

**Water Security
and Climate Change
Conference**

San Luis Potosí, Mexico
October 28-30, 2019

Program

Water Security and Climate Change Conference

Scientists, policy makers and stakeholders from various sectors discuss the diverse facets of water security and its relation to climate variability and change.

The availability of water affects many of mankind's social and economic actions and is an essential component of ecosystems. Hence, water security is one of the major challenges faced by society today, on both a global and local level. Additionally, impacts of climate change and water-related hazards are increasingly decisive for well-being, poverty, conflict or peace and have become a key component of social development.

Water security as well as climate change are cross-cutting elements of recent global agreements, such as the Sustainable Development Goals, the Paris Agreement on Climate Change and the Sendai Framework for Disaster Risk Reduction. Science should and can play an important role in contributing to the achievement of these goals.

The Water Security and Climate Change Conference (WSCC) strives to go beyond science and build bridges between various disciplines and sectors as well as different groups of stakeholders. Serving as a platform for discussions about water secure societies, by providing a stimulating environment with the intention of yielding innovative ideas and grounds for implementation, the WSCC is continuing a series of successful conferences in Bangkok, Cologne and Nairobi.

In 2019, WSCC is convened by the Universidad Autónoma de San Luis Potosí on behalf of the Exceed network, which consists of more than 90 universities worldwide.

Committee

Organized by:

UASLP – Universidad Autónoma de San Luis Potosí

CNRD – Centers for Natural Resources and Development | TH Köln (University of Applied Sciences)

SWINDON – International Network on Sustainable Water Management in Developing Countries | TU Braunschweig

FSC – Food Security Center | University of Hohenheim

In cooperation with:

EXCEED – Higher Education Excellence in Development Cooperation

Funded by:



DAAD

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

Organization team:

Lars Ribbe	TH Köln – ITT	Germany	Carolin Antoni	UASLP – Agenda Ambiental	Mexico
Guillermo Javier Castro L.	UASLP – Agenda Ambiental	Mexico	Sven Tönsjost	TH Köln – ITT	Germany
Andreas Haarstrick	TU Braunschweig – SWINDON	Germany	Nora Lucidi	TH Köln – ITT	Germany
Nicole Schönleber	University of Hohenheim – FSC	Germany	Alexander Klein	TH Köln – ITT	Germany
Heinrich Hagel	University of Hohenheim – FSC	Germany	M. Araceli Carvajal	UASLP – Agenda Ambiental	Mexico

Scientific team:

Lars Ribbe	TH Köln – ITT	Germany	Heinrich Hagel	University of Hohenheim – FSC	Germany
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Andreas Haarstrick	TU Braunschweig – SWINDON	Germany	Sven Tönsjost	TH Köln – ITT	Germany
Nicole Schönleber	University of Hohenheim – FSC	Germany	Carolin Antoni	UASLP – Agenda Ambiental	Mexico

Selection committee and session hosts (alphabetical order):

Marcos Algara Siller	UASLP – Agenda Ambiental	Mexico
Catalina Alfaro	UASLP – Chemical Sciences Faculty	Mexico
Carolin Antoni	UASLP – Agenda Ambiental	Mexico
Mukand Babel	Asian Institute of Technology	Thailand
Christian Birkel	University of Costa Rica	Costa Rica
Antonio Cardona	UASLP – Engineering Faculty	Mexico
Suden Dehnavi	TH Köln – ITT	Germany
Reiner Doluschitz	TH Köln – ITT	Germany
Rishiraj Dutta	Asian Institute of Technology	Thailand
Andreas Haarstrick	TU Braunschweig - SWINDON	Germany
Heinrich Hagel	University of Hohenheim – FSC	Germany
Johannes Hamhaber	TH Köln – ITT	Germany
Muhammad Khalifa	TH Köln – ITT	Germany
Jenny Kopsch-Xhema	University of Hohenheim – FSC	Germany
Mirja Michalscheck	Wageningen University and Research	The Netherlands
Mahsa Motlagh	Innovation Campus Bonn	Germany
Alexandra Nauditt	TH Köln – ITT	Germany
Udo Nehren	TH Köln – ITT	Germany
Luz Maria Del Rozo	CINVESTAV	Mexico
Lars Ribbe	TH Köln – ITT	Germany
Jorge Leon Sarmiento	The Nature Conservancy	USA
Nicole Schönleber	University of Hohenheim – FSC	Germany
Justyna Sycz	TH Köln – ITT	Germany
Trinh Duc Tran	VAWR – Center for Training and International Cooperation	Vietnam
Sven Tönsjost	TH Köln – ITT	Germany

