
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Domestic wastewater was used for irrigation and aquaculture by prehistoric civilizations (e. g. Mesopotamian, Indus valley, Egyptian, Chinese and Minoan) since the Bronze Age (ca. 3200-1100). Thereafter, wastewater was disposed or used for irrigation and fertilization purposes by Greek civilizations and later by the Roman one in areas surrounding cities (e. g. Athens and Rome). Sanitation practices re-emerged in force in the more recent history following the great epidemics in several regions of the world. After the mid of 17th century the need for sanitation led to the development of effluent application practices known as "sewage farms" as a means to protect public health and to control water pollution. Wastewater application to the land for disposal and agricultural use was originally operated in European cities and later on in USA. Today, planning of projects for water reclamation and reuse is significantly increasing in several regions of the world. Also recycled water is used for almost any purpose including portable use. This paper provides a brief overview of the evolution of water reuse over the last 5000 years. It provides a historical context and links to some of the latest developments in sustainable water reclamation and reuse. By understanding the practices and solutions of the past, we are better placed to meet present and future challenges. Finally, the important role that water reuse will play in the future highly urbanized world is highlighted.

BIOGRAPHY

A N Angelakis is a Water Resources Engineer at the National Agriculture Research Foundation, Institute of Crete, Hellas and Technical Consultant of Hellenic Union of Municipal Enterprises for Water Supply and Sewerage. He was graduated from Agricultural University of Athens, Greece and he did his Master's at University of California, USA. He is author/co-author of over 450 publications mostly in the scientific fields of Environmental Engineering. He has over 4,300 SCH citations and an i10-index of 80. Mostly he has participated, as invited speaker in the organizing/scientific committee in more than 120 international symposia and/or conferences in the last 25 years. He is Editor-in-Chief of one journal and Editor of several international journals. He is an active Member of European Academy of Sciences and Arts. Also he is IWA (International Water Association) Distinguished Fellow and Honorary member of IWA and of Hellenic Water Association (HWA) and Member of the IWA Strategic Council. He is President of IWA SG on Water and Wastewater in Ancient Civilizations. In addition, he is Past President of Federation of European Water and Wastewater Services (EurEau) and to the EurEau WG on Water Reuse. He was recently awarded by the Hellenic Committee of the International Association of Hydrogeology.

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Bharat Prasad Bhandari et al., J Environ Waste Management and Recycling 2019, Volume 2

GENERATION OF DEBRIS FLOW INTO THE SIWALIK HILLS OF NEPAL

Bharat Prasad Bhandari[1] and **Subodh Dhakal**[2]
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[2]Department of Geology, Tribhuvan University, Nepal

Debris flow is very common phenomena in the steep and heterogeneous surface of mountainous terrain during heavy rainfall. The fragile geological condition of sedimentary rocks like sandstone, mudstone and conglomerate are easily erodible with rain water. Under the high rainfall, many new landslides and expansion processes occurred easily at high slope, providing loose materials for debris flows. This research was conducted in the Babai Khola watershed of Siwalik region to identify the spatial and temporal generation of debris flow and examine the evolution of debris flows under the influence of different environmental triggering factors. The interpretation tools in Arc. GIS were used to delineate the profile of landslide and debris flow on Google earth imagery. The evolutionary characteristics of landslide and debris flow were analyzed by using various environmental factors. The spatial-temporal evolution patterns of debris flow were obtained. The result showed that the debris flow mostly evolved after the deposition of landslide mass between the slopes 300-700. There are three kind of debris flow on the basis of evolution; landslide induced debris flow, erosion induced debris flow and flood induced debris flow. The water carried the deposited loose materials from landslide and eroded debris during intense rain on the slope greater than 300. The result showed that debris flow evolved from the slides between the slope angles 300-600 in the Siwalik hill. The evolution rate of Landslides and debris flow has increased from 2001-2008 whereas decreased during 2009-2014 and again has increased from 2014 to 2017. The evolution of landslide (debris flow) and rainfall pattern showed the positive correlation. The landslide and debris flow triggered by future extreme rainfalls is still expected and this kind of fluctuating cycle may last for an unexpectedly longer period.

BIOGRAPHY

Bharat Prasad Bhandari is pursuing his PhD research at Central Department of Environment Science, Tribhuvan University, Nepal since 2017. He has completed his Masters in Geology from Central Department of Geology, Tribhuvan University in 2013. He is researcher in Central Department of Environment Science since 2014. He has conducted several scientific researches in the field of geosciences. His research interest is "Evolution of landslide in the Tectonic Himalaya". He is conducting his PhD research in Landslide characteristics of Siwaliks Zone of Nepal.

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Wang Zhenhui, J Environ Waste Management and Recycling 2019, Volume 2

PRELIMINARY STUDY ON REMOTE SENSING THE RELATIONSHIP BETWEEN THE BRIGHTNESS TEMPERATURE PULSES OBSERVED WITH A GROUND-BASED MICROWAVE RADIOMETER AND THE LIGHTNING ACTION INTEGRAL

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Nanjing University of Information Science and Technology, China

The integral of lightning current squared over time, named as the "lightning action integral", is an indicator of Joule heat generated by lightning discharge. The temperature of air molecules is thus increased, which can be observed by a ground-based microwave radiometer for atmospheric temperature remote sensing. Observational experiments were performed in early summer in 2017 with a ground-based, MWP967KV type microwave radiometer, which is commonly used for atmospheric temperature profile remote sensing but has been properly-configured this study in order to observe the artificially triggered lightning events at Guangzhou field experiment site for lightning research and test (GFESL). Data from the radiometer and the instrument for recording lightning current have been analyzed and the results from seven effective events show that a relationship like TB=exp (aX) may exist between the brightness temperature increment, TB, in unit of K, observed in 30-50GHz band and the lightning action integral, X, in unit of A2s, calculated from high temporal resolution lightning current records. The correlation coefficient is as high as 0.8863 while the coefficient, a is equal to 6.25381*10-5 (sample size =7).

