



# Hydrology Days

March 27 – 29, 2019

Lory Student Center

**COLORADO STATE UNIVERSITY**

***Student Showcase:***

*Hydrology is for  
Everyone!*



**COLORADO  
WATER CENTER**  
COLORADO STATE UNIVERSITY



**CIVIL AND ENVIRONMENTAL  
ENGINEERING**  
COLORADO STATE UNIVERSITY



**ONE WATER  
SOLUTIONS  
INSTITUTE**

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## Water Connects Us All

As an established leader in water research, Colorado State University is the perfect setting for the 39<sup>th</sup> Annual American Geophysical Union Hydrology Days meeting which provides a unique opportunity for students, faculty, staff and practitioners to engage in wide range of water-related interdisciplinary research topics.

In addition to hydrologic systems, the event covers a broad range of water concerns, including agriculture and water rights, sustainability and conservation, climate change and urbanization, economics and policy.

***“Hydrology Days an annual event that showcases the depth and breadth of water-related research and innovation at CSU as well as other regional institutions. If you’re interested in understanding the current state-of-the-science and our water programs, this is the place to be.” Mazdak Arabi, Chair HD-2019***

This year’s event provides student researchers their own showcase, a safe and supportive venue where students at different points in their careers can exchange ideas, give presentations and poster sessions of their research, and enhance their scientific communication skills. The showcase offers students an enriching environment that will spark peer-to-peer learning and collaboration.

We hope the meeting generates an atmosphere of discussion and exchange of ideas as well as opportunities to develop connections between the University’s wide range of water-related research activities. We look forward to hosting another tremendous meeting of the minds. Thank you for joining us!

# Program Overview

## Wednesday March 27

Room	LSC #382	Virginia Dale	Gray Rock	Cherokee Park
8:00 - 8:50 am	<i>Registration</i>			
9:00 - 10:20 am	Socio-Ecological Systems	Snow Hydrology		
10:20 - 10:30 am	<i>Break</i>			
10:30 - 12:00 pm	Modeling Tools			Poster Set-up
12:00 - 1:00 pm	<i>Lunch - North Ballroom</i>			
1:00 - 2:00 pm	<b>Borland Hydraulics Lecture: Fotis Sotiropoulos</b> <i>Hydraulic Engineering in the Era of Big Data &amp; Extreme-Scale Computing</i>			
2:00 - 3:20 pm	Confucius Institute (1)			Poster Session
3:20 - 3:30 pm	<i>Break</i>			
3:30 - 5:00 pm	Confucius Institute (2)			Poster Session
6:30 - 9:30 pm	World Water Day Special Screening at Lyric Cinema, Fort Collins <i>Water &amp; Power: A California Heist</i>			

## Thursday March 28

Room	LSC #382	Virginia Dale	Gray Rock	Cherokee Park
8:00 - 8:50 am	<i>Registration</i>			
9:00 - 10:20 am	River Mechanics (1)	Hydrologic Systems (1)	Global Enviro. Change (1)	
10:20 - 10:30 am	<i>Break</i>			
10:30 - 12:00 pm	Ramirez Celebration			
12:00 - 1:00 pm	<i>Lunch - North Ballroom</i>			
1:00 - 2:00 pm	<b>Hydrology Days Award: Bridget Scanlon</b> <i>Global to Local Water Resource Assessments: Implications for Management</i>			
2:00 - 3:20 pm	River Mechanics (2)	Hydrologic Systems (2)	Global Enviro. Change (2)	
3:20 - 3:30 pm	<i>Break</i>			
3:30 - 5:00 pm	River Mechanics (3)	Hydrologic Systems (3)	Global Enviro. Change (3)	

## Friday March 29

Room	LSC #382	Virginia Dale	Gray Rock	Cherokee Park
8:00 - 8:50 am	<i>Registration</i>			
9:00 - 10:20 am	Biogeochemical		Ag. Water & Conservation (1)	Energy-Water Nexus
10:20 - 10:30 am	<i>Break</i>			
10:30 - 12:00 pm	Groundwater (1)		Ag. Water & Conservation (2)	Urban Water (1)
12:00 - 1:00 pm	<i>Lunch - North Ballroom</i>			
1:00 - 2:00 pm	<b>Borland Hydrology Lecture: Nandita Basu</b> <i>Signatures of Human Impact: Legacies, Climate Change and the Future of our Waters</i>			
2:00 - 3:20 pm	Groundwater (2)		Ag. Water & Conservation (3)	Urban Water (2)
3:20 - 3:30 pm	<i>Break</i>			
3:30 - 5:00 pm				Urban Water (3)