Program Day 1

October 28th, 2019

8:00	REGISTRATION
8:30	<p>OPENING</p> <p>Welcome address by Marcos Algara Siller (Agenda Ambiental, UASLP) Welcome by Lars Ribbe in the name of SWINDON, FSC, CNRD (Exceed centers) Welcome by Katharina Fleckenstein (DAAD) Opening by Manuel Fermín Villar Rubio (president UASLP)</p> <p>Moderation: Marcos Algara Siller</p>
9:15	<p>KEYNOTE BY MARK SMITH, (IWMI)</p> <p>"Water Management for Climate Change Resilience: Priorities for Action"</p>
10:00	Questions, answers and discussion
10:30	Coffee and tea break

11:00 – 13:00	THEMATIC SESSIONS		
	<p>Governing Urban Water under Climate Change Organized by Johannes Hamhaber, Marcos Algara Siller (Room 1)</p> <hr/> <p>Urbanization and water management and security issues in Ethiopia based on case study of Addis Ababa Sahilu, Geremew</p> <p>Capacity building for water security: an assessment of the capacity demand in Nairobi's informal water supply sector Gichohi, Wanjiru</p>	<p>Understanding of Groundwater Flow Systems Organized by Antonio Cardona (Room 2)</p> <hr/> <p>The forgotten fact in water security: groundwater knowledge as a connected system Carrillo-Rivera, José Joel</p> <p>Tóthian groundwater flow systems in understanding environmental resilience to climate Ouyse, Samira</p>	<p>Quantification of Synergies and Trade-offs of Water-Energy Nexus Organized by Muhammad Khalifa, Lars Ribbe (Room 3)</p> <hr/> <p>Water-Energy-Food (WEF) Nexus analysis in Central Asia using a hydro-economic model with extended energy supply-demand accounts Bekchanov, Maksud</p> <p>Water-energy-carbon nexus in automobile manufacturing industry Kamalamma, Ambili G.</p>

