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Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung

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EXCELLENCE CENTERS FOR EXCHANGE AND DEVELOPMENT

Water Security and Climate Change Conference

—

01-04 March 2021
Hanoi, Vietnam

Program

— Indochina Time (ICT)

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Umsatzsteuer-Identifikationsnummer gem. § 27a Umsatzsteuergesetz:
DE 122653679

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Preface

The effects of global warming have been evident for decades; the number of people affected by the impacts of climate change continues to rise. Furthermore, the disruption of ecosystems through unabated urbanization, inappropriate agricultural practices, deforestation, and pollution are among the factors undermining the environment's capacity to sustain a sustainable living!

Water security and climate change are not only key concerns of the 21st century, but they are closely interlinked. Water security is an indispensable foundation for food and energy security, for economic activities, for public and ecosystem health, among others. In the coming years, climate change is going to alter the water balance in most parts of the world, climate extremes will become an ever-growing challenge and vulnerability to climate- and water-induced hazards will increase.

The years 2020 and 2021 reveal to many people what vulnerability means. The Covid19 pandemic has created a state of uncertainty and threat in many parts of the world and illustrates how interconnected today's societies are. However, the current situation also demonstrates the role science can play. More than ever, politics is calling for evidence-based research. The current situation thus offers an opportunity for a paradigm shift that could be conducive to a promising water and climate policy.

Climate- and water-related challenges can only be met if science and practice are closely interlinked! In this line, the Water Security and Climate Change conference (WSCC) aims at providing a platform for knowledge exchange, fostering dialogue and innovation, and starting new initiatives, collaborations, and projects. It is our particular interest to initiate and support a dialogue between the “water” and “climate change” communities, fostering nexus thinking and ultimately creating impact beyond the conference as such.

Thus, let us join forces to advance the role of science in decision-making and policy creation towards water security and climate resilience.

The WSCC is an initiative of the ‘Higher Education Excellence in Development Cooperation – exceed’ program, which consists of more than 90 universities worldwide. The conference has been implemented since 2016 under the auspices of the Centers for Natural Resources and Development (CNRD), the Sustainable Water Management in Developing Countries (SWINDON) network, the Food Security Center (FSC) as well as the Asian Institute of Technology (AIT). In 2021, WSCC is convened by the Vietnam Academy of Water Resources (VAWR) on behalf of the Exceed network.

— On behalf of the WSCC Organization Team

01. March

ICT

Check-in
02:05 pm

Inauguration
02:15 pm

Keynote: ‘Secure and Manage the Water we Eat in a Changing Climate’
Speaker: Stefan Uhlenbrook, International Water Management Institute, IWMI
Moderation: Michael Hoppe
02:45 pm

Round Table: ‘Science-Policy-Society Interfaces and the Co-designing of Applied Research’
Speaker: Lars Ribbe, CNRD; Robyn Johnston, ACIAR; Anik Bhaduri, Future Earth; Stefan Uhlenbrook, IWMI
Moderation: Michael Hoppe
03:15 pm

Meeting Other Participants
Networking Carousel
03:55 pm

Sessions

From Coping to Adaptation: Integrated Strategies to Build Resilience to Water-related Risks for the Most Vulnerable

Session Chairs: Simone Sandholz & Dominic Sett, UNU-EHS

See more

The Roles of Standards in Securing Urban Waters and its Interventions

Session Chairs: Thammarat Koottatep, AIT; Frank Fladerer & Hendra Gupta, BORDA

See more

Special Session on the Mekong Region

Live-stream from the Regional Training Center at VAWR

Session Chairs: Trinh Duc Tran, VAWR, Chinaporn Meechaiya, ADPC; Marcel Marchand, Deltares & Nguyen Nghia Hung, SIWRR

See more

04:20 pm

ICT

Session Insights & Outlook
Moderation: Michael Hoppe
05:30 pm

Virtual Marketplace for Posters
06:00 pm

Sessions

Building Resilient Food Systems Through Efficient Water Use

Session Chairs: Mirja Michalscheck, WUR; Heinrich Hagel & Daniela Gomez, FSC

See more

Urban Water Under Climate Change: Transition, Management and Governance

Session Chair: Johannes Hamhaber, TH Köln; Marcos Algara, UASLP

See more

Solutions Towards a Water-Energy-Food Security Nexus

Session Chairs: Alexandra Nauditt & Lars Ribbe, TH Köln

See more

08:30 pm

Check-out
09:30 pm

Poster Booth
ALL DAY

02. March

ICT

Check-in

02:05 pm

Keynote: ‘Interconnected Vulnerabilities and Risks for Water Security in the Context of Climate Change’

Speaker: Zita Sebesvari, United Nations University - Institute for Environment and Human Security, UNU-EHS
Moderation: Michael Hoppe

02:15 pm

Sessions

Operational Water Management Developments in Southeast Asia

Live-stream from the Regional Training Center, VAWR

Session Chairs: Marcel Marchand & Dinh Phuong Trang, Deltares

See more

Building Resilience to Hydrometeorological Hazards in Southeast Asia

Session Chairs: Dolores Rey Vicario, Cranfield University; Slobodan Djordjevic, University of Exeter

See more

03:15 pm

Yoga Session

04:15 pm

Sessions

Adapting to Climate Change: Strengthening Urban Water Resilience

Session Chairs: Phurba Lhendup & Asmita Poudel, Regional Resource Centre for Asia and the Pacific, AIT

See more

Irrigation and Drinking Water Security under Climatic Extremes: Empirical Analysis and Policy Lessons

Session Chairs: Mukand Babel, AIT; Dinesh Kumar & Nitin Bassi, IRAP; Yusuf Kabir, UNICEF

See more

Circular Design-built Strategies for Climate-friendly and Citizen-driven Urban Water and Food Systems

Session Chairs: Angela Million, Grit Bürgow & Anja Steglich, TU Berlin

See more

ICT

04:30 pm

Session Insights & Outlook

Moderation: Michael Hoppe

05:40 pm

Check-out

06:00 pm

Poster Booth

ALL DAY

03. March

Check-in

ICT
02:05 pm

Keynote: ‘Managing Water in a Changing Situation for the Mekong River Basin’

Speaker: Thim Ly, Mekong River Commission, MRC
Moderation: Michael Hoppe

02:15 pm

Round Table: ‘Integration of Land and Water Governance to Achieve the SDGs - Opportunities and Costraints’

Panelists: Mahsa Motlagh, ICB; Mukand Babel, AIT; John Dore, Australia’s DFAT; Nguyen Tung Phong, VAWR
Moderation: Michael Hoppe

02:45 pm

Flash Talk Sessions

Water and Land for Agriculture and Food
Session Chairs: Heinrich Hagel & Daniela Gomez, FSC

Water Management and Security in Relation to Climate Change and Policy Making
Session Chairs: Mukand Babel, AIT; Andreas Haarstrick, SWINDON

Water Security Hazards and Risks
Session Chairs: Oscar Baez Villanueva & Ian McNamara, TH Köln

Urban Water Management
Session Chairs: Greta Dekker, TH Köln; Ania Wilk-Pham, TU Berlin

See more

03:25 pm

Matchmaking & Networking

04:10 pm

Sessions

Nature-based Solutions (Ecosystem-based DRR and Adaptation) in Science, Policy and Practice: Filling the Post-2015 Development Agenda with Action

Session Chairs: Udo Nehren, TH Köln & Karen Sudmeier, UNEP

See more

SDGs in the Light of Synergies, Trade-offs, and Inclusive Development

Session Chairs: Andreas Haarstrick, SWINDON & Chrispin Kowenje, Maseno University

See more

Socio-economic Aspects of Water and Food Security

Session Chairs: Heinrich Hagel & Daniela Gomez, FSC

See more

ICT
05:00 pm

Virtual Marketplace for Posters

06:05 pm

Sessions

Water-Climate-Nexus: Challenges and Opportunities in Mountainous Regions

Session Chairs: Björn Weeser & Suzanne Jacobs, University Giessen, SDGnexus Network

See more

Smart Water Technologies and Digital Solutions to Advance Water Security

Session Chair: Mahsa Mothlagh, Bonn Alliance for Sustainability Research / Innovation Campus Bonn

See more

Drought Risk Assessment and Mitigation

Session Chair: Yuei-An Liou, National Central University; Tom Vanwalleghem, University of Cordoba

See more

08:30 pm

Session Insights & Outlook

Moderation: Michael Hoppe

09:40 pm

Check-out

10:00 pm

Poster Booth

ALL DAY

04. March

ICT

Check in

02:05 pm

Keynote: ‘Climate Change and Water Security Across the Asia Pacific - from Local to Regional Scales’

Speaker: Nicholas Schofield, Global Future Research
Moderation: Michael Hoppe

02:15 pm

Sessions

SDG 6 in the Urban Context: Assessing, Analyzing and Addressing Synergies and Trade-offs Between SDG 6 and Other SDGs Through Innovative Tools and Methods

Session Chairs: Bernd Gutterer, BORDA; Thammarat Koottatep, AIT; Greta Dekker, TH Köln

See more

Water and Disasters and the Role of Real-time Geospatial Tools for Operational Planning and Decision-making

Live-stream from the Regional Training Center, VAWR

Session Chairs: Rishiraj Dutta, Asian Disaster Preparedness Center; Trinh Tran, VAWR

See more

Resilience to Water-induced Disasters

Session Chairs: Vishnu Prasad Pandey, IWMI; Mina Adhikari, Nepal Water Conservation Foundation; Sanju Koirala, Policy Entrepreneurs Inc

See more

03:10 pm

Wrap-up and Closing

Moderation: Michael Hoppe

ICT
04:25 pm

Networking

05:55 pm

Check-out

07:00 pm

Poster Booth

ALL DAY

Keynotes

Secure and Manage the Water We Eat in a Changing Climate

Monday, 01. March, 02:45pm - 03:15pm (ICT)
Moderation: Michael Hoppe

Stefan Uhlenbrook

— International Water Management Institute (IWMI)

Professor Stefan Uhlenbrook' s main expertise includes water and sustainability assessments, hydrological process research and water resources management with focus on developing solutions for pressing water challenges. He is a renown academic, published >150 peer-reviewed papers and is frequently invited speaker at high-level meetings worldwide. He has led many research and development projects that have demonstrated the impact of global changes on water cycle dynamics in different hydro-climatic regions worldwide, and they provided effective solutions to address these challenges. He is experienced on translating science-based knowledge to effective policies and strategies that contribute to environmental, economic and societal sustainability (i.e. Agenda 2030). Recently, he has enlarged his interest to food production system transformations to provide healthy and nutritious food for all and the central role of water and ecosystems.

Stefan Uhlenbrook is the Strategic Program Director Water, Food and Ecosystems at IWMI, Colombo, Sri Lanka. Before he was the Coordinator of the UNESCO World Water Assessment Programme (WWAP) and the Director of the UNESCO Programme Office on Global Water Assessment in Perugia, Italy (2015-2019). He previously worked at the UNESCO Institute for Water Education (now IHE Delft), as Professor of Hydrology (since 2005), Deputy Director (Vice-Rector) for Academic and Student Affairs (2000-2014) and Director a.i. (acting Rector; 2014-2015). Stefan obtained his PhD (1999) and habilitation (2003) in Hydrology at the University of Freiburg, Germany, where he worked also as assistant and associate professor (2000-20004).

Interconnected Vulnerabilities and Risks for Water Security in the Context of Climate Change

Tuesday, 02. March, 02:15pm - 03:05pm (ICT)
Moderation: Michael Hoppe

Zita Sebesvari

— United Nations University, Institute for Environment and Human Security

Dr. Sebesvari heads the Environmental Vulnerability and Ecosystem Services (EVES) Section at UNU-EHS. She is an internationally recognized expert in the fields of social-ecological risk assessments, ecosystem-based disaster risk reduction (Eco-DRR) and ecosystem-based adaptation (EbA), with a focus on low-lying coastal areas, such as river deltas.

Dr. Sebesvari is author or co-author of around 80 publications, and served as a Lead Author of the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCCC, Chapter 4 and Summary for Policymakers; 2019). She has 13 years of research experience in Vietnam focusing on coastal areas across Vietnam.

Keynotes

Managing Water in a Changing Situation for the Mekong River Basin

Wednesday, 03. March, 02:15pm - 03:05pm (ICT)
Moderation: Michael Hoppe

Thim Ly

— Mekong River Commission

Dr. Thim Ly is the Chief River Basin Planner of the Planning Division of the Mekong River Commission (MRC) Secretariat. He has over 20 years working experience with various international organizations in variety of fields of development including more than 15 years working in water resources management in the Mekong Region. He holds a Master degree in development planning from the University of Dortmund, Germany, and a PhD degree in development studies from the University of Bonn, Germany. His field of interest lies in water resources planning and management.

Climate Change and Water Security Across the Asia Pacific - from Local to Regional Scales

Thursday, 04. March, 02:15pm - 03:05pm (ICT)
Moderation: Michael Hoppe

Nicholas Shofield

— Global Future Research

Nick is Director of the Global Future Research and Professorial Fellow at the University of NSW. He has led Australian research programs addressing salinity, eutrophication, sediments, pesticides, river and wetland health, groundwater and biodiversity loss. Internationally, Nick is delivering programs on climate change and water security, river basin management, irrigation modernisation, water sensitive cities and environmental water. Nick was formerly Director of the Global Water Institute (UNSW) and CEO, International RiverFoundation. He has qualifications in astrophysics and catchment hydrology and is a member of the IWA Strategic Council and Fellow of the Royal Society (NSW).

Topics

Urban Water Management

Two-thirds of the global population will be living in urban areas by 2050. Therefore, the water-related challenges over urban areas will be pivotal for future urban sustainability. This topic aims to understand the present and future challenges and transformative pathways of urban water security.

International Water Management

One-third of the global population lives in internationally shared river basins. These river basins are vital for economic development, reducing poverty and contributing to the attainment of the Sustainable Development Goals. This topic intends to address the complexities of international and shared river basins through management policies while improving ecological sustainability.

Water and Land for Agriculture and Food

Water scarcity and Climate Change are placing unprecedented pressure on water availability. There is a need to optimize water use practices to strive towards water and food security. The major focus of this topic is to bring together scientists and stakeholders to improve the evidence-based decision making for improving the co-management of water and land for sustainable food systems.