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# Keynote Speakers

## AGU Hydrology Day Award

### Dr. Bridget R. Scanlon

Senior Research Scientist – Bureau of Economic Geology, Jackson School of Geosciences, University of Texas at Austin



*Bridget Scanlon is a Senior Research Scientist at the Bureau of Economic Geology, Jackson School of Geosciences, University of Texas at Austin. Her degrees are in Geology with a focus on hydrogeology with a B.A. Mod. from Trinity College, Dublin (1980); M.Sc. from the Univ. of Alabama (1983), and Ph.D. from the Univ. of Kentucky (1985). She has worked at the Univ. of Texas since 1987. Her current research focuses on various aspects of water resources, including global assessments using satellites and modeling, management related to climate extremes, and water energy interdependence. She serves as an Associate Editor for Water Resources Research and Environmental Research Letters and has authored or co-*

*authored ~100 publications. Dr. Scanlon is a Fellow of the American Geophysical Union and the Geological Society of America and a member of the National Academy of Engineering.*

### **Global to Local Water Resource Assessments: Implications for Management**

Date: Thursday March 28, 2019

Time: 1:00 – 2:00pm

Location: North Ballroom (CSU Lory Student Center)

**Abstract:** Managing water resources is becoming increasingly challenging within the context of climate extremes and change. Our studies look at trends in water storage using the Gravity Recovery and Climate Experiment (GRACE) satellites and modeling ranging from global to local scales. We evaluate the reliability of global models by comparing modeled land water storage (snow, surface water, soil moisture and groundwater) trends to storage trends from (GRACE) satellites. Likened to giant weighing scales in the sky, GRACE satellites have monitored monthly changes in land water storage globally since their launch in 2002. The satellites show that global land water storage, summed over 186 river basins, increased over the past decade, although models show decreasing global water storage. This suggests opposing contributions to global mean sea level, with GRACE indicating a negative contribution to sea level and models indicating a positive contribution

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## Borland Hydraulics Lecture

### Dr. Fotis Sotiropoulos

Dean – College of Engineering and Applied Sciences, Stony Brook University  
*Dean Sotiropoulos's research focuses on simulation-based fluid mechanics in energy, environment, biology & health. Sotiropoulos has made seminal contributions in environmental fluid mechanics, including sediment transport and scour, stream and river restoration, and river flooding risk assessment and mitigation, wind and marine and hydrokinetic energy systems, cardiovascular fluid mechanics, and aquatic swimming.*



### ***Hydraulic Engineering in the Era of Big Data & Extreme-Scale Computing***

Date: Wednesday March 27, 2019

Time: 1:00 – 2:00pm

Location: North Ballroom (CSU Lory Student Center)

## Borland Hydrology Lecture



### Dr. Nandita Basu

Associate Professor – Water Sustainability and Ecohydrology,  
University of Waterloo

*Nandita Basu studies the role humans play in modifying water availability and quality through changing land use and climate, providing innovative solutions to water sustainability challenges. Professor Basu aims to discover innovative solutions to water sustainability challenges by studying the emergent patterns in landscape, hydrology and biogeochemistry and the role humans play in modifying such patterns.*

### ***Signatures of Human Impact: Legacies, Climate Change and the Future of our Waters***

Date: Friday March 29, 2019

Time: 1:00 – 2:00pm

Location: North Ballroom (CSU Lory Student Center)

# Program

Wednesday March 27 - Block 1 (9:00 am - 10:20 am)

LSC #382	Virginia Dale	Cherokee Park
<b>Socio-ecological Systems</b>	<b>Snow Hydrology</b>	
Chair: Mazdak Arabi	Chair: Steven Fassnacht	
<a href="#"><u>Who changes the rain? Linking the social-ecological dynamics of land-use change, atmospheric water recycling, and pastoralist behavior</u></a>	<a href="#"><u>G010: Applicability of Automated Image Recognition to Snow Depth Measurement</u></a>	
<b>Patrick Keys</b> – Colorado State University	<b>Kevin Brown</b> – Colorado State University	
<a href="#"><u>Regulation of water streams and climate change in Colombia</u></a>	<a href="#"><u>The Spatial Structure of Large-scale Snow Accumulation</u></a>	
<b>Ricardo Smith</b> - Gotta Engineering S.A.	<b>Steven Fassnacht</b> – Colorado State University	
<a href="#"><u>G047: Application of High-dimensional Epsilon Mutation Linear Particle Swarm Optimization in Mitigating the Effects of Best Management Practices Application in the Lower Arkansas River Basin</u></a>	<a href="#"><u>G037: Factors controlling recent trends in snowmelt and streamflow timing across different ecoregions of the western United States</u></a>	
<b>Faizal Rohmat</b> – Colorado State University	<b>Sam Miller</b> - University of Wyoming	
<a href="#"><u>G039: Algal Toxins in Agricultural Environments: Implications for Human Health</u></a>		
<b>Caryn Nezat</b> – CSU; USDA-ARS		