<p>Institutional responses towards achieving water security: case of two cities in Nepal Maskey, Gyanu</p> <p>Evaluating drought management in cities Schattan, Patricia</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p> <p style="text-align: center;">Poster presentation</p> <p>Social Vulnerability to Water Scarcity in Mexico City Salazar Vargas, Maria del Pilar</p> <p>Challenges and responses to urban water security: experiences from developing countries based on the example of Lusaka, Zambia, Southern Africa Nyambe, Imasiku</p> <p>Influencing factors for the adoption of domestic rainwater harvesting as a measure of adapting to urban water scarcity in Rondebosch, Cape Town Sett, Dominic</p> <p>Climate change adaptation: vulnerability assessment of the historic city of Rosetta, Egypt Khalifa, Marwa</p> <p>Overcoming the challenges of water governance in African cities in the 21st century Kung'u, James Biu</p> <p>Proposal for comprehensive management of water in public schools Mares Jasso, Miguel Alejandro</p> <p>Hazards to the water supply system of La Pila, San Luis Potosi, Mexico Cisneros Vidales, Alicia Anahi</p>	<p>An analytical framework for assessing groundwater resource: an intuitive tool for water practitioners Firoz, Aaron</p> <p>Understanding uranium and arsenic sources and mobility in groundwater flow systems from two areas in San Luis Potosi, Mexico: Cerritos and Villa de Reyes Basins Cauich Kau, Dario del Angel</p> <p>Assessment of seawater intrusion vulnerability potential using the GALDIT index model-case of Cox's Bazar aquifer, Bangladesh Fatema, Suraiya</p> <p>Vulnerability of an aquifer to inorganic contaminants in an agricultural environment in the Chihuahua desert Rentería-Villalobos, Marusia</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p>	<p>Social economic impact assessment of solar powered-micro irrigation system in Kenya Macharia, Ibrahim Ndegwa</p> <p>Optimization of economic return from water using Water-Energy-Food Nexus approach: a case of Karnafuli Basin, Bangladesh Budhathoki, Aakanchya</p> <p>Water footprint scenarios of hydraulic fracturing and their impact on the water-energy nexus across the semiarid Mexican Eagle Ford play Arciniega-Esparza, Saúl</p> <p>Water and energy nexus in water scarce regions, case study: west of Suez Gulf, Egypt M. Elmoustafa, Ashraf</p> <p style="text-align: center;">Poster presentation</p> <p>Production and characterization of sustainable heterogeneous catalysts for biodiesel production Rojas, Alejandra</p> <p>A sustainable adaptation approach 'PEPI' in ensuring food security in a water scarce coastal community of Southwestern Bangladesh Rahman, Md Tauhid Ur</p> <p>A mathematical model proposal for development and evaluation of operation scenarios to reduce electric consumption in conventional wastewater treatment systems Altamirano Abraham, José Ricardo</p>
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13:00	LUNCH
14:30	KEYNOTE BY PROSUN BHATTACHARYA (KTH) "Arsenic in groundwater - a challenge to global water security"
15.15	Questions, answers and discussion
15:30	Coffee and tea break

15:45 – 17:45	THEMATIC SESSIONS		
Water Management in the Age of Big Data Organized by Trinh Tran (Room 1) —	Groundwater Management – A Main Stay for Save and Sustainable Water Supply Organized by Andreas Haarstrick, Mukand Babel (Room 2) —	Risks and Prospects for the Presence of Inorganic Contaminants Naturally Occurring in the Water Organized by Catalina Alfaro de la Torre, Mariana Cárdenas (Room 3) —	
<p>Data integration and sharing solution for communities coping with water-related disasters in Vietnam Nguyen, Lam Xuan</p> <p>Evapotranspiration in the Nile. The importance of remote sensing data in data-scarce settings Baez Villanueva, Oscar Manuel</p> <p>Water analysis through the water concessions system of the national water commission in the “media” region of San Luis Potosí Padilla, Díaz Joel</p> <p>Data analysis to identify flood characteristic and flood pattern recognition for reservoir operation Trinh, Thu Phuong</p> <p>Agricultural use of water and environmental externalities in grapevine production Riera, Félix Sebastián</p>	<p>Characterizing the groundwater structures and modelling of hydraulic head distribution of aquifers in a humid area of rural Sub-Saharan Africa, Cameroon Defo, Celestin</p> <p>Groundwater resilience of major Indian cities Bankaru Swamy, Soundharajan</p> <p>Modeling of ditch drainage system for desalinization of saline aquifer considering a subsurface sink Tiwari, Shubham</p> <p>Protection of the vulnerability on long time than the climate change of the quality on the aquifer Tabaalopa Aguilar, Pravda Luz</p> <p>Technical innovations adopted for water security in transboundary water resources between Algeria, Tunisia and Lybia Chelli, Badia</p>	<p>Application of surface water quality classification models using principal components analysis and cluster analysis Hamed, Mohamed Ahmed Reda</p> <p>Clean water availability on the coastal inundation zone of Semarang Indonesia Marfai, Muh Aris</p> <p>Identification of =50 micron-sized plastics (MPs) in conventional tap water sourced from Thailand Babel, Sandhya</p> <p>Lead pollution in drinking water sources in artisanal mining areas in Zamfara State, Nigeria: the search for permanent solution Kunlere, Idowu</p>	