Water Security Hazards and Risks

Climatic extremes events have socio-ecological, economic, and environmental impacts. Their analysis is crucial to shift towards proactive management practices that reduce economical losses. This topic invites scientific contributions for solutions and management-oriented climatic risk reduction practices and policies for the most vulnerable communities.

Connecting the Dots: Nexus Themes & Transformation Strategies

Water security and climate change automatically include a wide range of cross-cutting issues to be addressed in this thread. For example, water, energy, and food security are closely linked to each other. An analysis of how these sectors interact with each other is crucial to enhance informed-based decision-making. The focus of the topic is to foster sustainable transformation using the Nexus framework as well as addressing social challenges and strategies for this transformation.

Water Security and Climate Change Adaptation

Water scarcity reduces the adaptive capacities of society and ecosystems. Additionally, Climate Change is already placing unprecedented pressure on global water resources availability. This topic aims to strive towards adaptation policies and nature-based solutions to increase the resilience of the affected areas by bringing together diverse stakeholders to address water insecurity against anthropogenic and environmental challenges.

Water Knowledge and the Data Revolution

Data is essential for striving towards informed-based decision-making. Thanks to technological development, there are multiple sources of information that can be used to assess the past, present and future status of diverse regions. Therefore, this topic intends to develop pathways for data-driven decision-making for sustainability.

Session

From Coping to Adaptation: Integrated Strategies to Build Resilience to Water-related Risks for the Most Vulnerable

Session Chairs: Simone Sandholz & Dominic Sett, United Nations University – Institute for Environment and Human Security (UNU-EHS)

Monday, 01. March, 04:20pm - 05:20pm (ICT)

BACKGROUND

Water-related disasters are becoming increasingly complex due to exacerbating environmental and anthropogenic change. To manage this growing risk, e.g. to assure water security of growing populations in the face of climate change or to protect informal dwellers from rising flood levels, a wide range of strategies has been developed. However, the design and implementation of such strategies often work in silos, with little consideration of cross-sectoral interlinkages. Due to the narrow sectoral focus, many sectoral approaches thus fail to strengthen overall resilience.

Therefore, integrative approaches are needed to better address risks and people's needs, particularly of the most vulnerable. Furthermore, such approaches could seize important coherence benefits that are substantial for achieving the goals of global development agendas like the SDGs, the Sendai Framework and the Paris Agreement. However, to establish cross-sectoral integration various challenges will need to be overcome, including, but not limited to, sectoral budgets, lack of institutional cooperation, established practices, and different underlying concepts with their own definitions. A risk and vulnerability focus would help to overcome these challenges by adding a common understanding and an entry point for various sector interventions.

This session invites contributions pointing the way to integrating climate change adaptation, disaster risk management, poverty reduction, climate risk insurance, human rights and/or other sectors to effectively build resilience to water-related risks. This will be done based on presentations 1) highlighting international best practices that have successfully linked sectoral approaches, 2) showcasing novel conceptual approaches or 3) presenting integrated policy frameworks facilitating the move from coping to adaptation in reality. By means of the presentations and discussions the session aims to jointly identify needs, gaps, opportunities and ways forward in cross-sectoral integration that contributes to build water-secure and socially just futures.

KEYWORDS

sector integration, policy coherence, water-related risks, vulnerability reduction

ORAL PRESENTATIONS

Understanding, Assessing and Managing Flood Risk in Vietnam: A Review of the Literature

Nguyen, Minh Tu[1]; Sebesvari, Zita[1]; Souvignet, Maxime[1,2]; Bachofer, Felix[3]; Braun, Andreas[4]; Garschagen, Matthias[5]; Schinkel, Ulrike[6]; Yang, Liang[5]; Nguyen, Linh Khanh Hoang[7]; Hochschild, Volker[4]; Assmann, André[8]; Hagenlocher, Michael[1]

Organization(s): 1: United Nations University-Institute for Environment and Human Security (UNU-EHS), UN Campus, Platz der Vereinten Nationen 1, 53113 Bonn, Germany; 2: Munich Climate Insurance Initiative (MCII); 3: German Aerospace Center (DLR) - Earth Observation Center (EOC), Muenchener Strasse 20, 82234 Wessling, Germany; 4: University of Tübingen, Institute of Geography, Rümelinstraße 19-23, 72070 Tübingen, Germany; 5: Ludwig-Maximilians-University Munich (LMU), Department of Geography, Luisenstr. 37, 80333 Munich, Germany; 6: IZES gGmbH, Altenkesseler Str. 17, 66115 Saarbrucken, Germany; 7: Hue University, International School, Le Loi Str. 04, 530000 Thua Thien Hue, Vietnam; 8: geomer GmbH, Im Breitspiel 11b, 69126 Heidelberg, Germany

Determinants of Adaptation Choices to Climate Change by Fishermen: The Case of Rural Fishing Communities in the Southern Region of Benin

Adjimoti, Idinin Jerome; Afolami Afolake, Caralyn

Organization(s): Centre of Excellence in Agricultural Development and Sustainable Environment (Federal University of Agriculture, Abeokuta, Nigeria)

Socio-economic Analysis of Floating House Techniques: Innovative Flood Adaptation Strategies in Bangladesh

Zannat, Zahrun; Murshed, Sonia Binte

Organization(s): Institute of Water and Flood Management, Bangladesh University of Engineering and Technology

Climate Change Preparedness, Adaptation and Mitigation Strategies: Perception of Fisheries Communities in Batticaloa, Sri Lanka

Selvanayagam, Vasanthakumary[1]; Swaminathan, Divya Rajeswari[2]; Balakrishnan, Arularasi[3]

Organization(s): 1: Eastern University, Sri Lanka; 2: BaWngalore University, India; 3: University of Peradeniya, Sri Lanka

Session

The Roles of Standards in Securing Urban Waters and its Interventions

Session Chairs: Thammarat Koottatep, AIT; Frank Fladerer & Hendra Gupta, BORDA

Monday, 01. March, 04:20pm - 05:20pm (ICT)

BACKGROUND

Association of Southeast Asian Nations (ASEAN), as a single entity, would rank as the seventh-largest economy in the world. The region comprises some of the largest and the fastest-growing cities of the world. The booming cities of Southeast Asia account for more than 65 per cent of the region's GDP today, and more than 90 million people are expected to move to urban areas by 2030. Creating cities with a high quality of life will demand some $7 trillion in investment in infrastructure, housing, and commercial space.

The whole developing process increases the demand for resources, consumptions and eventually locate pressures to resource security as well as disposal of waste. Nature's capacity to regenerate resources that human needs is currently overwhelmed by the continuously increasing demand. Technology application and approaches to treat wastewater and solid waste are crucial to support nature's regeneration process. Taking urban area as a starting point in dealing with water security and climate change offers enormous potential for its concentration of population.

Local and national governments increase investment in sanitation infrastructure development, while development banks offer the opportunity to scale up investment and access to sanitation infrastructures supporting the governments' initiation. Manufacturers of water and wastewater treatment technology play important roles in securing water and dealing with climate change as well as ensuring that the investments in the sanitation sector yield the expected impact. Standards for water and sanitation products are a necessity to push mutual market access as well as the realization of technical interoperability and compatibility of products, enhancing trade in goods and services. Application of standards ensures that only tested and quality technology products are offered in the market.

Asian Institute of Technology Thailand in collaboration with Bremen Overseas Research and Development Association organise this session to present the sanitation sector's contribution to water security and climate change within an urban context. The session focuses on the contribution of standardization on decentralized wastewater treatment technology to achieve SDG 6 on 'Clean Water and Sanitation' and 11 on 'Sustainable Cities'. The session brings forward the idea of a common standard or a mutual recognition of testing prefabricated residential wastewater treatment products to the ASEAN community and highlights urban decision-makers' specific and direct intervention to safeguard urban waters.

KEYWORDS

Managing urban waters, Sanitation, Standards, Decentralized systems, Performance test, Technology verification

ORAL PRESENTATIONS

Challenges and Opportunities of Water Security in Southeast Asia

Koottatep, Thammarat

Organization(s): Asian Institute of Technology

Establishment of a Standard for Testing Performance of Residential Wastewater Treatments in Thailand

Duangsri, Pichet

Organization(s): Thailand Industrial Standard Institute

Implementation of Standards for Water and Sanitation Sectors in Viet Nam

Rep. Ministry of Construction Vietnam

Organization(s): Ministry of Construction Vietnam

Role of Standards to secure water in an Urban-Context

Fladerer, Frank

Organization(s): BORDA Southeast-Asia

Session

Special Session on the Mekong Region

Session Chairs: Trinh Duc Tran, VAWR, Chinaporn Meechaiya, ADPC, Marcel Marchand, Deltares; Nguyen Nghia Hung, SIWRR

Monday, 01. March, 04:20pm - 05:20pm (ICT)

BACKGROUND

According to the research from Mekong River Commission (MRC), the effects of climate change over Mekong basin are obvious with rising temperatures and changes in the intensity of rainfall, river flow, floods, and droughts are destroying homes, infrastructure, crops and fisheries. Monitored rainfall and weather data of showed that Lower Mekong Basin and especially Mekong delta is experiencing a more immediate and short-term changes in weather patterns, natural disasters with consequences for water and natural resources management. More than half of the Mekong delta in Vietnam coastline is continuously eroded; Salinity intrusion and drought occurring with increasing frequency and intensity. Water shortages and scarcity due to saline intrusion have become a major challenge threatening the sustainability of the delta and its inhabitants. The session introduces results from different project/case study linking climate-nature-human conditions shaping the current challenges of the water security of Mekong delta. Case study presentations will show the underlying aspects of each of the challenge, propose immediate and long-term solutions (on planning decision) and offer future perspective for water related management at the Mekong delta in the context of climate change and upstream development.

ORAL PRESENTATIONS

Salinity, Wind and Wave Effects on Sediment Transport at Mekong River Estuaries

Le Xuan, Tu[1]; Tran Ba, Hoang[1]; Duc Dang, Thanh[2]; Tran Anh, Duong[3]

Organization(s): 1: Southern Institute of Water Resources Research, Ho Chi Minh City, Vietnam; 2: Pillar of Engineering Systems and Deign, Singapore University of Technology and Design, Tampines, Singapore; 3: Ho Chi Minh City University of Technology (HUTECH), 475A Dien Bien Phu Street, Binh Thanh District, Ho Chi Minh City, Vietnam

Research on Local Water Storage Solutions to Irrigate Fruit Trees in Droughty and Salty Conditions in the Mekong Delta

Hung, Tran Thai

Organization(s): Southern Institute of Water Resources Research

Mekong delta shoreline response to changing human intervention based on numerical model

Nguyen Nguyet Minh; Tran Ba Hoang; Dinh Cong San

A sediment budget for the Mekong Delta using a process-based model

Vo Quoc Thanh

FEWS – AMD: An operational salinity forecasting and water quality data knowledge platform in Ben Tre and Tra Vinh Provinces, Vietnam

Dinh Phuong Trang; Marcel Marchand

The Master Plan for River Training of the Lower Mekong: Needs and Outlooks

Nguyen Nghia Hung; Le Manh Hung; Dinh Quoc Phong

POSTER PRESENTATION

Catch-MEKONG – Saltwater Intrusion and Morphodynamics in the Mekong Delta: Status, Impacts and Future Developments. Results of a 5-year Research Project

Huth, Juliane[1]; Ottinger, Marco[1]; Apel, Heiko[2]; Schlurmann, Torsten[3]; Jordan, Christian[3]; Grimmeisen, Felix[4]; Heege, Thomas[5]; Lam Dao, Nguyen[6]; Chau Ngyuen, Xuan Quang[7]; Kuenzer, Claudia[1]

Organization(s): 1: German Aerospace Center (DLR), German Remote Sensing Data Center (DFD), 82234 Wessling, Germany; 2: German Research Centre for Geosciences (GFZ), 14473 Potsdam, Germany; 3: Ludwig-Franzius-Institute for Hydraulic, Estuarine and Coastal Engineering, 30167 Hannover, Germany; 4: SEBA Hydrometrie GmbH & Co. KG, 87600 Kaufbeuren, Germany; 5: EOMAP GmbH & Co. KG, 82229 Seefeld, Germany; 6: Vietnam National Space Center (VNSC), Ho Chi Minh City Space Technology Application Center (STAC), Ho-Chi-Minh City, Vietnam; 7: Vietnam National University Ho-Chi-Minh City, Institute for Environment and Resources (IER), Ho-Chi-Minh City, Vietnam

Regional Planning in the Mekong Delta – The System: Freshwater, Saline Water, and Land Uses Determines – Planning Questions – The R&D Project ViWaT-Mekong-Planning Develops Planning Support Tools

H. Stolpe, K. Brömme, S. Greassidis, V.K.T. Nguyen, Q.V. Trinh

Session

Building Resilient Food Systems Through Efficient Water Use

Session Chairs: Mirja Michalscheck, WUR; Heinrich Hagel & Daniela Gomez, FSC

Monday, 01. March, 08:30pm - 09:30pm (ICT)

BACKGROUND

Sustainable land and water management are two of today's greatest challenges. Climate change and a growing global demand for resources respectively increase the uncertainty and the pressure on water resources and agricultural production. The increasing water scarcity and food demand call for more efficient and resilient agricultural systems i.a. producing 'more crop per drop'. In this session, we take a look at the importance of water use efficiency (SDG 6.4) for resilient food systems (SDG 2.4). We would like to reflect on how to increase water use efficiency (WUE) for agricultural production and on how resilient food systems (will) look like when aiming at water security under climate change.

OBJECTIVES

To raise awareness on the link between water use efficiency and resilient food systems, fostering a relevant knowledge exchange and discussion and recognising the critical role sustainable NRM play on agricultural sustainability and food security.