BIOGRAPHY

Wang Zhenhui was graduated in 1978 from Department of Atmospheric Sounding of Nanjing University of Information Science and Technology, China and engaged in Atmospheric sounding and remote sensing research. He is currently a Professor at School of Atmospheric Physics in Nanjing University of Information Science and Technology and his research interests include atmospheric parameter inversions from meteorological satellites, ground-based radiometers and radar systems.

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QUANTUM LOCKING AND THE MEISSNER EFFECT LEAD TO THE ORIGIN AND STABILITY OF THE SATURN RINGS. PARTICLES ARE COMING TO THE MAGNETIC EQUATOR PLANE FROM THE PROTOPLANETARY CLOUD

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It is demonstrated how superconducting iced particles of the protoplanetary cloud of Saturn are coming to magnetic equator plane and create the stable enough rings disk. There are two steps. First, after appearance of the Saturn magnetic field due to Meissner phenomenon, all particles orbits are moving to the magnetic equator plane. Finally they become to be distributed as rings and gaps like iron particles around magnet on laboratory table. And particles are separated from each other by the magnetic field expelled from them. It takes up to few tens of thousands years with ten meters rings disk thickness. Second, because of quantum locking all particles become to be locked within three-dimensional magnetic well at the magnetic equator plane due to Abrikosov vortex for superconductor. It works even when particles have small fraction of superconductor. During the rings evolution some contribution to the disk also could come from the collision-generated debris of the current moon, coming meteorites and from the geysers like it happened due to magnetic coupling of Saturn and Enceladus. The rings are relict of the early days of the magnetic field of Saturn system.

BIOGRAPHY

Vladimir V Tchernyi has completed his PhD in Radiophysics from Rostov-on-Don University, Russia and Doctor of Science from the Institute of Radio-Engineering and Electronics, Russian Academy of Sciences, Moscow. He used to work at EECS of University of California at Berkeley and General Physics Institute, Russian Academy of Sciences, Moscow. He is the Director of Modern Science Institute, SAIBR in Moscow. He has published more than 200 papers in reputed journals, including twenty on Saturn rings origin and a few books.

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STUDIES OF CLIMATE CHANGE IMPACTS ON VEGETATION INDEX OVER KACHCHH REGION OF WESTERN PENINSULAR INDIA: PERSPECTIVE OF IN SITU AND REMOTE SENSING SATELLITE OBSERVATIONS

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Climate change has impacts on entire ecosystem and affects most of activities of human life. In this study, an attempt has been made to address the issue of impacts of climate change on vegetation dynamics. In view of high spatial variability in most realistic and transparent way, remote sensing technique is extensively used in this study to integrate and interpret scientific data and thus function of climate change processes are better understood. Kachchh an arid region of Gujarat state of western peninsular India is chosen as the study area. To evaluate spatio-temporal patterns of climatic variables, meteorological data are collected from in situ meteorological observatories of India Meteorological Department (IMD). The study is undertaken for two climatic variables, i.e. daily temperatures and daily rainfall for thirty years period from 1989 to 2018 and latest climatological normal is computed. Second part of the study addresses vegetation dynamics. Normalized differential vegetation index (NDVI) is chosen as a representative element of spatio-temporal vegetation pattern. In this study, Advanced Very High Resolution Radiometer (AVHRR) and Moderate Resolution Imaging Spectroradiometer (MODIS); NDVI composite satellite images from 1989 to 2018 are used. Total 783 satellite images for last 30 years have been analyzed. The variation in annual mean maximum and minimum temperatures was found more than 2oC over the Kachchh region that can be considered as climate change indicator. Though being arid region, rainfall over the region having very high annual variability from 77.3mm to 1032.7mm and NDVI also has yearly fluctuations, both exhibit increasing trend during the study period. Thus overall outcome of the study suggests that there is obvious indication of climate change through variation in climatic variables and there exist interrelation between climate and vegetation index over the region. These results at regional level may prove an important key for global climate studies.

BIOGRAPHY

Parul C Trivedi is working with India Meteorological Department (IMD) at Ahmedabad, India for last 25 years. She is a Meteorologist and mainly undertakes multidisciplinary research on different aspect of Earth Sciences. She has participated in many national and international seminars and conferences and published many research papers. She is engaged with writing a book for Government Publication.

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COMPARATIVE PLANETOLOGY OF MARTIAN IONOSPHERE

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The Martian ionosphere has been a substantial subject of research over the last 40 years, especially with the framework of our knowledge of planetary atmospheres and ionospheres. However, by utilizing Radio occultation (RO) measurements that can span and provide a full vertical profile of the ionosphere on Mars, a comprehensive comparative study of Martian ionosphere can be constructed. In this work, author will present the study of electron density profiles retrieved from several Radio occultation experiments, which has been conducted using data from Mars Global Surveyor (MGS), Mars Express (MEXs) and MAVEN ROSE. Total Electron Content (TEC) has been calculated numerically as well as the slab thickness for each profile. All the data has been analyzed under different circumstances of latitude, altitude, time of observation and Martian seasons to compare these results with the Earth's ionosphere. The preliminary results showed scale height changes due to the density variations marked by TEC dissimilarity and these differences in scale height quantification are expected to be related to the temperature divergence.

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