<p style="text-align: center;">—</p> <p>Questions and discussion</p>	<p style="text-align: center;">—</p> <p>Questions and discussion, session output, and session report</p>	<p>Identification of arsenic sources in groundwater, a major task to provide safe drinking water in semi-arid areas Armienta, Maria Aurora</p> <p>The water- related disease of fluorosis, a more social than a health issue in the far north region of Cameroon Murielle, Elouga Zoba</p> <p>Effect of environmental impacts of mining to the water security of mining districts in Zambia Nyambe, Imasiku</p> <p>Effects of human health on concurrent exposure of arsenic and fluoride Mariana Cárdenas (Del Razo, Luz M.)</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p>
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8:30	KEYNOTE BY MUKAND BABEL (AIT) "Water Security and the Sustainable Development Goals"
9:15	Questions, answers and discussions
10:00	Coffee and Tea Break

10:30 – 12:30	THEMATIC SESSIONS		
<p>Arsenic in Water – book presentation session Organized by Catalina Alfaro de la Torre, Mariana Cárdenas (Room 1)</p> <p style="text-align: center;">—</p> <p>Arsenic reduction to < 1 µg/L in Dutch drinking water: prospects for global arsenic management strategies Ahmad, Arslan</p> <p>Environmental arsenic in a changing world: As2018 Ahmad, Arslan and Bhattacharya, Prosun</p> <p>Arsenic and fluoride in water: risks and prospects from the civil society and the academicians in Mexico Armienta, Aurora and Alarcón, Teresa</p> <p style="text-align: center;">—</p> <p>Comments, questions and discussion on book presentations</p>	<p>Social Sciences Supporting Sustainable Water Resource Management and Policies Organized by Mirja Michalscheck and Justyna Sycz (Room 2)</p> <p style="text-align: center;">—</p> <p>Planning with the community: The Paisanos river restoration, social use and integration López Mares, Lourdes Marcela</p> <p>Water adaptive governance at subnational level: a case Pakistan Muhammad, Mumtaz</p> <p>A framework for public participation in governance of the Palestinian water and wastewater sector contributes to the national enabling environment for water security Al-Madbouh, Suha</p> <p>Clashing values over water conservation: a tale of dying sacred spring in Lagos megacity Akinyemi, Adebayo</p> <p>Towards understanding the socio-hydrological dynamics of irrigation in agriculture Orduña Alegría, María Elena</p>	<p>Food and Water Security - Adaptation Strategies part I Organized by Nicole Schönleber, Victor Jimenez and Heinrich Hagel (Room 3)</p> <p style="text-align: center;">—</p> <p>Climate driven water insecurity and its consequent forced migration in Southwestern coastal Bangladesh Rahman, Md Tauhid Ur</p> <p>The agri-compatibility framework for evaluating the utility of virtual water in the nexus of water-food security Yawson, David Oscar</p> <p>Economic activities related to irrigation water use: to reduce climate change impact on water resources Fekersillassie, Daneal</p> <p>Vertical or horizontal growth? Food production in the Eastern Nile Basin: an outlook from water and land perspective Ayyad, Saher</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p>	

—	Poster presentation	—
Comments and questions on both book presentations	<p>Project outcome evaluation under informal and water insecure contexts: Ollas for rainwater runoff harvesting in San Miguel de Allende, Gto., Mexico Diek Elena</p> <p>Between the public and the private: The woman assuming her role in water management Rosa, Alexsandra</p> <p>Role of social capital in the governance of traditional water reservoirs: case study from Mazandaran Province, Northern Iran Mirzai, Arezoo</p>	Questions and discussion
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	Questions and discussion	

12:30	LUNCH
13:30 – 15:00	POSTER SESSION (moderated by Carolin Antoni and Javier Castro) in room 4
15:00 – 17:00	THEMATIC SESSIONS