# Program

## Wednesday March 27 - Block 2 (10:30 am - 12:00 pm)

LSC #382	Virginia Dale	Cherokee Park
<p><b>Modeling Tools</b></p>		<p><b>Poster Set-up</b></p>
<p>Chair: Mazdak Arabi</p>		
<p><a href="#"><u>The enhanced Catchment areas delineation (Cadel) tool for watershed models with spatially explicit routing between simulated areas</u></a></p> <p><b>Holm Kipka</b> – Colorado State University</p>		
<p><a href="#"><u>G062: Extending modeling framework flexibility with complex network modeling capabilities: NET3</u></a></p> <p><b>Francesco Serafin</b> - University of Trento</p>		<p><i>Please set-up posters during this time</i></p>
<p><a href="#"><u>G051: Enabling modeling frameworks with surrogate modeling capabilities</u></a></p> <p><b>Francesco Serafin</b> - University of Trento</p>		
<p><b>Francesco Serafin</b> - University of Trento</p>		

# Program

## Wednesday March 27 - Block 3 (2:00 pm - 3:20 pm)

LSC #382	Virginia Dale	Cherokee Park
<p><b>Confucius Institute (1)</b></p>		
<p>Chair: Steven Fassnacht</p>		<p><b>Poster Session</b></p>
<p><i>Engagement and Outreach between CSU and Chinese Universities</i></p>		
<p><b>Louis Swanson</b> - CSU Vice President for Engagement and Director of Extension</p>		
<p><a href="#"><i>Bioconcentration, metabolism and the effects of tetracycline on multiple biomarkers in Chironomus riparius larvae</i></a></p>		
<p><b>Zhengxin Xie</b> - Anhui Agricultural University</p>		
<p><a href="#"><i>Influence of phosphorus release and initial nitrate concentration on anoxic phosphorus uptake</i></a></p>		
<p><b>Wei Xu</b> - Anhui Agricultural University</p>		
<p><a href="#"><i>A distributed hydrological model fully constrained by remote sensing information for total runoff and its component simulations in alpine regions: headwaters on the Tibetan Plateau</i></a></p>		<p>See pages 10-11 for list of poster presentations</p>
<p><b>Di Long</b> - Tsinghua University</p>		
<p><a href="#"><i>G034: Monitoring lake water variations on the Tibetan Plateau from massive Landsat archives and satellite altimetry: potential and uncertainty</i></a></p>		
<p><b>Xingdong Li</b> - Tsinghua University</p>		



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# Program

## Wednesday March 27 - Block 4 (3:30 pm - 5:00 pm)

LSC #382	Virginia Dale	Cherokee Park
<b>Confucius Institute (2)</b>		<b>Poster Session</b>
Chair: Steven Fassnacht		
<a href="#"><u>G026: Using solely river widths from high-spatial-resolution satellite images to calibrate a hydrological model for discharge estimation for ungauged basins</u></a>		
<b>Qi Huang</b> - Tsinghua University		<i>See pages 10-11 for list of poster presentations</i>

