Hydrology Days

March 27 – 29, 2019 Lory Student Center

COLORADO STATE UNIVERSITY

Student Showcase: Hydrology is for

Everyone!

COLORADO WATER CENTER COLORADO STATE UNIVERSITY





Water Connects Us All

As an established leader in water research, Colorado State University is the perfect setting for the 39th 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 waterrelated 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		Regis	tration	
9:00 - 10:20 am	Socio-Ecological Systems	Snow Hydrology		
10:20 10:30 am		Br	reak	
10:30 - 12:00 pm	Modeling Tools			Poster Set-up
12:00 - 1:00 pm		Lunch - No	rth Ballroom	
1:00 - 2:00 pm	Borland Hydraulics Lecture: Fotis Sotiropoulos Hydraulic Engineering in the Era of Big Data & Extreme-Scale Computing			
2:00 - 3:20 pm	Confucius Institute (1)	<u> </u>		Poster Session
3:20 - 3:30 pm		Br	reak	
3:30 - 5:00 pm	Confucius Institute (2)			Poster Session
6:30 – 9:30 pm	World W	Vater Day Special Scree Water & Power:	ning at Lyric Cinema, Fort (<i>A California Heist</i>	Collins

Thursday March 28

Room	LSC #382	Virginia Dale	Gray Rock	Cherokee Park
8:00 - 8:50 am		Regist	ration	
9:00 - 10:20 am	River Mechanics (1)	Hydrologic Systems (1)	Global Enviro. Change (1)	
10:20 10:30 am	Break			
10:30 - 12:00 pm	Ramirez Celebration			
12:00 - 1:00 pm	Lunch - North Ballroom			
1.00 2.00 pm	Hydrology Days Award: Bridget Scanlon Global to Local Water Resource Assessments: Implications for Management			
1:00 - 2:00 pm				gement
2:00 - 3:20 pm	River Mechanics (2)	Hydrologic Systems (2)	Global Enviro. Change (2)	
3:20 - 3:30 pm	Break			
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	Registration			
9:00 - 10:20 am	Biogeochemical		Ag. Water & Conservation (1)	Energy-Water Nexus
10:20 10:30 am	Break			
10:30 - 12:00 pm	Groundwater (1)		Ag. Water & Conservation (2)	Urban Water (1)
12:00 - 1:00 pm	Lunch - North Ballroom			
1.00 2.00 pm	Borland Hydrology Lecture: Nandita Basu			
1.00 - 2.00 pm	Signatures of Human Impact: Legacies, Climate Change and the Future of our Waters			
2:00 - 3:20 pm	Groundwater (2)		Ag. Water & Conservation (3)	Urban Water (2)
3:20 - 3:30 pm			Break	
3:30 - 5:00 pm				Urban Water (3)

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

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)

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

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

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

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

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

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

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

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

Posters

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

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

Posters

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

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

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

River Mechanics (1)Hydrologic Systems (1)Global Environmental Change (1)Chair: Pierre JulienChair: Jeffrey NeimannChair: Mazdak ArabiA Reflection on the Water Year of 2018 and Where We Go from HereG019: Rainfall Variability on a Small Watershed: Implications for Runoff PredictionG022 : A Coherent Statistical Model for Coastal Flood Frequency Analysis under Nonstationary Sea Level ConditionsPete Goble - Colorado State UniversityRob Erskine - USDA-ARSMahshid Ghanbari - Colorado State UniversityG029: Geospatial Analysis of Land Use Effects on Sediment YieldEvaluation of a machine-learning model for improved probabilistic predictions of excessive rainfallG017: Flood-Producing Storms in a Current and Future Climate Using High-Resolution Convection- Permitting Simulations in the United UniversityG058: Parametric Analysis of the Mean Annual Sediment YieldG044: Assessing impacts of soil hydrology on patterns of soil moisture and surface soil strengthG041: A Framework for Estimating Moisture Susceptibility Attributable to Natural Flooding Hazards in the
Chair: Pierre JulienChair: Jeffrey NeimannChair: Mazdak ArabiA Reflection on the Water Year of 2018 and Where We Go from Here6019: Rainfall Variability on a Small Watershed: Implications for Runoff Prediction6022 : A Coherent Statistical Model for Coastal Flood Frequency Analysis under Nonstationary Sea Level ConditionsPete Goble – Colorado State UniversityRob Erskine - USDA-ARSMahshid Ghanbari – Colorado State UniversityG029: Geospatial Analysis of Land Use Effects on Sediment YieldEvaluation of a machine-learning model for improved probabilistic predictions of excessive rainfall6017: Flood-Producing Storms in a Current and Future Climate Using High-Resolution Convection- Permitting Simulations in the United StatesWoochul Kang - Colorado State UniversityRuss Schumacher - Colorado State UniversityG014: Assessing impacts of soil hydrology on patterns of soil moisture and surface soil strengthG041: A Framework for Estimating Moisture Susceptibility Attributable to Natural Flooding Hazards in the
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moisture and surface soil strength to Natural Flooding Hazards in the
Chun-Yao Yang - Colorado State
University Matthew Pauly - Colorado State
University Oluwatobi Oke – Colorado State
University
GU15: Modeling the effects of GU53 : Modeling hydrologic GU30 : Quantitative Assessment of GU30 : Quantitative Assessment of
subsidence on sealment transport in processes associated with soli Floodplain Functionality Using an
the San Joaquin River Bypass saturation and aebris flow initiation index of integrity
System. Quring the September 2013 Storm,
Colorado State
Susan Cunum - CSO, retra rech Sujana Timilsina - Colorado Stato
Liniversity

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. <u>Water REU</u>, <u>I-WATER</u>, <u>distance programs</u>), execution and management of interdisciplinary research and training programs (e.g. <u>I-WATER</u>), and development and administration of internationally recognized academic events (e.g. <u>Hydrology Days</u>).

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.

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

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

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

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

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

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

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

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

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

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

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

Cherokee Park

Urban Water (3)

Chair: Mostafa Razzaghmanesh

<u>Community-enabled Lifecycle Analysis of Stormwater Infrastructure Costs (CLASIC) tool hydrological</u> <u>investigation, a case study of McClelland Basin</u>

Mostafa Razzaghmanesh – Colorado State University

G016: Barriers to low impact development for stormwater management and how they have changed in the past 10 years

Tyler Dell – Colorado state University

G046: Co-benefit Analysis of Infrastructure Interventions of Various Feasibility Scenarios in New York City

William Rainey – Colorado State University

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