<p>Novel Approaches to Assess and Cope with Droughts in Data Scarce Regions Organized by Alexandra Nauditt and Lars Ribbe (Room 1)</p> <p>—</p> <p>Development and Mapping of Climate-Induced Risk in WASH for the Districts of Rajasthan in India Manhachery, Dinesh Kumar</p> <p>Spatio-temporal Variability in Alberta Soil Moisture Climatology Agboma, Clement</p>	<p>Water Diplomacy: Building Bridges for Sustainable Development Organized by Mahsa Motlagh (Room 2)</p> <p>—</p> <p>Climate migration impacts on water security: a virtual water perspective Yawson, David Oscar</p> <p>Water adaptive governance at subnational level: a case of Pakistan Mumtaz, Muhammad</p>	<p>Food and Water Security – Adaptation Strategies part II Organized by Nicole Schönleber, Victor Jimenez and Heinrich Hagel (Room 3)</p> <p>—</p> <p>Optimization of crop water productivity and food security under limited water resources: interdisciplinary assessment of the prospective implementation of deficit irrigation strategies Orduña Alegría, María Elena</p>
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<p>Testing global precipitation products with a conceptual rainfall-runoff model for hydrological drought analysis in the seasonally-dry tropics of Costa Rica. Venegas, Nelson</p> <p>On the impacts of Temperature to Chilean Droughts Using Ensemble Climate Projections Zambrano-Bigiarini, Mauricio</p> <p>Drought impacts on water quality and potential implications for agricultural production in the Maipo River Basin, Central Chile Peña-Guerrero, Mayra Daniela</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p>	<p>Coastal water degradation by tourism activities in Natural Protected Areas in Ría Celestún, México: a political ecology theoretical framework Hernandez Estrada, Mauricio</p> <p>Assessment of emerging water conflicts among smallholder farmers: the coastal zone of the Mekong Delta, Vietnam Dekker, Greta</p> <p>The role of water forum as a social learning platform for water management in the face of climate change and urbanization: insights from practice Shrestha, Suchita</p> <p style="text-align: center;">Poster presentation</p> <p>Climate change as an opportunity for cooperation in the Blue Nile River Basin under the water-energy-food (WEF) Nexus Elhatow, Lama</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p>	<p>Socioeconomic, agricultural, and individual factors shaping farmers' perceptions and willingness of compost production and use in Wadi al-Far`a Watershed-Palestine Al-Madbouh, Suha</p> <p>Climate variability and change trends, impacts, perceptions and adaptation: multiple lessons from east and west Africa Borona, Pius</p> <p>Climate-induced natural disasters and its consequences on livelihood and food security Yadav, Neha</p> <p>Farmers adaptation and coping of water related hazards in Ethiopia: disentangling household specific factors of ex-ante and ex-post strategy choices Yismaw Habtamu, Demilew</p> <p style="text-align: center;">—</p> <p>Questions and discussion</p>
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8:30	<p style="text-align: center;">KEYNOTE BY JORGE LEÓN SARMIENTO & FERNANDO MIRALLES-WILHELM (TNC)</p> <p style="text-align: center;">"Human Demand vs Climate Change: which dominates the water scarcity problem around the world?"</p>
9:15	Questions, answers and discussion
9:30	<p style="text-align: center;">ROUND TABLE</p> <p style="text-align: center;">"Water Funds as Nature-based Solutions and the Role of Academia"</p> <p style="text-align: center;">Hilda Hesselbach (TNC), Maria del Rocío Salinas (Fondo de Agua de Zacatecas), Lars Ribbe (TH Köln, ITT), Mark Smith (IWMI)</p>
10:30	Coffee and tea break