KEYWORDS

Sustainable NRM (Natural Resources Management), IWRM (Integrated Water Resources Management), Land and Water Management, Agricultural Sustainability, Food Security

ORAL PRESENTATIONS

Supporting Food Security Through the Use of Rainwater Harvesting to Supply Vertical Hydroponic Systems in Andean Cities

Sucozhañay, Adrian[1]; Guerrero-Coronel, Rigoberto[1,2]; Guerrero-Coronel, Rodrigo[2]; Peña, David[1]; Pesántez, Juan[1]; Célleri, Rolando[1]

Organization(s): 1: Department of Water Resources and Environmental Sciences, University of Cuenca; 2: AQUA-Payana, Cuenca, Ecuador

Unlocking the Potential of Agricultural Productivity and Water use Efficiency in the Eastern Nile Countries

Ayyad, Saher[1]; Khalifa, Muhammad[1,2]

Organization(s): 1: Institute for Technology and Resources Management in the Tropics and Subtropics (ITT), Cologne University of Applied Sciences, Germany; 2: Department of Geography, University of Cologne, Germany

POSTER PRESENTATIONS

Use of the Leachate Produced in a Landfill in Veracruz, Mexico as a Liquid Biofertilizer

Marcos-Valencia, Erik; Salazar-Hernandez, Elizabeth; Jacome-Sanchez, Heidi Anabel; Lopez-Gonzalez, Yovani; Sanchez-Zarate, Neira

Organization(s): Instituto Tecnologico Superior de Misantla

The Climate, Land Use and Food "Triple" Challenge and Opportunity for Uganda

Lunyolo, Lilian Daphine[1]; Khalifa, Muhammad[1,2]; Ribbe, Lars[1]

Organization(s): 1: Institute for Technology and Resources Management in the Tropics and Subtropics (ITT), Technische Hochschule Köln (University of Applied Sciences), Cologne 50679, Germany; 2: Institute of Geography, University of Cologne, Albertus-Magnus-Platz, D-50923 Cologne, Germany

Session

Urban Water under Climate Change: Transition, Management and Governance

Session Chairs: Johannes Hamhaber, TH Köln; Marcos Algara, UASLP

Monday, 01. March, 08:30pm - 09:30pm (ICT)

BACKGROUND

Cities are now hosting the still growing majority of global population and thus have become the hubs of natural resources and water demand, both direct and indirect. At the same time, they face multiple socio-economic, political and planning challenges, especially in the so-called Global South, which are exacerbated by impending climate change impacts. The session introduces approaches to urban water management from a social and governance perspective, linking water management to poverty, inequality, and urban planning. Case study presentations will show cities and citizens as vulnerable to CC-related water issues and introduce governance practices to tackle such challenges in an integrated manner. Beyond that, the poster session offers perspectives on urban water bodies, their services provided and related management frameworks

ORAL PRESENTATIONS

Revealing Structural Racism in Access to Drinking-water and Health of Population: The Case of Hepatitis A in the State of Rio de Janeiro Between 2007 and 2018

Gonçalves Nunes, Daniele[1]; Saldanha Machado, Carlos José[2]; Pistón, Nuria[3]

Organization(s): 1: Universidade do Estado do Rio de Janeiro e Instituto Federal do Rio de Janeiro,; 2: Pesquisador Titular em Saúde Pública da Fundação Oswaldo Cruz/Ministério da Saúde Instituto de Comunicação e Informação Científica e Tecnológica em Saúde; 3: Departamento de Ecología, Instituto de Biologia, Universidade Federal do Rio de Janeiro (UFRJ)

Addressing Water Sensitivity Through Wastewater Reuse: Issues and Challenges in Bangalore, India

H.M, Sharath

Organization(s): Bangalore University

Green Infrastructure for Sustainable Urban Water Management in Amman, Jordan

Al-Houri, Zain[1]; Al-Omari, Abbas[2]

Organization(s): 1: AL alBayt University; 2: University of Jordan

Water-sensitivity of Statutory Development Plans of Bhopal and Melbourne: A Critical Review

Kumar, Sameer; Doshi, Siddh; Mishra, Gargi; Iyer, Mona

Organization(s): CEPT University

POSTER PRESENTATIONS

Indicators for Tourism Scenarios of Climatic Vulnerability in Hydrological Attractions in San Luis Potosí, Mexico

García, Ana Mónica de Jhesú[1,3]; Vázquez Solís, Valente[1,2,3,4]

Organization(s): 1: Autonomous University of San Luis Potosí; 2: Environment and Resourses Management International Master Program (ENREM); 3: Multidisciplinary Postgraduate Program for Environmental Sciences (PMPCA acronym in Spanish); 4: National Council for Science and Technology

Session

Solutions Towards the Water-Energy-Food Security Nexus

Session Chairs: Alexandra Nauditt & Lars Ribbe, TH Köln

Monday, 01. March, 08:30pm - 09:30pm (ICT)

BACKGROUND

It is widely recognized that more “Nexus Thinking” is needed in resources management and that planning strategies should consider the needs of all sectors related to water, energy, food and the environment; and be based on a profound understanding of Nexus conflicts and trade-offs. However, Nexus systems can be extremely complex, depending on the spatial scale, seasonal variability, resources availability and demand as well as potential climatic, demographic and socioeconomic changes. Aside from understanding the economic trade-offs between the different resources uses, we need to be aware of the environmental implications of any intervention, and how it compromises other sectors. Typical examples are e.g. the impact of agricultural activities on water quantity and quality, reduced groundwater recharge due to increased technification and efficiency of irrigation, energy generation vs. water uses for domestic supply and agricultural activities, etc. ..). Therefore, only based on a WEF Security Nexus System assessment, we will be able to suggest adaptive solutions to improve sustainable resources planning.

In recent years, qualitative and quantitative tools of varying complexity have been developed and applied to assess such Nexus components and interconnections (Bassel et al., 2015; Basheer et al., 2018; Schull et al., 2020). Many of these tools address decision-making and governance at the national or regional level and are capable of depicting the regional physical and institutional context of WEF Nexus systems (Hermann et al., 2012; Sieber et al., 2015; Daher and Mohtar, 2015). Therefore, there is a strong demand to provide tools that can assess such Nexus tradeoffs at local scale systems as eg. the catchment scale, irrigation scheme or urban system.

Based on such a Nexus system assessment, we can suggest and develop integrated, low-cost WEF Nexus conform solutions (hybrid and polyservice technologies), that can optimize resources supply and protect ecosystems. Common examples are agro-photovoltaics, photovoltaics combined with water treatment, waste(water) for fertilization and energy generation.

Therefore, this session aims at presenting and discussing concepts, methods and data that can support WEF Security assessment and governance approaches, as well as smart and integrated solutions that can improve the secure supply of clean resources.

KEYWORDS

Water Security, Energy Security, Food security, Nexus Assessment Tools, Nexus Governance, Nexus assessment indicators and indices, hydropower, irrigation, polyservice solutions, resources management, resources planning, governance.

ORAL PRESENTATIONS

Water-Energy Assessment of Sound Groundwater Management in Mendoza, Argentina

Riera, Félix Sebastián[1,2,3]

Organization(s): 1: Universidad Nacional de Cuyo (FCA-UNCuyo); 2: Argentine Association of Regional Consortiums for Agricultural Experimentation (AACREA); 3: National Scientific and Technical Research Council (CONICET)

Utilizing WEF Nexus approach in Central Asia

Makhmudov, Zafar; Kiktenko, Ludmila

Organization(s): The Regional Environmental Centre for Central Asia (CAREC), Kazakhstan

Remote Sensing and Machine Learning for Real-Time Runoff Forecasting in Large Complex Mountain Basins – Application to Hydropower Optimization

Muñoz, Paul[1,2]; Orellana-Alvear, Johanna[1,3]; Célleri, Rolando[1,2]

Organization(s): 1: Department of Water Resources and Environmental Sciences, University of Cuenca, Cuenca 010150, Ecuador; 2: Faculty of Engineering, University of Cuenca, Cuenca 010150, Ecuador.; 3: Laboratory for Climatology and Remote Sensing (LCRS), Faculty of Geography, University of Marburg, D-35032 Marburg, Germany

Energy for Amman Water Supply

Al-Omari, Abbas[1]; Al-Houri, Zain[2]

Organization(s): 1: The University of Jordan,; 2: Al Albayt University

Considerations on the State of the Art of the Water-Energy-Food Nexus in Computable General Equilibrium Models: A Critical Analysis of Modeling Issues

Bardazzi, Elisa[1,2]; Bosello, Francesco[1,2]

Organization(s): 1: Università Ca’ Foscari; 2: Euro-mediterranean Centre on Climate Change

Regional Droughts in the Greater Mekong Doom Long-distance Power Transfers to Temporary Failures

Chowdhury, Kamal[1]; Dang, Thanh Duc[2]; Nguyen, Hung[2]; Koh, Rachel[2]; Galelli, Stefano[2]

Organization(s): 1: University of California Santa Barbara; 2: Singapore University of Technology and Design

Session

Operational Water Management Developments in Southeast Asia

Session Chairs: Marcel Marchand & Dinh Phuong Trang, Deltares

Tuesday, 02. March, 03:15pm - 04:15pm (ICT)

BACKGROUND

Hydrometeorological hazards such as floods and droughts are omnipresent in Southeast Asian countries and are likely to increase with climate change. To cope with these hazards there is a growing need for real time water information enabling timely decisions in water management. Indeed, most countries are currently developing early warning systems as part of their disaster risk reduction management policies. These systems require up to date and high-resolution data to feed hydrodynamic models, preferably in an automated workflow to generate reliable forecasts. Surface observation data, satellite and radar images combined with numerical weather prediction model results need to be processed, analyzed and archived in such a way that they can be used by rainfall run-off and hydraulic models that can generate predicted water flows and levels. There have been commendable achievements and investments in each of these components over the past decade. Nevertheless, there remains a genuine challenge to combine and integrated these into a reliable operational forecasting and warning system. Data transmissions are vulnerable, databases and models are often fragmented and require different formats, hampering interoperability. Hence, latest developments are (or should be) focusing on system integration from a holistic perspective, acknowledging that technical solutions can only be effective if sufficient attention is given to capacity building and institutional embedding.

OBJECTIVES

This session seeks to present examples of real-time operational water management systems, for instance flood and drought early warning, salinity monitoring and forecasting, reservoir operation and optimization, in order to learn from these experiences. The focus of these presentations during the session would be on the interface between technology and stakeholders in the widest sense, including forecasters and IT specialists as well as end-users such as decision makers and the wider public.

KEYWORDS

Hydroclimatic hazards, Operational water management, Forecasting, Early warning

ORAL PRESENTATIONS

Storm Surge Forecasting System in The Gulf of Thailand during Pabuk Tropical Storm 2019

Sisomphon, Piyamarn; Thanathanphon, Watin; Luangdilok, Narongrit; Chettanawanit, Kachapond
Organization(s): Hydro Informatics Insitute, Bangkok, Thailand

eAtlas: Towards a Vietnam Resilient to Climate Change

Nguyen, Da D.; Luong, Thang M.; Dinh, Trang P.; Nguyen, Trung Q.; Nguyen, Kien T.
Organization(s): HARRI Team

An Ultrafine Precipitation Dataset on Data Cube and its Hydrological Applications

Luong, Thang M.; Nguyen, Da D.; Dinh, Trang P.; Nguyen, Trung Q.; Nguyen, Kien T.
Organization(s): HARRI Team

POSTER PRESENTATION

Assessment on the Sediment Yield and Annual Runoff of the Pulangi Dam Reservoir Watershed Basin and Impact of Climate Change Using Soil and Water Assessment Tool (SWAT) Model for Reservoir Sustainability

Panondi, Warda; Izumi, Norihiro
Organization(s): Hokkaido University

Session

Building Resilience to Hydrometeorological Hazards in Southeast Asia

Session Chairs: Dolores Rey Vicario, Cranfield University; Slobodan Djordjevic, University of Exeter

Tuesday, 02. March, 03:15pm - 04:15pm (ICT)

BACKGROUND

Hydrometeorological hazards, including floods, droughts, landslides and storm surges, threaten lives and impact livelihoods. The incidence and severity of extreme weather is projected to increase due to climate change[1]. Besides, in Southeast Asia, population growth, land-use change and urbanization are increasing the number of people at risk from these hazards. A better understanding of the likely impacts and potential responses is needed to enable appropriate adaptation and mitigation measures and ultimately increase resilience. This session aims at presenting the main outcomes of several research projects jointly funded by the UK and countries in Southeast Asia through the Newton fund scheme[2]. These projects bring together researchers from the UK and Southeast Asian countries (Thailand, Vietnam, Indonesia, Philippines, Malaysia) to work together on increasing our understanding on hydrometeorological hazards (e.g., droughts, floods, landslides) and their associated impacts on food and water security, economies and livelihoods, and health. The session is co-convened by two of these projects (STAR and ENRICH), focusing on drought risks and impacts in Thailand. The rest of the 16 projects funded by this program[3] (and others funded by a different program but with the same focus) will be invited to contribute to the session. This session will be a unique opportunity to share experiences from these ongoing projects, identify commonalities and to discuss future steps for increasing resilience of Southeast Asia to hydrometeorological disasters.