# Posters

Wednesday March 27 - 2:00 pm – 5:00 pm

Presenter	ID	Poster Title
Ismail Alhelal	GP200	<a href="#"><u>Recovery Of Nitrogen In Multi-Stage Anaerobic Digestion By Nitrification As Acid Source</u></a>
Alyssa Anenberg	GP201	<a href="#"><u>Effects Of Snow Persistence On Soil Moisture And Soil Water Nitrogen Along The Colorado Front Range</u></a>
Preston Benko	UP100	<a href="#"><u>How Important Is Frost? Determining The Validity In Estimating Sublimation And Latent Mass Flux At The Soil-Surface Interface Using Above Surface Measurements</u></a>
Kristin Bunte	2	<a href="#"><u>Data Sets To Be Published From Field Measurements Of Gravel Transport In Mountain Streams</u></a>
Maria Patricia Sales Castro	GP202	<a href="#"><u>Treated Wastewater Reuse For Irrigation</u></a>
Maria Patricia Sales Castro	GP203	<a href="#"><u>Trophic Status Index Of The Receiving River Wastewater From Sewage Treatment</u></a>
Cibi Vishnu Chinnasamy	GP204	<a href="#"><u>Characteristics Of Water Use Across 124 Urban Centers In The USA: What Did We Learn?</u></a>
Lily Conrad	UP101	<a href="#"><u>A Hydrologic Analysis Of Big Bear Creek Watershed In Iowa</u></a>
Julie Dauer	UP102	<a href="#"><u>A Shower Water Reclamation System To Address Colorado House Bill 18-1069</u></a>
Abby Eurich	GP205	<a href="#"><u>Combined Effects Of Land Cover Change And Flow Modifications On Streamflow In Colorado</u></a>
Noelle Fillo	GP206	<a href="#"><u>Water-Stable Isotope Characterization Of Semi-Arid, Urban Streams</u></a>
Jorge Gironás	3	<a href="#"><u>Planform Geometry And Relief Characterization Of Drainage Networks In High-Relief Environments: An Analysis Of Chilean Andean Basins</u></a>
Peter Goble	4	<a href="#"><u>Developing Crop-Specific Flash Drought Indices</u></a>
Ryan Gonzalez	GP207	<a href="#"><u>A First Look At The Consistency In AMSR-E Snow Products</u></a>
Hannah Harrison	UP103	<a href="#"><u>Water Balance Comparison For Headwater Catchments Across An Elevation Gradient In Northern Colorado</u></a>
Alison Kingston	GP209	<a href="#"><u>Snowmelt Modeling At Fine Scale For Mine Infiltration Estimation In Southern Colorado</u></a>
Katie Knight	GP210	<a href="#"><u>Evaluating The Effects Of Green Stormwater Infrastructure On Urban Street Flooding</u></a>
Weimin Li	GP211	<a href="#"><u>Use Of Numerical Simulation To Study Rio Grande Silvery Minnow Habitat In The Middle Rio Grande River In New Mexico</u></a>

# Posters

Wednesday March 27 - 2:00 pm – 5:00 pm

Presenter	ID	Poster Title
Hannah Miller	6	<a href="#"><u>Reuse Of Produced Water For Agricultural Irrigation</u></a>
Ned Molder	GP212	<a href="#"><u>The Hydro-Social Cycle And Extreme Cities</u></a>
Agustin Nunez	GP213	<a href="#"><u>Changes In Soil Carbon Stocks After Conversion From Irrigated To Dryland Cropping Systems</u></a>
Panagiotis Oikonomou	7	<a href="#"><u>Development Of A Web-Based Tool For Instream Flow Recommendations In Colorado</u></a>
Danielle Palm	UP104	<a href="#"><u>Assessing Differences In Diel Hydrologic And Chemical Signals Along A River-Floodplain System</u></a>
Anna Pfohl	GP214	<a href="#"><u>Snow Accumulation, Melt And Streamflow Response From Point And Spatial Snowpack Measurements</u></a>
Joshua Reyling	GP215	<a href="#"><u>The Rio Grande River Basin Geospatial Database</u></a>
Jessica Sanow	GP216	<a href="#"><u>Geometric Versus Anemometric Surface Roughness For A Shallow Accumulating Snowpack</u></a>
Bradley Simms	UP105	<a href="#"><u>Spatiotemporal Snow Surface Roughness Across Multiple Resolutions</u></a>
Jianyi Tang	UP106	<a href="#"><u>Temperature And Precipitation Impact On Snowmelt Runoff Mosaics From Headwaters To Continental Basins</u></a>
Anoop Valiya Veettil	8	<a href="#"><u>Modeling The Effects Of Onsite Wastewater Treatment Systems On Nitrogen And Phosphorus Loads In Lake Keowee, South Carolina.</u></a>
Saddam Waheed	GP218	<a href="#"><u>Dam Operation Assessment Under Climate Change Effects Using New Performance Indicators: Case Study In Diyala River Basin In Iraq</u></a>
Yiru Wang	UP107	<a href="#"><u>Would The Great One Be As Great If He Was Born Later ?</u></a>
Joshua Wenz	9	<a href="#"><u>Using Canopy Stomatal Conductance Calculated From Remotely Sensed Plant Parameters To Determine Plant Water Status</u></a>
Danny White	GP217	<a href="#"><u>Sorting Patterns In Curved Channels: Flume Experiment Observations</u></a>
Sarah Wingard	UP108	<a href="#"><u>Measuring Snow Surface Roughness Using Terrestrial Lidar</u></a>
Julia Young	UP109	<a href="#"><u>Quantifying The Relative Contributions Of Biological Uptake And Physical Sorption To Whole-Stream Phosphate Retention</u></a>

# Program

Thursday March 28 - Block 1 (9:00 am - 10:20 am)