11:30 – 12:30	THEMATIC SESSIONS		
<p>Novel Remote Sensing, Monitoring, Tracer and Model Techniques for WSCC Organized by Christian Birkel (Room 1)</p> <p style="text-align: center;">—</p> <p>Evaluating water security with an integrated modelling approach in the seasonally-dry tropics of Costa Rica Mena Benavides, Melisa</p> <p>Assessment of climate and vegetation influences on hydrological processes across tropical catchments using global products Arciniega-Esparza, Saúl</p> <p>Shifting from water resources demand to supply considerations in large humid tropical catchments Correa, Alicia</p> <p>Changes and variability of extreme precipitation index in Colombia Giraldo Osorio, Juan Diego</p>	<p>Viewing Water Security through the Lens of the SDGs Organized Mukand Babel and Andreas Haarstrick (Room 2)</p> <p style="text-align: center;">—</p> <p>Serious gaming to explore water resource management decisions Michalscheck, Mirja</p> <p>Assessment of water security in river resource management decisions Chapagain, Kaushal</p> <p>Strengthening resilience to water supply disruptions – critical infrastructure challenges for low and high-income countries Sett, Dominic (Sandholz, Simone)</p> <p>Coherence for water security in the post 2015 agenda frameworks: Implementation in the Mexican context Moure, Mar</p>	<p>Nature-based Solutions for Water and Climate Related Hazards Organized Udo Nehren and Jorge León Sarmiento (Room 3)</p> <p style="text-align: center;">—</p> <p>Role of universities in promoting and supporting ecosystem based approaches to climate change adaptation and disaster risk reduction Kung'u, James Biu</p> <p>The contribution of improved irrigation efficiency to mitigate the impacts of climate change in arid landscapes Davidson, Michael</p> <p>Climate-related extremes and water availability to supply Rio de Janeiro Metropolis: a qualitative vulnerability analysis Formiga-Johnsson, Rosa María</p>	

<p>Assessment of upstream development impact on the transboundary flood management in Mekong Delta – Vietnam: a hydrological-hydraulic approach Tran, Trinh</p> <p>Citizen science to generate water quality information in a catchment affected by pineapple monoculture in northern Costa Rica Sara, Blanco Ramírez</p> <p>—</p> <p>Questions and discussion</p>	<p>Water energy food nexus modeling for sustainable development path: methodological approach and demonstration of a case study Hailu, Dereje</p> <p>—</p> <p>Questions and discussion, session outputs and session report</p>	<p>Water security in Guandu water supply system, Brazil: action and goals to green natural structure Moster, Claudia</p> <p>Poster presentations</p> <p>Coastal environments and protection on fragment conservation unit: examples from Rio de Janeiro Coast Fernandez, Guilherme</p> <p>Methodology to improve the definition of scenarios of future land use change for hydrological modeling Acosta Porras, Eileen Andrea</p> <p>Priority areas for natural regeneration and reduction of sediments in a subbasin of Cantareira water system, Brazil Moster, Claudia</p> <p>—</p> <p>Questions and discussion</p>
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13:00	LUNCH
14:30 – 16:00	WRAP-UP & CLOSING

Keynote Speaker



Mukand S. Babel

Professor of Water Engineering and Management at the Asian Institute of Technology (AIT), Thailand. In addition, he is leading the Climate Change Asia (CCA) initiative at AIT for catalyzing capacity for action to address climate change issues in the region. He was the Chair of Academic Senate of AIT. He has been a Visiting/Honorary Professor at the University of Exeter, UK; Kyoto University, Japan; University Teknologi Mara, Malaysia and Sam Higginbottom University of Agriculture, Technology and Sciences (SHIATS), India.



Mark Smith

Deputy Director General – Research for Development of the International Water Management Institute (IWMI), based in Colombo, Sri Lanka. He has a Ph.D. in Ecology & Resource Management from Edinburgh University, UK and over 25 years of research & programme management experience in water resources, agriculture, climate & sustainability. Prior to joining IWMI in April 2018, Mark spent 10 years as Director of the Global Water Programme at the International Union for Conservation of Nature (IUCN)



Prosun Bhattacharya

PhD in Sedimentary Geochemistry from University of Delhi, India (1990). He is a Professor of Groundwater Chemistry and Coordinator of the KTH-International Groundwater Arsenic Research Group, at the Department of Sustainable Development, Environmental Science and Engineering at KTH Royal Institute of Technology, Stockholm, Sweden. Since 2016, he is also an Adjunct Professor at University of Southern Queensland, Australia



Jorge León Sarmiento

Jorge Leon, ecologist, works for the Latin American Water Funds Partnership. His research areas of interest include improving scientific knowledge to improve water security in metropolitan areas, expanding the monitoring network to identify the real impacts of natural infrastructure in improving the availability and quality of water, as well as, in mitigating the effects of climate change.