[1] IPCC (2012) Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. Special Report of the Intergovernmental Panel on Climate Change. doi: 10.1017/CBO9781139177245.009

[2] https://nerc.ukri.org/research/funded/programmes/hazards-seasia/

[3] http://gotw.nerc.ac.uk/list_them.asp?them=SE+Asia+Hazards

ORAL PRESENTATIONS

Leptospirosis Risk from Hydrometeorological Patterns under Climate Change

De Stercke, Simon[1]; Ab Rahman, Jamalludin[3]; Afip, Irfan Ahmad[2]; Buytaert, Wouter[1]; Mijic, Ana[1]; Rahman, Mohamad Fariq[2]; Templeton, Michael[1]; Zulkafli, Zed[2]

Organization(s): 1: Imperial College London,; 2: Universiti Putra Malaysia; 3: International Islamic University Malaysia

Uncertainty in Estimated Flood Losses from National and Global Derived Depth-damage Functions: A Case Study in Malaysia

Rehan, Balqis Mohamed; Mohd Ghamrawi, Muhammad Fadhil

Organization(s): Universiti Putra Malaysia

A Comparison of Models, to Study Future Agricultural Land Use Change in the Mun River Basin

Penny, Jessica[1]; Djordjevic, Slobodan[2]; Chen, Albert[3]

Organization(s): 1: University of Exeter, College of Engineering, Mathematics, and Physical Sciences; 2: University of Exeter, College of Engineering, Mathematics, and Physical Sciences; 3: University of Exeter, College of Engineering, Mathematics, and Physical Sciences

Strengthening Thailand‘s Agricultural drought Resilience

Parry, Simon[1]; Visessri, Supattra[2]; Rey, Dolores[3]; Ekkawatpanit, Chaiwat[4]; Hannaford, Jamie[1,5]; Pardthaisong, Liwa[6]

Organization(s): 1: UK Centre for Ecology & Hydrology, UK; 2: Chulalongkorn University, Thailand; 3 Cranfield University, UK; 4: King Mongkut’s University of Technology Thonburi, Thailand; 5: Maynooth University, Ireland; 6: Chiang Mai University, Thailand

Session

Adapting to Climate Change: Strengthening Urban Water Resilience

Session Chairs: Phurba Lhendup & Asmita Poudel, Regional Resource Centre for Asia and the Pacific, AIT

Tuesday, 02. March, 04:30pm - 05:30pm (ICT)

BACKGROUND

Climate change coupled with poorly planned water management pose significant threats for water quality and water related disaster in the urban areas. This has potential consequences for human health, livelihoods, and assets, especially for the urban poor, informal settlements, and other vulnerable groups. Over the past twenty years, there has been a sustained rise and frequency in the number of climate-related disasters such as floods and droughts. A large part of disaster risk is directly or indirectly linked to water. It is estimated that the global average annual loss from disasters will increase from an annual average of US$ 260 billion in 2015 to US$ 414 billion by 2030 (Word into Action: Implementation Guide for Addressing Water- Related Disasters and Transboundary Cooperation: Integrating Disaster Risk Management with Water Management and Climate Change Adaptation, is part of the Words into Action. UNISDR,
2018). This puts at risk economic growth, poverty reduction, peace, and more generally, the achievement of the Sustainable Development Goals.

Water-related disasters account for almost 90% of the 1,000 most disastrous events that have taken place since 1990 (UNISDR, 2017). Climate change is a key driver that exacerbates water-related risks and slow-onset disasters. The impacts of severe hydro-meteorological events,
including water-related disasters, result in multiple casualties and significant damage to devastating stroke. The poor and vulnerable, particularly women and girls, and vulnerable populations in regions where risks may exacerbate, fragility, conflict or forced displacement and affect peace and security, suffer most. Economic and environmental losses associated with water-related hazards are on the rise globally. Countries, communities and individuals are called upon to step up their investments in resilience and address underlying drivers of disaster risk; including climate change and unsustainable management of land and water resources.

It is envisaged that this session will contribute to sharing information, best practices, tools and approaches used to develop strategies towards water-secure urban settlements from disaster risks.

OBJECTIVES

The purpose of this session is to provide information on urban water resilience related issues, vulnerability and resilience assessment, planning, tools and approaches to facilitate discussions on key challenges in mainstreaming concepts of resilience, water related disaster risks
reduction and climate change adaptation into local planning and policy development processes and for Increasing political commitment and social demand for disaster resilient development, adapted for climate change, aiming for sustainable development.

The session will facilitate sharing countries experience, case studies, best practices as well as to provoke discussions on how to best address identified management aspects and capacity gaps in this area.

KEYWORDS

Water risk management, DRR planning, Water sensitive cities, Vulnerability and risk assessment, Educational partnerships, City resilience

ORAL PRESENTATIONS

Adapting to Climate Change: Strengthening Urban Water Resilience

Rostomyan, Armen; Keesara, Venkata Reddy; Pratap, Deva Pratap
Organization(s): Regional Resource Centre for Asia and the Pacific

Web-based Interface for Urban Flood Warning System in Bangkok Area

Kay Khaing Kyaw
Organization(s): Hydro-Informatics Institute (HII), Thailand

Water Adaptation Governance at Local Level

Mumtaz, Muhammad; Khan, Shiraz
Organization(s): The University of Haripur

Understanding Water Insecurity Dynamics in Slums of Dhaka

Tahsin, Nazwa; Subah, Zarin; Kashem, Sumaia; Mondal, Mohammad Shahjahan; Nowreen, Sara; Murshed, Sonia Binte
Organization(s): Bangladesh University of Engineering and Technology

Session

Irrigation and Drinking Water Security under Climatic Extremes: Empirical Analysis and Policy Lessons

Session Chairs: Mukand Babel, AIT; Dinesh Kumar & Nitin Bassi, IRAP; Yusuf Kabir, UNICEF

Tuesday, 02. March, 04:30pm - 05:30pm (ICT)

BACKGROUND

In the past couple of decades, researchers and academicians in the field of climate, water and agriculture have tried to predict future changes in Asia's climate at various scale from sub-continental level to regional level to basin level, using various assumptions about likely future changes in temperature and by using GCMs and RCMs. However, the model predictions are based on average values, significantly reducing the utility of such predictions for regions that experience high variability in climate factors. The reason is that many a time, the value of the predicted variable (say, % change in rainfall) is less than the % change in the annual rainfall values that the region receives between a dry year and a wet year. In the same way, the model predictions of the impact of climate change on water resources done at basin scales, have also failed to capture the impact of variability in climate on basin hydrology that precipitation alters.

From a purely utilitarian perspective, we need to know how these changes would look like in dry and wet years. From a water management perspective, capturing the current variations in the hydrological conditions in the basin and the stress that they induce on the socio-economic system might appear to be more important than capturing the consequences of the small changes in precipitation on basin yield and water supplies. The former requires complex modeling exercise. This is attempted in the session, through an assessment of climate-induced threat to irrigation water supplies, climate-induced risk in WASH faced by communities. While climate change issues are addressed in the literature only at the macro and national level. But this session addresses the same in the specific context of irrigation and water supply & sanitation, with empirical studies both at the national, provincial and local levels with case studies.

OBJECTIVES

The objectives of this workshop are to: 1) provide the theoretical basis for the line of argument that the available research that analyzes the impacts of climate on hydrology, water resources, and water systems, without factoring in the effect of climate variability, are inadequate and often misleading; 2) to empirically show that in the Asian context, the impacts of climate variability on hydrology and water resources, and irrigation, water supply & sanitation systems are far more pronounced than the likely impacts of future change in climate; and 3) to discuss technological, institutional and policy alternatives for reducing these impacts on various competitive use sectors, especially, irrigation, and water supply and sanitation through case studies of river basins in different hydrological setting.

KEYWORDS

Climate variability, Climate change, Climate extremes, Droughts, Floods, WASH risk index, Water accounting, River basins, Basin yield

ORAL PRESENTATIONS

Development and Application of a Water Security Index Incorporating Future Challenges in the Aegean Coast

Marangoz, Deniz; Daloglu Cetinkaya, Irem
Organization(s): Bogazici University, Turkey

Climate Resilient and Sustainable Options for Functional Household Tap Water Connection in State of Maharashtra, India

Yusuf Kabir; Ghodke, Anand
Organization(s): UNICEF

Climate Variability and Water Management in a River Basin in Eastern India

Nitin Bassi
Organization(s): 1: Presentation by Nitin Bassi based on research study by Dr. M. Dinesh Kumar and Nitin Bassi

POSTER PRESENTATIONS

AMICA Project: Automated Monitoring and Irrigation Control Advancement Project

Osias, Jerome
Organization(s): National Irrigation Administration

Future Climate Change Impact on Agricultural Water Resources for Rice Cultivation in Malaysia

Zulkafli, Zed[1]; Nurfarhana, Raffar[1]; Shukri, Shahmi[1]; Nurulhuda, Khairudin[1]; Muharam, Farrah Melissa[1]; Rehan, Balqis[1]; Liew, Juneng[2]; Tangang, Fredolin[2]
Organization(s): 1: Universiti Putra Malaysia; 2: Universiti Kebangsaan Malaysia

Ecological Health and Water Quality of Village Ponds in the Subtropics Limiting their Use for Water Supply and Groundwater Recharge

Shrivastava, Dr Naresh Gopal
Organization(s): Global Enviro Laboratories Ghaziabad

Session

Circular Design-Built Strategies for Climate-Friendly and Citizen-Driven Urban Water and Food Systems

Session Chairs: Angela Million, Grit Bürgow & Anja Steglich, TU Berlin

Tuesday, 02. March, 04:30pm - 05:30pm (ICT)

BACKGROUND

The subject of the session is the organizational and design-built integration of technical module sets for the combined use of water treatment and reuse in urban farming; whether at ground level, in vertical structures or on the roof-tops of the city.

The focus is on combined water and farming systems that are easy to implement and operate, and are therefore particularly suitable for collective and sharing usage. Ideally, they are also not place-fixed and can be used flexibly by the citizens in different locations.

Central questions for the session are therefore: How can service water, rainwater and urban fertilizers become useable in a cooperative and productive way? How can blue-green infrastructures become part of a climate-friendly urban development driven by citizen? How, how much and in what quality can edible green, biodiversity and a pleasant urban climate be reproduced by mobile and rather low-tech design-built strategies? Contributions are sought that deal with the design and technical feasibility, from operation and maintenance to the mapping of combined water and farming systems and their ecosystem services in the urban context of the global South or North.

KEYWORDS

Mobile Blue-Green Infrastructure, Circular Water Management, Vertical Farming, Hydroponics, Climate-Friendly and Citizen-Driven Urban Design

ORAL PRESENTATIONS

Potential Nutrient Conversion Using Nature-based Solutions in Cities and Utilization Concepts to Create a Circular Urban Food System

Wirth, Maria; Vobruba, Tamara; Hartl, Marco; Kisser, Johannes
Organization(s): alchemia-nova GmbH

SUDS Missed Opportunity in Indian City: Case Example Dwarka, India

Vishwakarma, Rajesh Kumar; Singh, Rahul Kumar
Organization(s): Indian Institute of Technology Roorkee

An Integrated Blue- Green- Grey Infrastructure Solution for the At Risk-sinking Coastal Regions in the Context of Kochi

Jaleel, Shahanaz[1]; Kini, Dr. Manoj Kumar[2]
Organization(s): 1: TKM College of Engineering; 2: Kerala State Institute of Design

POSTER PRESENTATIONS

Device for Phosphorus and Nitrogen Recycling Extracted From Human Urine: Saving Water, Reducing the Discharge of Minerals in Rivers and Utilizing Agriculture

Santos Barros, Ana Paula[1]; Matos de Souza, Jhonatan[2]; Gonsalves de Abreu, Adley Bergson[3]; dos Santos Ferreira, Fernanda[4]
Organization(s): 1: Federal Technological University of Paraná UTFPR, Brazil; 2: State University of Mato Grosso, Brazil; 3: State University of Mato Grosso, Brazil; 4: State University of Mato Grosso, Brazil

Removal of a Mixture of Diclofenac and Naproxen in a Constructed Subsurface Flow Wetland

Zapata Morales, Ana Laura[1]; Alfaro de la Torre, Ma. Catalina[2]; Hernandez, Alejandro[3]; Leyva Ramos, Socorro[4]
Organization(s): 1: Universidad Autonoma de San Luis Potosí,; 2: Universidad Autonoma de San Luis Potosí,; 3: Universidad Autonoma de San Luis Potosí,; 4: Universidad Autonoma de San Luis Potosí

Flash Talk Sessions

Water and Land for Agriculture and Food

Session Chairs: Heinrich Hagel & Daniela Gomez, FSC

Wednesday, 03. March, 03:25pm - 04:10pm (ICT)

POSTER PITCHES

Management of the Moghra Aquifer Considering Climate Change Implications

Sayed, Ebtehal; Hassan, Ahmed
Organization(s): Higher Technological Institute, Ain Shams University, Egypt

How Far is Climate Change Adaptation Policy from Practice? Contrasting the Effectiveness and Acceptance of Local and Regional Strategies in Irrigated Agricultural Systems in Northern Italy

Ricart, Sandra; Castelletti, Andrea
Organization(s): Politecnico di Milano, Department of Electronics, Information and Bioengineering

Nexus Efficiency of Centralized and Decentralized Models for Water Management and Food Production in the Region of Alentejo, Portugal

García Sánchez, Sergio Osvaldo[1]; Guarín Cifuentes, Diego[2]
Organization(s): 1: Universidad Panamericana campus Bonaterra; 2: Technische Hochschule Köln, Germany (alumni)

Water Management Optimisation of Pumpkin (Cucurbita Pepo) under Drip Irrigated Field in Ede Southwest Nigeria

Abayomi, Ewemoje[1] [Professor]; Matthew, Oke[2] [Engineer]
Organization(s): 1: University of Ibadan, Oyo State, Southwest Nigeria; 2: Adeleke University, Ede, Osun State, Southwest Nigeria

Nitrogen Inputs for Agriculture in a Tropical Montane Catchment, a Water Quality Ambiguity?