LSC #382	Virginia Dale	Gray Rock
<b>River Mechanics (1)</b>	<b>Hydrologic Systems (1)</b>	<b>Global Environmental Change (1)</b>
Chair: Pierre Julien	Chair: Jeffrey Neimann	Chair: Mazdak Arabi
<a href="#"><u><i>A Reflection on the Water Year of 2018 and Where We Go from Here</i></u></a> <b>Pete Goble</b> – Colorado State University	<a href="#"><u><i>G019: Rainfall Variability on a Small Watershed: Implications for Runoff Prediction</i></u></a> <b>Rob Erskine</b> - USDA-ARS	<a href="#"><u><i>G022 : A Coherent Statistical Model for Coastal Flood Frequency Analysis under Nonstationary Sea Level Conditions</i></u></a> <b>Mahshid Ghanbari</b> – Colorado State University
<a href="#"><u><i>G029: Geospatial Analysis of Land Use Effects on Sediment Yield</i></u></a> <b>Woochul Kang</b> - Colorado State University	<a href="#"><u><i>Evaluation of a machine-learning model for improved probabilistic predictions of excessive rainfall</i></u></a> <b>Russ Schumacher</b> - Colorado State University	<a href="#"><u><i>G017: Flood-Producing Storms in a Current and Future Climate Using High-Resolution Convection-Permitting Simulations in the United States</i></u></a> <b>Erin Dougherty</b> – Colorado State University
<a href="#"><u><i>G058: Parametric Analysis of the Mean Annual Sediment Yield</i></u></a> <b>Chun-Yao Yang</b> - Colorado State University	<a href="#"><u><i>G044: Assessing impacts of soil hydrology on patterns of soil moisture and surface soil strength</i></u></a> <b>Matthew Pauly</b> - Colorado State University	<a href="#"><u><i>G041: A Framework for Estimating Moisture Susceptibility Attributable to Natural Flooding Hazards in the U.S.</i></u></a> <b>Oluwatobi Oke</b> – Colorado State University
<a href="#"><u><i>G015: Modeling the effects of subsidence on sediment transport in the San Joaquin River Bypass system.</i></u></a> <b>Susan Cundiff</b> - CSU, Tetra Tech	<a href="#"><u><i>G053: Modeling hydrologic processes associated with soil saturation and debris flow initiation during the September 2013 Storm, Colorado Front Range</i></u></a> <b>Sujana Timilsina</b> - Colorado State University	<a href="#"><u><i>G030 : Quantitative Assessment of Floodplain Functionality Using an Index of Integrity</i></u></a> <b>Marissa Karpack</b> – Colorado State University

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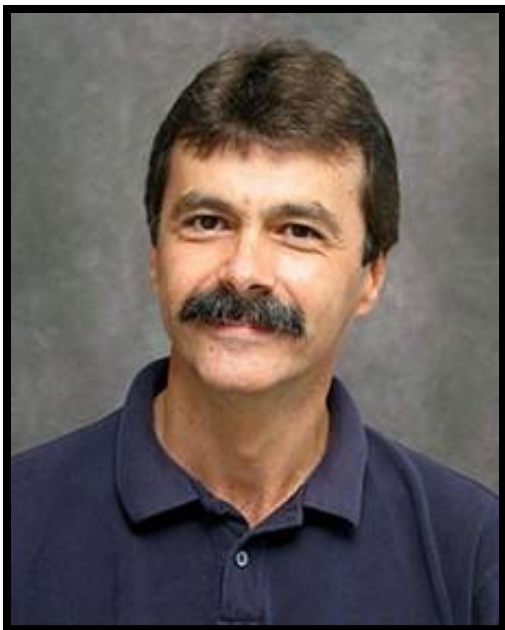
# Program

**Thursday March 28 - Block 2 (10:30 am – 12:00 pm)**

## **Dr. Jorge Ramirez Celebration (LSC# 382)**

*This year, Dr. Ramirez steps down as chair of Hydrology Days and this session provides an opportunity to acknowledge his tremendous efforts organizing and leading the event for the last 10+ years. In addition, the session will celebrate and recognize his remarkable contributions to the field of Hydrology. The session will include short, anecdotal presentations from esteemed colleagues and former students discussing relevant research and other examples of how he has contributed to the overarching field of study and influenced their professional endeavors and successes.*

Over nearly three decades of service to Colorado State University, Dr. Ramirez has led numerous research, education and training efforts to establish CSU as a leader in water science and technology. His academic scholarship has substantially expanded the University's research reputation in the fields



of hydrology, hydrometeorology, and water resources planning and management, benefitting not only CSU students and his fellow faculty members, but the profession as a whole.

Dr. Ramirez has an extensive record of significant contributions to curriculum and education program development (e.g. [Water REU](#), [I-WATER](#), [distance programs](#)), execution and management of interdisciplinary research and training programs (e.g. [I-WATER](#)), and development and administration of internationally recognized academic events (e.g. [Hydrology Days](#)).

In addition to the leadership, mentoring and global recognition he has brought to CSU, Dr. Ramirez also has a history of active participation in broadening the reach of the University through engagement and collaboration with outside partners. Furthermore, Dr. Ramirez works cooperatively across disciplines providing further evidence of his exemplary service qualities that align directly with CSU's core mission.

# Program

Thursday March 28 - Block 3 (2:00 pm - 3:20 pm)

LSC #382	Virginia Dale	Gray Rock
<b>River Mechanics (2)</b>	<b>Hydrologic Systems (2)</b>	<b>Global Environmental Change (2)</b>
Chair: Pierre Julien	Chair: Jeffrey Neimann	Chair: Mazdak Arabi
<a href="#"><u>G021: Comparison of 2D and 3D Numerical Simulations of Flow Around a Bendway Weir</u></a>  <b>Mason Garfield</b> - Colorado State University	<a href="#"><u>Evapotranspiration, Evaporative Demand, and Jorge Ramirez: 25 Years From Fundamental Research to Applied Tools</u></a>  <b>Mike Hobbins</b> - University of Colorado: Cooperative Institute for Research in Environmental Sciences	<a href="#"><u>Statistical Hydrology: Developments for Assessing Hydraulic Structures</u></a>  <b>Jose D Salas</b> – Colorado State University
<a href="#"><u>G040: Clear-Water Contraction Scour in Sand Bed Channels</u></a>  <b>Alireza Nowroozpour</b> - Colorado State University	<a href="#"><u>G050: NOAA's Next-Generation Reference Evapotranspiration Dataset</u></a>  <b>Connor Seacrest</b> - Colorado State University	<a href="#"><u>The relative importance of agricultural and municipal demands in causing future water shortages in the United States</u></a>  <b>Travis Warziniack</b> – US Forest Service
<a href="#"><u>G059: Hydraulic Modeling and Silvery Minnow Habitat Analysis on the Middle Rio Grande</u></a>  <b>Chun-Yao Yang</b> - Colorado State University	<a href="#"><u>G012: A simple, robust design of field measurements for evapotranspiration barriers using universal multiple linear regression</u></a>  <b>Melissa Clutter</b> - University of Arizona	<a href="#"><u>G023 : A Mixture Gamma-GPD Probability Model for Characterization of Water Shortage Vulnerability under Nonstationary Supply and Demand Conditions</u></a>  <b>Hadi Heidari</b> – Colorado State University
	<a href="#"><u>The role of upstream flow contributions in spatially distributed travel time models for hydrograph prediction</u></a>  <b>Jorge Gironás</b> - Pontificia Universidad Católica de Chile	<a href="#"><u>Climate versus human impacts on sediment transfer in an Alpine basin</u></a>  <b>Peter Molnar</b> - ETH Zurich

# Program

## Thursday March 28 - Block 4 (3:30 pm - 5:00 pm)

LSC #382	Virginia Dale	Gray Rock
<b>River Mechanics (3)</b>	<b>Hydrologic Systems (3)</b>	<b>Global Environmental Change (3)</b>
Chair: Pierre Julien	Chair: Jeffrey Neimann	Chair: Mazdak Arabi
<p><a href="#"><u>G004: Turbidity And Sediment Concentration Measurements Of The Porong River From The Mud Volcano Diversion</u></a></p> <p><b>Neil Andika</b> - Colorado State University</p>	<p><a href="#"><u>G033: Assessment of Acoustic Flow Measurement Instrumentation for Mean Flow Measurements</u></a></p> <p><b>Matthew Klema</b> - Colorado State University</p>	<p><a href="#"><u>Changes in the convective population and thermodynamic environments in convection-permitting regional climate simulations over the United States</u></a></p> <p><b>Kristen Rasmussen</b> – Colorado State University</p>
<p><a href="#"><u>G042: Simulation of the hypothetical collapse of tailings dams in the Doce River Basin - Brazil</u></a></p> <p><b>Marcos Palu</b> - Colorado State University</p>	<p><a href="#"><u>Flushing Flow Time Series Analysis</u></a></p> <p><b>Robert Milhous</b> - U.S. Geological Survey (Retired)</p>	<p><a href="#"><u>Shallow landslides probabilities and return period in a climate change context</u></a></p> <p><b>Antonino Cancelliere</b> - University of Catania, Italy</p>