Kasebele, Miriam[1,2,3]; Jacobs, Suzanne[1,4]; Rufino, Mariana[2,5]; Breuer, Lutz[1,4]
Organization(s): 1: Institute for Landscape Ecology and Resources Management (ILR), Justus Liebig University, Heinrich-Buff-Ring 26,35392 Giessen, Germany; 2: Centre for International Forestry Research (CIFOR), c/o World Agroforestry Centre, United Nations Avenue, Gigiri, P.O. Box 30677, 00100 Nairobi, Kenya; 3: Institute of Resource Assessment (IRA), University of Dar es Salaam, P.O. Box 35097, Dar es Salaam, Tanzania; 4: Centre for International Development and Environmental Research (ZEU), Justus Liebig University, Senckenbergstr. 3, 35390 Giessen, Germany; 5: Lancaster Environment Centre, Lancaster University, Lancaster LA1 4YQ, UK

Effects of Sedimentation on Reservoirs in the Mushibemba Catchment, Mkushi Farm Block, Central Zambia

Mphande, Goodfellow
Organization(s): University of Zambia

Water Security Hazards and Risks

Session Chairs: Oscar Baez Villanueva & Ian McNamara, TH Köln

Wednesday, 03. March, 03:25pm - 04:10pm (ICT)

POSTER PITCHES

Water Security and COVID-19 Recovery: Lessons from Research in South Asia

Wahid, Shahriar
Organization(s): CSIRO, Australia

Flash Flood Susceptibility Mapping Using Machine Learning Techniques

Vinh, Hoang Duc[1,2]; Liou, Yuei -An[2]
Organization(s): 1: Vietnam Academy for water resources; 2: National Central University, Taiwan

Policy Responses and Challenges on Cyclone Disasters in Bangladesh: Lessons from Cyclone Sdir, Aila and Amphan

Ahsan, Md Moynul
Organization(s): Ankara University

Development of Operational Drought Monitoring using Drought index in Thailand

Lolupiman, Ticha; Luangdilok, Narongrit; Sisomphon, Piyamarn
Organization(s): Hydro-Informatics Institute

Situational Analysis Climate Change Impacts on the Livelihood of the Coastal Communities, a Case of Phu Tan District, Ca Mau Province

Pham, Chi Trung
Organization(s): Vietnam Academy for Water Resources

Managed Aquifer Recharge in Saline Regions for Enhanced Recovery of Freshwater

Tiwari, Shubham; Yadav, Brijesh Kumar
Organization(s): Indian Institute of Technology (IIT) Roorkee

Flash Talk Sessions

Water Management and Security in Relation to Climate Change and Policy Making

Session Chairs: Mukand Babel, AIT; Andreas Haarstrick, SWINDON

Wednesday, 03. March, 03:25pm - 04:10pm (ICT)

POSTER PITCHES

The Interaction of Development Projects and Climate Change on Sustainable Security in Shared Water Bodies, A Case Study: Euphrates and Tigris River Basin

Daryadel, Ehsan[1]; Amini, Azam[2]

Organization(s): 1: LLM of International Law, Shiraz University, Islamic Republic of Iran; 2: Assistant Professor of International Law Ferdowsi University of Mashhad, Islamic Republic of Iran

Environmental Monitoring and Management of Land Use and Land Cover Change in the Protected Coastal and Inland Wetlands of El-Burullus and Wadi El-Rayan Lakes, Egypt

Eid, Asmaa[1]; Olatubara, C. O.[1]; Ewemoje, T. A.[1]; El-Hennawy2, M. T.[2]; Farouk, Haitham[3]

Organization(s): 1: Pan African university for earth and life sciences including health and Agriculture; 2: Ministry of Environment of Egypt; 3: Suez University

Biodiversity and Water Security: Can We Linkage?

Monson Serpa, Kelvin; Moster, Claudia

Organization(s): Universidade Federal Rural do Rio de Janeiro

Water Management Policies, Risk Factors and Climate Change Effects in Ecosystem and Economics

Musa, Naeem[1,2]; Rafa, Ahmed Yesvi[1,3]; Ilman, Ahnaf[4]; Syed, Md. Abu[4,5,6]

Organization(s): 1: Yugen Research Organization; 2: University of Sakarya, Turkey; 3: Western Michigan University, Michigan, United States of America; 4: Dhaka Residential Model College, Dhaka, Bangladesh; 5: Disaster Managemet, BRAC University, Dhaka, Bangladesh; 6: Community Development for Peace

Assessing the Impacts of Internal Climate Variability on Rainfall under Climate Change Scenarios in the Mun River Basin, Thailand

De Silva, Neelahandi Yenushi Kavindi; Babel, Mukand S.

Organization(s): Asian Institute of Technology, Thailand

Urban Water Management

Session Chairs: Greta Dekker, TH Köln; Ania Wilk-Pham, TU Berlin

Wednesday, 03. March, 03:25pm - 04:10pm (ICT)

POSTER PITCHES

Modeling Water Security of a Metropolitan under Future Climate and Population Scenarios

Kilinc, Sultan; Daloglu Cetinkaya, Irem; Guven, Basak

Organization(s): Bogazici University, Turkey

Factors Influencing Adoption of Smart Water Metering and Domestic Water Consumption: A Case Study of Chennai Metropolitan Region

Ashwin Ram, Sridharan; Irfan, Zareena Begum

Organization(s): Madras School of Economics

Modeling urban Flash Floods and the Transport of Pollutant and Pathogen using SWMM: A Case Study of Phnom Penh City

Liu, Kexin[1]; Kinouchi, Tsuyoshi1; HENG, Sokchhay[2]; TAN, Reasmey[2]; CHHUON, Kong[2]

Organization(s): 1: Tokyo Institute of Technology; 2: Institute of Technology of Cambodia

Resource Recovery from Wastewater Treatment Plants in Megacities of Developing Countries: Current Status and Potentials

Chrispim, Mariana Cardoso[1,2]; Nolasco, Marcelo Antunes[1]; Scholz, Miklas[2]

Organization(s): 1: School of Arts, Sciences and Humanities, University of Sao Paulo, Arlindo Bettio Avenue 1000, Sao Paulo, Brazil; 2: Division of Water Resources Engineering, Faculty of Engineering, Lund University, John Ericssons väg 1, P.O. Box 118, 22100, Lund, Sweden

Towards Re-Defining Urban Water Supply Monitoring System in Karachi

Rehman, Abdul

Organization(s): Lahore University of Management Sciences

Using Satellite Imagery to Detect Land Cover Change and the Suitability for Green Roof Retrofit in Preturo Municipality

Mobilia, Mirka; Longobardi, Antonia

Organization(s): University of Salerno

Session

Nature-Based Solutions in Science, Policy and Practice: Filling the Post-2015 Development Agenda with Action

Session Chairs: Udo Nehren, TH Köln & Karen Sudmeier, UNEP

Wednesday, 03. March, 05:00pm - 06:00pm (ICT)

BACKGROUND

Nature-based Solutions (NbS) are an umbrella term covering a range of ecosystem-based approaches for different societal challenges within the paradigm of sustainable development. NbS aim at four main target areas: climate change adaptation, climate change mitigation, disaster risk reduction, and environmental management. Under these four areas, we find various concepts such as Ecosystem-based Adaptation (EbA), Ecosystem-based Disaster Risk Reduction (Eco-DRR), Ecological Restoration (ER), Green or Natural Infrastructure (GI/NI), Integrated Water Resources Management (IWRM), and Integrated Coastal Zone Management (ICZM). In our session, we would like to invite scientists and practitioners to present their research and practical experiences related to the conceptualization, design and implementation of NbS in different environments such as coasts, mountains, drylands, wetlands, and urban landscapes. We would like to emphasize that in addition to ecological conservation and restoration measures, the focus is also on hybrid solutions, i.e. measures that combine green-blue and grey infrastructure. A special focus is on how the Post-2015 Development Agenda is implemented across the national and sub-national scales up to the project level and how academics, policy makers and practitioners can work together to increase uptake of NbS for resilience-building.

KEYWORDS

Nature-based solutions (NbS), Ecosystem-based Adaptation (EbA), Ecosystem-based Disaster Risk Reduction (Eco-DRR), Green and Blue Infrastructure, Hybrid Solutions

ORAL PRESENTATIONS

Water Security Analytical Framework from Nature-based Solutions

Ikemoto, Silvia Marie[1]; Formiga Johnsson, Rosa Maria[2]

Organization(s): 1: Environment State Institute of Rio de Janeiro (INEA-RJ); 2: University of Rio de Janeiro (UERJ)

Potential of Nature Based Solution in Controlling Current Flooding of the Great Rift Valley Lakes in Kenya

Biu Kung'u, James[1]; Muchiri, Bethsheba[2]

Organization(s): 1: Kenyatta University,; 2: African Network of Agriculture, Agroforestry and Natural Resources Management Education

Sustainability-oriented Evaluation of Nature-based Solutions in European cities

Poyraz, Anıl Yıldırım; Szalmáné Csete, Mária

Organization(s): Budapest University of Technology and Economics, Department of Environmental Economics

Mangroves Restoration in Response to Climate Change: A Case Study in Bac Lieu Province, Vietnam

Nguyen Hoang, Hanh; Nguyen Quoc, Huy; Tran Van, Sang; Do Quy, Manh; Tran Thi, Loi

Organization(s): Institute of Ecology and Works Protection

Session

SDGs in the Light of Synergies, Trade-Offs, and Inclusive Development

Session Chairs: Andreas Haarstrick, SWINDON & Chrispin Kowenje, Maseno University

Wednesday, 03. March, 05:00pm - 06:00pm (ICT)

BACKGROUND

It is undebatable that one of the most important natural resources are represented by freshwater systems. The preservation of the natural function of ground and surface water is both a challenge and an obligation. However, the question often arises as to how far sustainable resource use and conservation can be achieved in the context of SDGs and the global need for growth. Unfortunately, the achievement of "real" sustainable development is still hampered by numerous compromises in favour of conservative economic growth over social well-being and environmental sustainability. The debate on social well-being and ecological viability, including climate protection, forms the concept of the "inclusive development" within the SDGs´ framework. The current discussion supports the thesis that without a commitment to inclusive development, the SDGs run the risk of not directing the substantive transformation needed to achieve strong sustainable development at states and global level.

Continued economic growth, which is further bound to the "business-as-usual" paradigm, will fail to achieve sustainable development. As long as this paradigm does not undergo a paradigm shift, an inclusive development approach is necessary to balance or minimize the dominance of the conservative business-as-usual growth approach.

Over time, the global community has learned that ecological issues are not so much one-off, isolated incidents as they are intertwined with development and growth issues. The insight that resource exploitation is limited has transferred our awareness and action, at least to some extent, to a new qualitative level where ecological and economic opportunities are evaluated in the same way, thus paving the way for the achievement of sustainability goals.

OBJECTIVES

The session will examine ways of SDG synergies and trade-offs, transformation processes (examples from developing countries/emerging economies), and measures that could create sustainable development and organised monitoring and control structures, addressing SDGs and inclusive development approaches. Reports on research on natural resource governance or other objectives in the context of the SDGs – also in interaction with national and international policy – are welcome.

KEYWORDS

SDGs, Inclusive Development

ORAL PRESENTATIONS

Sanitation Tariff as a Key Instrument for Water Security

Checco, Guilherme Barbosa; Capobianco, João Paulo Ribeiro

Organization(s): Democracy and Sustainability Institute / Instituto Democracia e Sustentabilidade, Brazil

Okavango River Basin – Achieving RBO Goals Adapting the Provisions of SADC Protocol & UN Watercourses Convention

Datla, Anand

Organization(s): IHE Delft

Understanding Water Governance through Strategic Environmental Assessment Approach

Tejeda-González, Juan Carlos[1]; López-de la Cruz, Jesus[1]; Mendezcarlo-Silva, Violeta[2]; Salto-Quintana, Felipe[2]; Padilla-Díaz, Joel[1]; Hernández-Cortés, Mayra Vanessa[1]; Pérez-Cabrera, José Miguel[1]; Alfaro-de la Torre, Ma. Catalina[2]

Organization(s): 1: University of Colima,; 2: Autonomous University of San Luis Potosi

'Owners' vs. 'Beholders': Community Agency and Sustainability of Water Supply Projects in Nairobi City's Informal Settlements

Gichohi, Wanjiru; Sang, Paul; Kosimbei, George

Organization(s): Kenyatta University

POSTER PRESENTATION

Harnessing Synergies Between Climate Action and Economic Growth in Sudan

Khalifa, Muhammad

Organization(s): TH Köln

Session

Socio-Economic Aspects of Water and Food Security

Session Chairs: Heinrich Hagel & Daniela Gomez, FSC

Wednesday, 03. March, 05:00pm - 06:00pm (ICT)

BACKGROUND

Provision of water and food security are main challenges reflected within the UN Sustainable Development Goals (esp. SDGs 2 and 15). To guarantee the sustainable implementation of innovative technical solutions, economic feasibility and social acceptability are crucial. Therefore, this session aims at analysing the socio-economic dimension of natural resource management solutions and their implementation potential to ensure water and food security.

We welcome contributions covering the socio-economic aspects of water and land management systems, which include (but are not limited to) economic valuation and local acceptance of coping mechanisms, resilience strategies and responding measures. Concrete case studies on specific local and cultural solutions including a multi-stakeholder approach are highly welcome.

OBJECTIVES

This session aims at creating links between disciplines and stakeholders, to contribute to the implementation of more sustainable natural resource management.

KEYWORDS

This session aims at creating links between disciplines and stakeholders, to contribute to the implementation of more sustainable natural resource management.

ORAL PRESENTATIONS

The Peril of Climate Change on Water Availability and its Implications on the Triple Roles of Rural Women in Cameroon: Challenges and Prospects

Fonjong, Lotsmart

Organization(s): University of Buea, Cameroon

What Motivates Farmers‘ to Undertake Farm-level Adaptation Options in India? A Systematic Review of Literature

Bahinipati, Chandra sekhar[1]; Patnaik, Unmesh[2]

Organization(s): 1: INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI; 2: TATA INSTITUTE OF SOCIAL SCIENCES

Nature Based Adaptation Practices In Ensuring Food Security in Coastal Bangladesh

Rahman, Md Tauhid Ur

Organization(s): MIST

POSTER PRESENTATION

Agricultural Insurance as an Instrument for Moderating the Hydrological Vulnerability of Vegetable Production in Brazlândia, Federal District, Brazil

da Silva, Priscilla Regina[1,2]; Lima, Carlos Henrique Ribeiro[1]; Minoti, Ricardo Tezini[1]; Oliveira, Tairone Urcino[1]

Organization(s): 1: University of Brasília (UnB); 2: Technical Assistance and Rural Extension Company of the Federal District (Emater -DF)

Session

Water-Climate-Nexus: Challenges and Opportunities in Mountainous Regions

Session Chairs: Björn Weeser & Suzanne Jacobs, University Giessen, SDGnexus Network

Wednesday, 03. March, 08:30pm - 09:30pm (ICT)

BACKGROUND

Mountainous regions across the world play a vital role in the supply of freshwater to a large proportion of the world's population. Compared to other ecosystems, mountain ecosystems are particularly vulnerable to climate change. This will strongly affect the often already poor and marginalized communities living there, as well as downstream populations, that rely on the mountains as a water source. Climate change effects, such as melting glaciers, changes in the volume and timing of water supply and an increased risk of landslides, could affect hydropower production and agricultural productivity, whilst increasing water scarcity conflicts through unequal water allocation.

In this session, we will explore climate change effects, adaptation, and mitigation options for mountainous regions and the communities living in and around them, with a specific focus on water. We invite contributions presenting challenges, but also opportunities resulting from climate-induced changes in water-related issues. This includes, but is not limited to, studies on the effect of climate change on water provisioning and livelihoods, the application of novel monitoring strategies (e.g. citizen science, wireless sensor networks, remote sensing) and modeling to support water management and the development of early warning systems for natural hazards, and recommendations for good governance of mountain ecosystems.

OBJECTIVES

This session aims to compare and contrast key opportunities and challenges in the water-climate-nexus in different mountainous regions across the world to share experiences and identify joint challenges that require urgent action.

KEYWORDS

Mountain ecosystems, Climate change, Water supply and monitoring, Natural hazards, Adaptation and mitigation

ORAL PRESENTATIONS

Exploring the Inter-section of Water Scarcity and Socio-economic and Livelihood Factors in the Indian Himalayan state of Uttarakhand

Malik, Anup[1]; Sharma, Santosh V[1]; Nagar, Shailesh[2]; Sharma, Animesh[2]; Udayabhanu, Nikhil O[2]

Organization(s): 1: Uttarakhand Forest Resource Management Project; 2: NR Management Consultants India Pvt Ltd

Emerging Hydrological Risks in Andean Glacier-fed River Basins

Drenkhan, Fabian[1,2,3]; Martínez, Erika[1,4]; Zogheib, Charles[1]; Ochoa-Tocachi, Boris F.[1,2,4]; Buytaert, Wouter[1,2]

Organization(s): 1: Department of Civil and Environmental Engineering, Imperial College London, London, United Kingdom; 2: Regional Initiative for Hydrological Monitoring of Andean Ecosystems (iMHEA), Lima, Peru; 3: Department of Geography, University of Zurich, Zurich, Switzerland; 4: Institute for Applied Sustainability Research, Quito, Ecuador

Mapping and Monitoring Mountain Wetlands in Colombian Paramos

Lizarazo, Ivan[1]; Grosse-Stoltenberg, André[2]

Organization(s): 1: Universidad Nacional de Colombia; 2: Justus-Liebig-University Gießen (JLU)

Water Use and Differential Adaptation to Climatic Risk: Experimental Evidence with Farming Producers in Colombian Andes

Maldonado, Jorge[1]; Barrero, Yady[2]

Organization(s): 1: Universidad de los Andes,; 2: Universidad de Antioquia

Active Remote Sensing in the High Andes: New Alternatives of Exploiting Radar Rainfall Data for Water Management Applications by Using a Machine Learning Approach

Orellana-Alvear, Johanna[1,2]; Célleri, Rolando[2,3]; Rollenbeck, Rütger[1]; Muñoz, Paul[2]; Contreras, Pablo[2]; Bendix, Jörg[1]

Organization(s): 1: Laboratory for Climatology and Remote Sensing (LCRS), Faculty of Geography, University of Marburg, Marburg, Germany; 2: Departamento de Recursos Hídricos y Ciencias Ambientales, Universidad de Cuenca, Cuenca, Ecuador; 3: Facultad de Ingeniería, Universidad de Cuenca, Cuenca, Ecuador

Towards the Water-Energy-Food (WEF) Nexus Adaptation to Climate Change: The Pacific - Andean-Amazon transects

Correa, Alicia; Weeser, Björn

Organization(s): Justus Liebig University Giessen

Session

Smart Water Technologies and Digital Solutions to Advance Water Security

Session Chairs: Mahsa Mothlagh, Bonn Alliance for Sustainability Research / Innovation Campus Bonn

Wednesday, 03. March, 08:30pm - 09:30pm (ICT)

BACKGROUND

Water is essential to realize all the SDGs, to meet the challenges of global changes, and for all aspects of human and environmental development. The wide range of water security challenges will require a similarly wide range of innovative solutions and tools, ranging from using the internet and mobile applications to remote sensing and big data, from desalination to cloud seeding, and from artificial intelligence to blockchain technologies. Technology brings a new chapter to data and decision-support systems to light and develop innovative forms of institutions, governance, and enabling infrastructure. However, technology alone cannot solve the water security challenges. Sustainable solutions require integrated and transdisciplinary approaches to create a roadmap as a shared vision to embrace the opportunities of the present and future digital solutions to reach the 17 SDGs by 2030 and beyond.

Today sustainability and digital technology have been connected along their path of development, and their innovative combination may provide such new capabilities in the water sector to understand the trend of disruptive changes from global to local. As a promising game-changer, the on-going development and integration of digital technologies are providing opportunities for water security while actuating the positive impact of a technology-enabled sustainable development won't occur unguided in water management practices.

Experts in digitalization and sustainability from academia, private sector, politics, tech organizations, start-ups, national authorities are invited to join in our a session to present their research, experience, projects and case studies, to contribute to creating a shared vision considering the current landscape, gaps, risks and opportunities as well as actions that can accelerate the transformation towards sustainable digital water security.

OBJECTIVES

To align on a shared vision for technology and sustainability through science, knowledge exchange, dialogue and collaboration

KEYWORDS

Water security, Sustainable development, Digital technology, Shared vision

ORAL PRESENTATIONS

Mathematical Models Based on Poisson Point Process, Machine Learning and Kalman Filter to Predict and Describe Next Drought in Namibia as a Tool for Farming Management

Vallejo Orti, Miguel

Organization(s): Namibia University of Science and Technology, Namibia

Water Talks how Information Flow can Enhance Governance

Riera, Félix Sebastián[1,2,3]; Hunecke, Claudia[4]

Organization(s): 1: Universidad Nacional de Cuyo (FCA-UNCuyo); 2: Argentine Association of Regional Consortiums for Agricultural Experimentation (AACREA); 3: National Scientific and Technical Research Council (CONICET); 4: Georg-August-Universität Göttingen

Development of a Water Balance Web Application for Costa Rica using Open-source and Global Data

Arciniega-Esparza, Saúl[1]; Birkel, Christian[2,3]; Breña-Naranjo, J. Agustín[1,4]

Organization(s): 1: Institute of Engineering, National Autonomous University of Mexico, Mexico; 2: Department of Geography and Water and Global Change Observatory, University of Costa Rica, San José, Costa Rica; 3: Northern Rivers Institute, University of Aberdeen, Aberdeen, Scotland; 4: Instituto Mexicano de Tecnología del Agua, Juitepec, Morelos, Mexico

Artificial Neural Networks: Closing the Gap Between Big Global Data and Local Environmental Challenges

Leon Sarmiento, Jorge[1]; Moster, Claudia[2]

Organization(s): 1: University of São Paulo,; 2: Universidade Federal Rural do Rio de Janeiro

POSTER PRESENTATION

A Regional Coupled Spatially Distributed Hydrologic-Hydrodynamic Model for the Barotse Floodplain, Upper Zambezi Basin

Chomba, Innocent C.[1]; Banda, Kawawa E.[1]; Winsemius, Hessel C.[2,5]; Eunice, Makungu[3,4]; Hughes, Dennis[4]; Eilander, Dirk[5]; Hrachowitz, Markus[5]; Nyambe, Imasiku A.[1]; Sichingabula, Henry H.[6]; Mata, Mulema[1]; Chomba, Machaya J.[7]; Ellender, Bruce[7]; Ngwenya, Victoria[1]

Organization(s): 1: Integrated Water Resources Management Centre, Department of Geology, School of Mines, The University of Zambia; 2: Deltares,the Netherlands; 3: Department of Civil Engineering and Built Environment,St. Augustine University of Tanzania; 4: Institute for Water Research, Rhodes University, Grahamstown, South Africa; 5: Water Resources Section, Faculty of Civil Engineering and Applied Geosciences, Delft University of Technology; 6: Department of Geography and Environmental Studies, School of Natural Sciences, The University of Zambia; 7: Upper Zambezi Programme, Worldwide Fund for Nature (WWF) Zambia

Decision Support System for Upgrading Slum Sanitation Management

Apriadi, Dian

Organization(s): TU Berlin

Session

Drought Risk Assessment and Mitigation

Session Chairs: Yuei-An Liou, National Central University; Tom Vanwalleghem, University of Cordoba

Wednesday, 03. March, 08:30pm - 09:30pm (ICT)

BACKGROUND

Droughts are very common phenomena that occur worldwide and may cause the society tremendous amounts of economic loss and social damage with long-term consequences and difficulties to overcome. In the context of climate change, droughts are increasingly threatening not only economy, but also ecosystems and food security in the most vulnerable countries. Take Vietnam in 2019-2020 dry season as an example, drought and saline intrusion have greatly affected the life, activities, and agricultural yields of the Mekong Delta, where is Vietnam's largest rice bowl. It is important to assess the changes in spatiotemporal trends of droughts in the regional scale. This information will help us understand the impacts of climate change and drought. Implementation of drought assessment will support policymakers and water resources managers in developing coping strategies and drought management plans.This session seeks for research studies on advancements in development, application, technology, and model to further heighten exploration of droughts, climate change and their impacts on socio-economics. In addition, this session solicits solutions in short-and long-term visions of technologies, policies and institutions to prevent and reduce the damages caused by drought.

ORAL PRESENTATIONS

Approach for a Sustainable Irrigation District in Monterrey, Casanare, Colombia

Arias Ramirez, Erika Lucia[1]; Ribbe, Lars[2]; Charcas Salazar, Hilario[3]; Rocha Escalante, Hermann[3]; Posso Suarez, Christian[4]

Organization(s): 1: Confederacion Agrosolidaria Colombia; 2: Technical University of Cologne; 3: Universidad Autónoma de San Luis Potosí; 4: Central Bank of Colombia

Probabilistic Analysis of Meteorological Drought using Markov Chains and Bayesian Networks in the Seasonally-dry Tropics of Costa Rica

Gutierrez-Garcia, Kenneth[1]; Aviles, Alex[2]; Nauditt, Alexandra[3]; Birkel, Christian[1,4]; Arce, Rafael[1]

Organization(s): 1: Observatorio del Agua y Cambio Global; 2: Departamento de Recursos Hídricos y Ciencias Ambientales; 3: Institute for Technology and Resources Management in the Tropics and Subtropics; 4: Northern Rivers Institute

Assessment of Agricultural Drought under Climate Change in Spain

Vanwalleghem, Tom; Jiménez-Donaire, Maria del Pilar; Giráldez, Juan Vicente

Organization(s): University of Cordoba,

Who Drives the Media Discourse on Droughts?: A Case Study of Maharashtra, India

Kaur, Harnoor

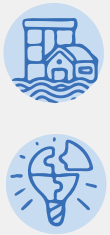
Organization(s): School of Geography and the Environment University of Oxford

Session

SDG6 in the Urban Context: Assessing, Analyzing and Addressing Synergies and Trade-offs Between SDG6 and Other SDGs Through Innovative Tools and Methods

Session Chairs: Bernd Gutterer, BORDA; Thammarat Koottatep, AIT; Greta Dekker, TH Köln

Thursday, 04. March, 03:10pm - 04:10pm (ICT)



BACKGROUND

The achievement of SDG6 is strongly interlinked with the localization of other SDGs and these connections can generate both synergies and trade-offs. While this occurs in all settings, it is especially relevant in cities, which are dense and growing hubs for innovation and economic activities. By 2030, 60% of the global population is projected to live in urban areas and while this global trend of urbanization opens various possibilities, it also presents significant challenge in the context of sustainability. Already today, many cities are experiencing multi-scaled water burdens simultaneously and struggle to ensure water security.

The objective of this session is to investigate the character of interlinkages between SDG6 and other SDGs in the urban context and to present case studies and innovative methods and tools that address these synergies and trade-offs. Central questions for this session are: How does the localization of SDG6 affect the localization of other SDGs in the urban context (and vice versa)? How can innovative tools and methods encourage synergies between SDGs in the urban context? What is the potential of decentralized approaches, participative planning and nature-based solutions to address SDG interlinkages in the urban context?

After the presentations, we invite participants and speakers to engage in an interactive simulation model to solve an urban development challenge that includes interlinkages between SDG6 and other SDGs.

KEYWORDS

SDG synergies and trade-offs, Integrated urban water management, Sustainable urban development, Participative urban planning, Decentralized solutions, Nature-based solutions, Water-sensitive cities

ORAL PRESENTATIONS

Towards Climate Resilient Municipal Water Supply in Bangkok: A Collaborative Risk Informed Analysis

Koh, Rachel[1,2]; Babel, Mukand S.[2]; Shinde, Victor R.[2,3]; Mendoza, Guillermo[4]

Organization(s): 1: Singapore University of Technology and Design,; 2: Asian Institute of Technology; 3: National Institute of Urban Affairs; 4: United States Army Corps of Engineers Institute for Water Resources

SDG-based Integrated Scenarios of Mumbai's Water-energy Nexus

De Stercke, Simon[1]; Chaturvedi, Vaibhav[2]; Buytaert, Wouter[1]; Mijic, Ana[1]

Organization(s): 1: Imperial College London; 2: Council on Energy, Environment and Water

Urban Water Security Assessment at City and Sector Levels

Marcal, Juliana[1]; Hofman, Jan[1]; Shen, Junjie[1]; Butler, David[2]

Organization(s): 1: Chemical Engineering, University of Bath, UK; 2: Centre for Water Systems, University of Exeter, UK

POSTER PRESENTATIONS

Polycentric and Water-sensitive Urban Development – Concept and Potential Transition Pathways

Dekker, Greta[1]; Wilk-Pham, Ania[2]; McNamara, Ian[1]

Organization(s): 1: TH Köln,; 2: TU Berlin

Aligning SDGs to City Plans through Water and Sanitation Interventions: Case Studies from 6 Southeast Asian Cities

Gupta, Hendra[1]; Frank, Fladerer[1]; Thammarat, Koottatep[2]

Organization(s): 1: Bremen Overseas Research & Development Association, BORDA Southeast Asia; 2: Asian Institute of Technology (AIT)

Session

Water and Disasters and the Role of Real-Time Geospatial Tools for Operational Planning and Decision-Making

Session Chairs: Rishiraj Dutta, Asian Disaster Preparedness Center; Trinh Tran, VAWR

Thursday, 04. March, 03:10pm - 04:10pm (ICT)

BACKGROUND

Through a unique partnership between NASA and USAID, SERVIR-Mekong is harnessing space technology and open data to help address development challenges related to a changing climate. SERVIR-Mekong works in partnership with leading regional organizations to help the five countries in the Lower Mekong Region namely Cambodia, Lao PDR, Myanmar (Burma), Thailand and Vietnam, use information provided by Earth observing satellites and geospatial technologies to manage climate risks. Over the years, several tools and services have been developed and deployed in the Lower Mekong Region prioritizing the specific country needs in terms of real-time monitoring of sectoral issues such as disasters, agriculture, water, and ecosystems and land use.