# Program

## Friday March 29 - Block 1 (9:00 am - 10:20 am)

LSC #382	Gray Rock	Cherokee Park
<b>Biogeochemical</b>	<b>Agriculture &amp; Conservation (1)</b>	<b>Energy-Water Nexus</b>
Chair: Ryan Bailey	Chair: Tim Green	Chair: Sybil Sharvelle
<a href="#"><u>G024: A novel and probabilistic approach to characterizing vulnerability to nutrient pollution in urban streams</u></a>	<a href="#"><u>Internet-of-Things (IoT) Soil Moisture Sensors Will Transform Irrigation and Water Management</u></a>	<a href="#"><u>G060: Assessing The Performance Of A Multi-Stage Anaerobic Digester For The Digestion Of High Solids Cattle Manure</u></a>
<b>Chelsey Heiden</b> - Colorado State University	<b>Jay Ham</b> – Colorado State University	<b>Kadin Young</b> – Colorado State University
<a href="#"><u>G056: Molecular and watershed-scale drivers of soil C loss following long-term N enrichment.</u></a>	<a href="#"><u>G006: Development of a Simplified Transistor-Based Soil Matrix Potential Sensor</u></a>	<a href="#"><u>G048: Aquifer Test Methods to Estimate Well Efficiency via a Single Pumping Well</u></a>
<b>Tim Weinmann</b> - CSU: NREL, GDPE, ESS; USGS	<b>Garrett Banks</b> - Colorado State University	<b>James Roman</b> – Colorado State University
<a href="#"><u>G003: Treatment of Chloronitrobenzene-contaminated Water Using Sequential Chemical-Biological Oxidation</u></a>	<a href="#"><u>G013: Evapotranspiration modeling using an aerodynamic temperature approach based on weather and remote sensing data</u></a>	<a href="#"><u>G002: Optimizing ASR wellfield operation to minimize energy consumption</u></a>
<b>Samia Amiri</b> - Colorado State University	<b>Edson Costa Filho</b> - Colorado State University	<b>Abdulaziz Alqahtani</b> – Colorado State University
<a href="#"><u>G008: Petroleomics – Modern Analytical Tools and Approaches for the Characterization of Hydrocarbon Weathering</u></a>	<a href="#"><u>Using canopy cover and temperature in deficit irrigation scheduling: a concept</u></a>	<a href="#"><u>Complements of the House: Estimating Demand-side Linkages between Residential Water and Electricity</u></a>
<b>Olivia Bojan</b> - Colorado State University	<b>Kendall DeJonge</b> - USDA-ARS Water Management & Systems Research Unit	<b>Alexander Maas</b> – University of Idaho



# Program

Friday March 29 - Block 2 (10:30 am - 12:00 pm)

LSC #382	Gray Rock	Cherokee Park
<b>Groundwater (1)</b>	<b>Agriculture &amp; Conservation (2)</b>	<b>Urban Water (1)</b>
Chair: Ryan Bailey	Chair: Meagan Schipanski	Chair: Sybil Sharvelle
<p><a href="#"><u>G027: Modelling the Distribution of Major Salt Ions in Agricultural Stream and Groundwater Systems</u></a></p> <p><b>Abdullah Javed</b> - Colorado State University</p>	<p><a href="#"><u>Using strategic deficit irrigation to increase water productivity under limited water availability.</u></a></p> <p><b>Louise Comas</b> - USDA-ARS Water Management &amp; Systems Research Unit</p>	<p><a href="#"><u>G038: Cost-benefit evaluation of water conservation and reuse strategies using the Integrated Urban Water Model for three U.S. cities</u></a></p> <p><b>Michael Neale</b> – Colorado State University</p>
<p><a href="#"><u>G054: Modeling to Characterize and Mitigate Uranium Pollution in an Irrigated River Valley</u></a></p> <p><b>Erin Underwood</b> - Colorado State University</p>	<p><a href="#"><u>G014: Satellite-Based Soil Electrical Conductivity Mapping to Assess Soil-Water Salinity Concentrations in an Irrigated Area</u></a></p> <p><b>Brian Craig</b> - Colorado State University</p>	<p><a href="#"><u>G001: Off the Roof: A Citizen Science Project to Measure the Microbial Characteristics of Roof Runoff</u></a></p> <p><b>Jumana Alja'fari</b> – Colorado State University</p>
<p><a href="#"><u>Groundwater Management Policies Over Space and Time: A Hydro-Economic Modeling Approach</u></a></p> <p><b>Mani Rouhi Rad</b> - Colorado State University</p>	<p><a href="#"><u>G009: Predicting Crop Yield Losses Due to Soil-Water Salinity: Comparison of Traditional and Alternative Approaches</u></a></p> <p><b>Ansley Brown</b> - Colorado State University</p>	<p><a href="#"><u>G005: Investigating the innovative use of random packing material to improve the internal hydraulics of decentralized water systems</u></a></p> <p><b>Jessica Baker</b> – Colorado State University</p>
<p><a href="#"><u>On the Effect of the Infinite Aquifer Assumption for Groundwater Management</u></a></p> <p><b>Mani Rouhi Rad</b> - Colorado State University</p>	<p><a href="#"><u>G057: Developing a Hydro-Agronomic Model to Assess Groundwater Conservation Strategies in the Ogallala Aquifer Region</u></a></p> <p><b>Zaichen Xiang</b> - Colorado State University</p>	<p><a href="#"><u>Impact of Urban Growth and Residential Irrigation on Streamflow and Groundwater Levels in a Peri-urban Semi-arid Catchment</u></a></p> <p><b>Jorge Gironás</b> - Pontificia Universidad Católica de Chile</p>