While the session will provide an overview of the different tools and services deployed in the region, it will also give an account of a successful case example of the Vietnam Drought Portal that has been customized for drought monitoring and forecasting in the Ninh Thuan province of the South and Central Highlands. The tool was developed jointly by SERVIR-Mekong and the Vietnam Academy of Water Resources (VAWR) whereby the Regional Hydrologic Extreme Assessment System (RHEAS) was successfully customized and implemented to produce the drought outlook/forecast for Ninh Thuan province. The drought information generated by this service have helped assist farmers to make preemptive decisions about their water use, cropping and planting patterns, and market decisions. The service has also empowered end-users to help reduce crop loss, support agricultural livelihoods, and have enabled farmers to access appropriate advisories for their crops including scheduling and harvesting.

OBJECTIVES

The objective of this session would be to highlight the different real-time geospatial tools that are available through SERVIR-Mekong in the Lower Mekong Region and how each of these tools and services are helping towards improving the operational decision-making process in the countries. It will also highlight the successful implementation of the Regional Hydrologic Extreme Assessment System (RHEAS) in Vietnam aimed at improving drought monitoring and forecasting capabilities of VAWR.

KEYWORDS

SERVIR-Mekong, Drought Monitoring, Drought Forecast, RHEAS, Advisories

ORAL PRESENTATIONS

Preprocessing of Radar-based Rainfall Estimation for Real Time Flood Forecasting and Early Warning system

Luangdilok, Narongrit; Kyaw, Kay Khaing; Thanathanphon, Watin; Sisomphon, Piyamarn

Organization(s): Hydro Informatics Institute

Climate Change Impacts on Precipitation Patterns over Egypt

El-Hagrsy, Rufayda M.; Gado, Tamer A.; Rashwan, I.M.H

Organization(s): Dept. of Irrigation and Hydraulics Engineering, Faculty of Engineering, Tanta University

Advances in Short and Middle-term Riverine Flood Forecasting over the Lower Mekong Basin: Implementation of New Bias-corrected Near-real-time and Forecast Rainfall Information into the Mekong River Commission Flood Early Warning System

Laverde-Barajas, Miguel[1,2]; Meechaiya, Chinaporn[1,2]; Son, Lam Hung[3]; Khem, Sothea[3]; Haag, Arjen[4]; Kwant, Martijn[4]; Poortinga, Ate[2,5]; Jayasinghe, Susantha[1,2]; Park, Sooyoung[1,2]; Markert, Amanda[6,7]; Shukla, Shraddhanand[8]; Landsfeld, Marty[8]; Husak, Greg[8]; Chishtie, Farrukh[2,5]; Towashiraporn, Peeranan[1,2]; Saah, David[2,5,9]

Organization(s): 1: Asian Disaster Preparedness Center; 2: SERVIR-Mekong program; 3: Mekong River Commission; 4: Deltares; 5: Spatial Informatics Group; 6: SERVIR Science Coordination Office; 7: University of Alabama in Huntsville; 8: Climate Hazards Group, University of California; 9: University of San Francisco

POSTER PRESENTATION

The Use of Remote Sensing and GIS for Drought Risk Assessment: The Case of Southern Province, Zambias

Phiri, Micheal Katongo

Organization(s): University of Zambia Integrated Water Resources Management

Session

Resilience to Water-Induced Disasters

Session Chairs: Vishnu Prasad Pandey, IWMI; Mina Adhikari, Nepal Water Conservation Foundation; Sanju Koirala, Policy Entrepreneurs Inc

Thursday, 04. March, 03:10pm - 04:10pm (ICT)

BACKGROUND

Climate change is exacerbating hydro-climatic extremes and associated water-induced disasters. Water security is not only ensuring sufficient water for people and economic activities, but also about protecting us against water-related disasters and having healthy aquatic ecosystems (AWDO, 2016). Therefore, enhancing resilience to water-induced disasters, more importantly of those left-behind (e.g., women, elderly, children, differently-abled, etc.) are equally important for achieving the goal of water security. Disaster is more than a natural phenomenon; it is socially-constructed and has diverse aspects, which needs to be reflected in programs aimed at enhancing resilience and subsequently improving water security. Furthermore, different sections of a society are affected to a varying level of risks to the same resilience, due to various reasons. This session therefore, aims to answer following questions –

- What are approaches for characterizing different drivers of water-induced disasters (i.e., natural roots, social roots, and developmental roots)?
- How those left-behind are differently vulnerable than others to water-induced disasters and what makes that different?
- What are risks posed by different types of water-induced disasters (e.g., floods, droughts, etc.) for people and ecosystem at different socio-economic and natural settings?
- What are frameworks available for measuring resilience with specific focus on water-induced disasters and how can they be applied to different contexts?
- What are workable ways (hard and soft) for enhancing resilience to WIDs? What are learnings from implementing resilience building programs?

ORAL PRESENTATIONS

Linking Extreme Climate Events with Child Marriages in Climate Hotspots: an Outcome or Adaptation Practice?

Sarkar, Jheelum

Organization(s): Jawaharlal Nehru University,

Framework for Measuring Resilience to Water Induced Disaster in Nepal

Adhikari, Mina[1]; Gyawali, Dipak[1]; Pandey, Vishnu Prashad[2]; Koirala, Sanju[3]

Organization(s): 1: Nepal Water Conservation Foundation for Academic Research (NWCF); 2: International Water Management Institute (IWMI); 3: Policy Entrepreneur Incorporated (PEI)

Water-induced Disasters and the Differentiated Vulnerabilities of Those Left-behind: Case of Extended East Rapti Watershed

Koirala, Sanju; Shakya, Shristi; Rana, Shreeya

Organization(s): Policy Entrepreneur Incorporated, Lalitpur Kathmandu

Natural Drivers of Water-induced Disasters and Associated Risks: The case of the Extended East Rapti Watershed, Nepal

Pandey, Vishnu[1]; Shrestha, Dibesh[2]; Adhikari, Mina[3]

Organization(s): 1: International Water Management Institute (IWMI), Nepal Office; 2: Nepal Development Research Institute (NDRI), Nepal; 3: Nepal Water Conservation Foundation (NWCF), Nepal

Poster Booth

01 - 04. March, all day

P01 Water Security in Ankara City: Existing Challenges and Overcoming Measures

Ahsan, Md Moynul; Yesim, Tanrivermis; Mustafa, Tuna

Ankara University, Department of Real Estate Development and Management

P02 Policy Responses and Challenges on Cyclone Disasters in Bangladesh: Lessons from Cyclone Sdir, Aila and Amphan

Ahsan, Md Moynul

Organization(s): Ankara University

P03 Rain Harvest Implementation in a Highly Stressed Watershed: The Case of the Independence Watershed in Guanajuato, Mexico

Morales Aguilar, Gabriela[1]; Almeida Colmenares, Fátima[2]

1: Wageningen University; 2: Caminos de Agua A. C.

P04 Decision Support System for Upgrading Slum Sanitation Management

Apriadi, Dian

Organization(s): TU Berlin

P05 Water Consumption Practices and Health Risks Among the Population of Baloum, Western Region of Cameroon

Aristide Guillaume, Kamda Silapeux[1]; Martin, Fonkoua[2]; Maurice, Kenne[3]; Dieudonne, Nebane[4]; Elie, Fokou[2]

1: Department of Social Economy and Family Management, Higher Technical Teachers Training College (HTTTC) Kumba, University of Buea, Cameroon; 2: Department of Biochemistry, University of Yaoundé 1, Yaoundé, Cameroon,; 3: Department of Health Science, Siantou Institute, Yaoundé, Cameroon,; 4: Department of Guidance and Counselling, Higher Technical Teachers Training College (HTTTC) Kumba, University of Buea, Cameroon

P06 Sustainability in Mountain Basins: Irrigation Systems and Water Security

Avila Larrea, Javier Alejandro

Universidad de Cuenca

P07 A Regional Coupled Spatially Distributed Hydrologic-Hydrodynamic Model for the Barotse Floodplain, Upper Zambezi Basin

Chomba, Innocent C.[1]; Banda, Kawawa E.[1]; Winsemius, Hessel C.[2,5]; Eunice, Makungu[3,4]; Hughes, Dennis[4]; Eilander, Dirk[5]; Hrachowitz, Markus[5]; Nyambe, Imasiku A.[1]; Sichingabula, Henry H.[6]; Mata, Mulema[1]; Chomba, Machaya J.[7]; Ellender, Bruce[7]; Ngwenya, Victoria[1]

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P08 Resource Recovery from Wastewater Treatment Plants in Megacities of Developing Countries: Current Status and Potentials

Chrispim, Mariana Cardoso[1,2]; Nolasco, Marcelo Antunes[1]; Scholz, Miklas[2]

Organization(s): 1: School of Arts, Sciences and Humanities, University of Sao Paulo, Arlindo Bettio Avenue 1000, Sao Paulo, Brazil; 2: Division of Water Resources Engineering, Faculty of Engineering, Lund University, John Ericssons väg 1, P.O. Box 118, 22100, Lund, Sweden

P09 Modeling Water Security of a Metropolitan under Future Climate and Population Scenarios

Kilinc, Sultan; Daloglu Cetinkaya, Irem; Guven, Basak

Organization(s): Bogazici University, Turkey

P10 The Interaction of Development Projects and Climate Change on Sustainable Security in Shared Water Bodies, A Case Study: Euphrates and Tigris River Basin

Daryadel, Ehsan[1]; Amini, Azam[2]

Organization(s): 1: LLM of International Law, Shiraz University, Islamic Republic of Iran; 2: Assistant Professor of International Law Ferdowsi University of Mashhad, Islamic Republic of Iran

P11 Polycentric and Water-sensitive Urban Development – Concept and Potential Transition Pathways

Dekker, Greta[1]; Wilk-Pham, Ania[2]; McNamara, Ian[1]

Organization(s): 1: TH Köln,; 2: TU Berlin

P12 Flash Flood Susceptibility Mapping Using Machine Learning Techniques

Vinh, Hoang Duc[1,2]; Liou, Yuei -An[2]

Organization(s): 1: Vietnam Academy for water resources; 2: National Central University, Taiwan

P13 Indicators for Tourism Scenarios of Climatic Vulnerability in Hydrological Attractions in San Luis Potosí, Mexico

García, Ana Mónica de Jhesú[1,3]; Vázquez Solís, Valente[1,2,3,4]

Organization(s): 1: Autonomous University of San Luis Potosí; 2: Environment and Resourses Management International Master Program (ENREM); 3: Multidisciplinary Postgraduate Program for Environmental Sciences (PMPCA acronym in Spanish); 4: National Council for Science and Technology

P14 Methodology Proposal to Develop Competencies for Sustainability. Case Study Based on Creating Water Management Model

Garcia, Mariana

Universidad Autónoma de San Luis Potosí

P15 Nexus Efficiency of Centralized and Decentralized Models for Water Management and Food Production in the Region of Alentejo, Portugal

García Sánchez, Sergio Osvaldo[1]; Guarín Cifuentes, Diego[2]

Organization(s): 1: Universidad Panamericana campus Bonaterra; 2: Technische Hochschule Köln, Germany (alumni)

Poster Booth

01 - 04. March, all day

P16 Everyday Hydrosocial Relations along Kolkata's River-Fronts

Ghosh, Raina

Jawaharlal Nehru University, New Delhi, India

P17 Healing Biotope: A Model of Living in Times of Sociopolitical and Economic Collapse

Guarín Cifuentes, Diego Alexander; García Sànchez, Sergio Osvaldo

Alumni ITT TH Koeln

P18 Aligning SDGs to City Plans through Water and Sanitation Interventions: Case Studies from 6 Southeast Asian Cities

Gupta, Hendra[1]; Frank, Fladerer[1]; Thammarat, Koottatep[2]

Organization(s): 1: Bremen Overseas Research & Development Association, BORDA Southeast Asia; 2: Asian Institute of Technology (AIT)

P19 Modeling Current Hydro-Meteorological Variability in the Neelum Basin Using HBV-Light Model

Hameed, Saira[1]; Iqbal, Javed[1]; Ahmad, Burhan[2]

1: National University of Science and Technology, Islamabad, Pakistan; 2: Pakistan Meteorological Department, Islamabad, Pakistan

P20 Forestry Solutions to Prevent Soil Erosion and Landslides in Ba River Basin

Hien, Lai; Tuat, Le; Huy, Nguyen; Nguyen, Pham

Institute of Ecology and Works Protection

P21 Catch-MEKONG – Saltwater Intrusion and Morphodynamics in the Mekong Delta: Status, Impacts and Future Developments. Results of a 5-year Research Project

Huth, Juliane[1]; Ottinger, Marco[1]; Apel, Heiko[2]; Schlurmann, Torsten[3]; Jordan, Christian[3]; Grimmeisen, Felix[4]; Heege, Thomas[5]; Lam Dao, Nguyen[6]; Chau Ngyuen, Xuan Quang[7]; Kuenzer, Claudia[1]

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P22 Nitrogen Inputs for Agriculture in a Tropical Montane Catchment, a Water Quality Ambiguity?

Kasebele, Miriam[1,2,3]; Jacobs, Suzanne[1,4]; Rufino, Mariana[2,5]; Breuer, Lutz[1,4]

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P23 Harnessing Synergies Between Climate Action and Economic Growth in Sudan

Khalifa, Muhammad

Organization(s): TH Köln

P24 SWAT-Simulated Streamflow Response to Land Use, Climate Variability and Dam Management in the Mono River Basin, Togo-Benin, West Africa

Koubodana, H. Djann'na[1,2]; Adounkpe, Julien[2]; Atchonouglo, Kossi[1]; Djaman, Koffi[3]; Larbi, Isaac[2]

1: Faculy of Science, University of Lomé, Togolese Republic, 01BP 1511; 2: West Africa Science Service Centre on Climate change and Adapted Land Use, WASCAL-Climate Change and Water Resources, University of Abomey Calavi, 03 BP 526 Cotonou, Benin; 3: Agricultural Science Center at Farmington, Department of Plant and Environmental Sciences, New Mexico State University, P.O. Box 1018, Farmington, NM 87499, USA

P25 Modeling Nutrient Distribution Patterns in Selected Coastal Lagoons in Ghana

Kwame-Biney, Michael; Appeaning Addo, Kwasi; Mahu, Edem; Ansong, Joseph Kojo; Jayson-Quashigah, Philip Neri; Brempong, Emmanuel Kwadzo

University of Ghana, Marine and Fisheries Department

P26 Quantifying Teleconnection Pathways Leading to Low Rainfall Anomalies during Boreal Summer in Indonesian Borneo

Lam, Timothy[1]; Kretschmer, Marlene[2]; Adams, Samantha[3]; Arribas, Alberto[3,4]; Prudden, Rachel[3]; Saggioro, Elena[5]; Catto, Jennifer[4]; Barciela, Rosa[6]

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P27 Application of the Flowforms for Urban Landfill Leachate Treatment

Pham, Tuan Hung[1]; Ung, Thi Thuy Ha[1]; Le, Hanh Chi[2]; Le, Ngoc Mai[2]

Organization(s): 1: National University of Civil Engineering; 2: Institute of Ecology and Works protection

P28 Precipitation and Associated Extreme Storms Affecting Peninsular Malaysia in High-Resolution Global Climate Models

Liang, Ju[1]; Hawcroft, Matthew[2,3]; Catto, Jennifer[1]; Tan, Mouleong[4]; Hodges, Kevin[5]; Haywood, Jim[1,2]

1: College of Engineering, Mathematics and Physical Sciences, University of Exeter; 2: Met Office; 3: University of Southern Queensland; 4: Geography Section, School of Humanities, Universiti Sains Malaysia; 5: Department of Meteorology, University of Reading

Poster Booth

01 - 04. March, all day

P29 Modeling urban Flash Floods and the Transport of Pollutant and Pathogen using SWMM: A Case Study of Phnom Penh City

Liu, Kexin[1]; Kinouchi, Tsuyoshi1; HENG, Sokchhay[2]; TAN, Reasmey[2]; CHHUON, Kong[2]
Organization(s): 1: Tokyo Institute of Technology; 2: Institute of Technology of Cambodia

P30 Development of Operational Drought Monitoring using Drought index in Thailand

Lolupiman, Ticha; Luangdilok, Narongrit; Sisomphon, Piyamarn
Organization(s): Hydro-Informatics Institute

P31 The Climate, Land Use and Food "Triple" Challenge and Opportunity for Uganda

Lunyolo, Lilian Daphine[1]; Khalifa, Muhammad[1,2]; Ribbe, Lars[1]
Organization(s): 1: Institute for Technology and Resources Management in the Tropics and Subtropics (ITT), Technische Hochschule Köln (University of Applied Sciences), Cologne 50679, Germany; 2: Institute of Geography, University of Cologne, Albertus-Magnus-Platz, D-50923 Cologne, Germany

P32 Social-Economic Impacts of Sand Dam in Semi-Arid Agricultural Areas of Kenya

Macharia, Ibrahim
Kenyatta University, Kenya

P33 When Low and High Streamflows are in Conflict: Using NMPSO to Provide a Multi-Objective Compromise Solution

Marinao, Rodrigo; Zambrano-Bigiarini, Mauricio
Universidad de La Frontera

P34 An Automated Drip Irrigation System for Watermelon Kaolack (Citrullus lantatus) Based on Climatic and Hydro-Physical Parameter Measurement and Control

Matthew, Oke[1]; Abayomi, Ewemoje[2]; Edward, Ofoegbu[3]; Tolulope, Aremu[1]; Michael, Ajobo[3]; Victor, Gbadamosi[3]
1: Department of Agricultural Engineering, Adeleke University, Ede, Osun State, Southwest Nigeria,; 2: Department of Agricultural and Environmental Engineering,University of Ibadan, Oyo State, Southwest Nigeria.; 3: Department of Electrical and Electronics Engineering, Adeleke University, Ede, Osun State, Southwest Nigeria

P35 Lost Material Stock in Buildings due to Sea Level Rise from Global Warming: The Case of Fiji Islands

Merschroth, Simon
University of Vienna

P36 Using Satellite Imagery to Detect Land Cover Change and the Suitability for Green Roof Retrofit in Preturo Municipality

Mobilia, Mirka; Longobardi, Antonia
Organization(s): University of Salerno

P37 Biodiversity and Water Security: Can We Linkage?

Monson Serpa, Kelvin; Moster, Claudia
Organization(s): Universidade Federal Rural do Rio de Janeiro

P38 Effects of Sedimentation on Reservoirs in the Mushibemba Catchment, Mkushi Farm Block, Central Zambia

Mphande, Goodfellow
Organization(s): University of Zambia

P39 Assessing the Impacts of Internal Climate Variability on Rainfall under Climate Change Scenarios in the Mun River Basin, Thailand

De Silva, Neelahandi Yenushi Kavindi; Babel, Mukand S.
Organization(s): Asian Institute of Technology, Thailand

P40 Review of Textile Waste Water Treatment Using Constructed Wetlands

Notonugroho, Owen Jacob; Ismail, Fadhila Rahma; Kurniawan, Allen
IPB University

P41 Efficient Irrigation Management Based on the Data through Telemetry(TM) System In Vietnam

Ohira, Shozo
Agricultural Development Consultants Association

P42 A Proggram Framework for Collaboration on Sustainable Water Resources Management in Southeast Asia

Orencio, Pedcris M[1]; Delos Reyes, Mona Lisa F[2]; Bantayan, Rosario B[1]
1: Southeast Asian Regional Center for Graduate Study and Research in Agriculture,; 2: University of the Philippines Los Banos

P43 Assessment on the Sediment Yield and Annual Runoff of the Pulangi Dam Reservoir Watershed Basin and Impact of Climate Change Using Soil and Water Assessment Tool (SWAT) Model for Reservoir Sustainability

Panondi, Warda; Izumi, Norihiro
Organization(s): Hokkaido University

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01 - 04. March, all day

P44 Situational Analysis Climate Change Impacts on the Livelihood of the Coastal Communities, a Case of Phu Tan District, Ca Mau Province

Pham, Chi Trung

Organization(s): Vietnam Academy for Water Resources

P45 Modelling Lahar Initiation from Rainfall: Reconstruction of 3rd December 2019 Maninila Lahar at Mayon Volcano

Phillips, Jeremy[1]; Delos Reyes, Perla[2]; Daag, Arturo[2]; Coxon, Gemma[1]; University of Bristol, Newton SE Asia project team[1]; PHIVOLCS, Newton SE Asia project team[2]

1: University of Bristol, UK; 2: Philippine Institute of Volcanology and Seismology

P46 The Use of Remote Sensing and GIS for Drought Risk Assessment: The Case of Southern Province, Zambias

Phiri, Micheal Katongo

Organization(s): University of Zambia Integrated Water Resources Management

P47 Preliminary Analysis of Effluent from Wastewater Treatment Plant for Indirect Potable Reuse in Overexploited Aquifer

Quintero Hernandez, Miguel Alejandro; Ávila Sanchez, Verónica; Aguilera Flores, Miguel Mauricio

INSTITUTO POLITECNICO NACIONAL

P48 Spatio-Temporal Assessment of Chlorine Residuals in the Water Distribution System of Dhaka City

Rahaman, Md. Mezanur

BUET

P49 Mapping and Identifying Hot Spots of Research on Flash Drought: A Quantitative and Key Word Biclustering Analysis

Rahim, Akif

Faculty of Environmental Sciences, Czech University of Life Sciences Prague, Kam´yck´a 129, Praha –Suchdol, 16500, Czech Republic

P50 Factors Influencing Adoption of Smart Water Metering and Domestic Water Consumption: A Case Study of Chennai Metropolitan Region

Ashwin Ram, Sridharan; Irfan, Zareena Begum

Organization(s): Madras School of Economics

P51 Application of System Thinking Causal Loop Modelling for a Sustainable Integrated Water Resources Management

Ashwin Ram, Sridharan; Irfan, Zareena Begum

Madras School of Economics

P52 Towards Re-Defining Urban Water Supply Monitoring System in Karachi

Rehman, Abdul

Organization(s): Lahore University of Management Sciences

P53 How Far is Climate Change Adaptation Policy from Practice? Contrasting the Effectiveness and Acceptance of Local and Regional Strategies in Irrigated Agricultural Systems in Northern Italy

Ricart, Sandra; Castelletti, Andrea

Organization(s): Politecnico di Milano, Department of Electronics, Information and Bioengineering

P54 Use of the Leachate Produced in a Landfill in Veracruz, Mexico as a Liquid Biofertilizer

Marcos-Valencia, Erik; Salazar-Hernandez, Elizabeth; Jacome-Sanchez, Heidi Anabel; Lopez-Gonzalez, Yovani; Sanchez-Zarate, Neira

Organization(s): Instituto Tecnologico Superior de Misantla

P55 Management of the Moghra Aquifer Considering Climate Change Implications

Sayed, Ebtehal; Hassan, Ahmed

Organization(s): Higher Technological Institute, Ain Shams University, Egypt

P56 Quantifying and Mitigating Climate Change Implications on Eco-hydrodynamics of Lake Burullus, (Egypt)

Shalby, Ahmed Shalby Mamdouh; Sayed, Ebtehal Sayed

Faculty of Engineering, Tanta University, Tanta, Egypt

P57Ecological Health and Water Quality of Village Ponds in the Subtropics Limiting their Use for Water Supply and Groundwater Recharge

Shrivastava, Dr Naresh Gopal

Organization(s): Global Enviro Laboratories Ghaziabad

P58 Agricultural Insurance as an Instrument for Moderating the Hydrological Vulnerability of Vegetable Production in Brazlândia, Federal District, Brazil

da Silva, Priscilla Regina[1,2]; Lima, Carlos Henrique Ribeiro[1]; Minoti, Ricardo Tezini[1]; Oliveira, Tairone Urcino[1]

Organization(s): 1: University of Brasília (UnB); 2: Technical Assistance and Rural Extension Company of the Federal District (Emater -DF)

Poster Booth

01 - 04. March, all day

P59 Cervical Cancer, Pesticides and Water Quality in an Agricultural State of the Federation: A Route of Imminent Hazards and Risks to Human Health in Mato Grosso do Sul

Barreto da Silva, Julio Cesar[1]; Saldanha Machado, Carlos José[1,2]

1: State University of Rio de Janeiro - UERJ; 2: Oswaldo Cruz Fundation - FIOCRUZ

P60 Timing of Proper Paddy Planting Based on Wet and Dry Season Patterns in South Sumatra

Sugiarto, Ari; Suharnoto, Yuli; Kurniawan, Allen

IPB University

P61 Assessment of Groundwater Nitrate Concentration in the Island Municipality of Panglao, Bohol, Philippines

Sumaria, Ma. Grace[1]; Soriano, Roberto[2]

1: Visayas State University,; 2: University of the Philippines Diliman

P62 Managed Aquifer Recharge in Saline Regions for Enhanced Recovery of Freshwater

Tiwari, Shubham; Yadav, Brijesh Kumar

Organization(s): Indian Institute of Technology (IIT) Roorkee

P63 Assessment of Water Shortage in Ba River Basin

Kim Chau, Tran[1] [1]; Tien Thanh, Nguyen[1] [2]; Minh Duc, Vu[2] [3]; Duc Thuan, Luyen[3] [4]; Thi Hoa, Nguyen[4] [5]

Organization(s): 1: Thuyloi University, Vietnam; 2: National Center for Water Resources Planning and Investigation, Vietnam; 3: Northern Division for Water Resources Planning and Investigation, Vietnam; 4: Institute for Hydro Power and Renewable Energy, Vietnam

P64 Numerical Simulation of Residence Time for Different Floating Treatment Wetland Designs

Yamasaki, Tais; Janzen, Johannes

Federal University of Mato Grosso do Sul

P65 Removal of a Mixture of Diclofenac and Naproxen in a Constructed Subsurface Flow Wetland

Zapata Morales, Ana Laura[1]; Alfaro de la Torre, Ma. Catalina[2]; Hernandez, Alejandro[3]; Leyva Ramos, Socorro[4]

Organization(s): 1: Universidad Autonoma de San Luis Potosí,; 2: Universidad Autonoma de San Luis Potosí,; 3: Universidad Autonoma de San Luis Potosí,; 4: Universidad Autonoma de San Luis Potosí

P66 Future Climate Change Impact on Agricultural Water Resources for Rice Cultivation in Malaysia

Zulkafli, Zed[1]; Nurfarhana, Raffar[1]; Shukri, Shahmi[1]; Nurulhuda, Khairudin[1]; Muharam, Farrah Melissa[1]; Rehan, Balqis[1]; Liew, Juneng[2]; Tangang, Fredolin[2]

Organization(s): 1: Universiti Putra Malaysia; 2: Universiti Kebangsaan Malaysia

P67 AMICA Project: Automated Monitoring and Irrigation Control Advancement Project

Osias, Jerome

Organization(s): National Irrigation Administration

P68 Achieving Sustainable Groundwater Management in Water-Stressed Countries - Lessons from Jordan and Tunisia

Assaf, Mohammed[1]; Ben Romdhane, Abir[2]

1: Dept. of Civil and Environmental Engineering, School of Natural Resources Management, German Jordanian University, Amman, Jordan; 2: Dept. of geology, Faculty of Sciences of Tunisia, University of Tunis El Manar, Tunis, Tunisia

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Mukand Babel	Asian Institute of Technology (AIT), Thailand
Reiner Doluschitz	University of Hohenheim, Food Security Center (FSC), Germany

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Nguyen Nghia Hung	Southern Institute of Water Resources Research
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Thammarat Koottatep	Asian Institute of Technology (AIT), Thailand
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