# Program

## Friday March 29 - Block 3 (2:00 pm - 3:20 pm)

LSC #382	Gray Rock	Cherokee Park
<b>Groundwater (2)</b>	<b>Agriculture &amp; Conservation (3)</b>	<b>Urban Water (2)</b>
Chair: Tyler Dell	Chair: Green/Schipanski	Chair: Mostafa Razzaghmanesh
<p><a href="#"><u>G020: Real-Time Visualization of Advective Groundwater Flow</u></a></p> <p><b>Zachary Ferrie</b> - Colorado State University</p>	<p><a href="#"><u>G052: Cost Effective Water Quality Management in Tile-drained Fields</u></a></p> <p><b>Di Sheng</b> - Colorado State University</p>	<p><a href="#"><u>G011: Spatial Distribution of Stormwater Infiltration Affects Partitioning of Subsurface Storage and Baseflow Timing</u></a></p> <p><b>Benjamin Choat</b> – Colorado State University</p>
<p><a href="#"><u>G035: Conductivity Mass Balance Method of Baseflow Estimation in Northwest Colorado using Low-Cost Data Loggers</u></a></p> <p><b>Amber Lidell</b> - CSU: Geosciences; USDA Forest Service</p>	<p><a href="#"><u>G031: Profitability of Water-Limited Irrigated Cropping Strategies in Northeastern Colorado: A Stochastic Enterprise Analysis</u></a></p> <p><b>Timothy Kelley</b> - Colorado State University</p>	<p><a href="#"><u>G043: Using hydrologic modeling to revise stormwater management criteria in a redeveloping urban neighborhood</u></a></p> <p><b>Chelsea Panos</b> – Colorado School of Mines</p>
<p><a href="#"><u>G036: Riparian vegetation characteristics and evapotranspiration in relation to groundwater exchange and water table fluctuations along an irrigated river valley</u></a></p> <p><b>Matthew Lurtz</b> - Colorado State University</p>	<p><a href="#"><u>Crop Insurance and Groundwater Extraction: Evidence from the Ogallala</u></a></p> <p><b>Matthew Sloggy</b> - Colorado State University</p>	<p><a href="#"><u>Investigation clogging dynamic of permeable pavement systems using embedded sensors</u></a></p> <p><b>Mostafa Razzaghmanesh</b> – Colorado State University</p>
		<p><a href="#"><u>G028: Assess Performance of Urban Stormwater Control Measures (SCMs) under Varying Maintenance Regimes</u></a></p> <p><b>Alfy Joseph George</b> – Colorado State University</p>

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# Program

## Friday March 29 - Block 4 (3:30 pm - 5:00 pm)

<b>Cherokee Park</b>
<b>Urban Water (3)</b>
Chair: Mostafa Razzaghmanesh
<a href="#"><u>Community-enabled Lifecycle Analysis of Stormwater Infrastructure Costs (CLASIC) tool hydrological investigation, a case study of McClelland Basin</u></a>
<b>Mostafa Razzaghmanesh</b> – Colorado State University
<a href="#"><u>G016: Barriers to low impact development for stormwater management and how they have changed in the past 10 years</u></a>
<b>Tyler Dell</b> – Colorado state University
<a href="#"><u>G046: Co-benefit Analysis of Infrastructure Interventions of Various Feasibility Scenarios in New York City</u></a>
<b>William Rainey</b> – Colorado State University

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