



Mississippi 2024

WATER RESOURCES CONFERENCE

SHERATON FLOWOOD REFUGE HOTEL



MISSISSIPPI STATE
UNIVERSITY™

4:00 pm	EARLY REGISTRATION <i>Sheraton Flowood Refuge Hotel, Flowood, MS</i>
6:30 pm	WELCOME RECEPTION CASINO NIGHT EVENT <i>Sheraton Flowood Refuge Hotel, Flowood, MS</i>

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Mississippi Farm Bureau Federation

USDA

Waters Agricultural Laboratories Inc.

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DAY 2

THURSDAY | October 10

7:00 am	REGISTRATION AND BREAKFAST
8:00 am	WELCOME AND INTRODUCTIONS
	<p>Dr. Jason Barrett Interim Director, Mississippi Water Resources Research Institute, Mississippi State University</p> <p>Daniel Lang Economic Development Director of Flowood</p>
	<p>KEYNOTE ADDRESS</p> <p>SPEAKER Rachel McGuire - The Jones Center</p> <div data-bbox="308 757 609 1097" data-label="Image"> </div> <p>RACHEL MCGUIRE joined The Jones Center at Ichauway as the Outreach & Education Coordinator in the Fall of 2023. Previously, she served as a Programs and Communications Coordinator at the Auburn University Water Resources Center and as a field biologist in wetland, stream, and endangered species mitigation for Westervelt Ecological Services in Alabama, northwest Florida, and south Mississippi.</p> <p>She has a B.S. in Fisheries, Wildlife, and Conservation Biology from North Carolina State University and a M.S. in Wildlife Sciences from Auburn University. Rachel is a Type 2 Wildland Firefighter, an Alabama Certified Prescribed Burn Manager, and currently serves on the boards of Georgia Adopt-a-Stream and the Alabama Prescribed Fire Council.</p> <p>Rachel's passion for the natural world, storytelling, and bringing people together has driven her professional journey to science communications and stakeholder engagement. Her session will focus on The Jones Center at Ichauway's mission to understand, demonstrate, and promote excellence in natural resources management and conservation.</p>
9:30 am	BREAK

DAY 2

THURSDAY | October 10

9:45 am	CONCURRENT SESSION I	
	Water Quality <i>Junior Ballroom A</i>	Jamie Nettles Riparian hardwood restoration
		Lindsey Wilhaus Weaving a web of phosphorus research in the Mississippi Alluvial Plain
		Emily Gain The development of long-term mean annual total nitrogen and total phosphorus load models for Mississippi, U.S. using RSPARROW
	Water Misc. <i>Junior Ballroom B</i>	Jiayu Fang Efficient Bayesian Experimental Design for Estimating Stream and Aquifer Hydraulic Conductivity using Conservative Meshfree Mimetic Numerical Groundwater Model
		Ying Ouyang Assessment of century long groundwater exchange between cropland and forestland in Mississippi
		Dr. Nicolas Quintana Ashwell Irrigation Practices in the Mississippi Delta (Groundwater)
	Modeling and Water Management <i>Junior Ballroom C</i>	Yaixin Zhang Parallel implicit solvers for 2D numerical models on structured meshes
		Yavuz Ozeren - University of Mississippi NCHE Integrating ET datasets into watershed simulations: Insights from Goodwin Creek Experimental Watershed in Mississippi
		Andrew O'Reilly Feasibility assessment of the Groundwater Transfer and Injection Pilot project through pilot testing and regional hydrogeologic modeling, Shellmound, Mississippi
Harmful Algal Blooms (HABs) / Aquatic Ecology <i>Junior Ballroom D</i>	Wayne Carpenter Investigating the effects of algal content, dissolved oxygen, and temperature on a high-frequency acoustic attenuation system in a controlled laboratory environment (HABs)	
	Prem Parajuli Runoff analysis due to spatially variable rainfall and land use changes at a tributary level watershed (HABs)	
	Jason Taylor Denitrification potential in Lower Mississippi River floodplain lakes during summer cutoff (aquatic ecology)	
11:00 am	BREAK	

DAY 2

THURSDAY | October 10

11:15 am	CONCURRENT SESSION 2	
	Water Quality <i>Junior Ballroom A</i>	Nuttita Pophet A water quality study of the upper Pearl River Watershed in Mississippi using a web-based management system
		Benjamin Webster Drought impacts on hydrologic annual residence time and sediment nitrogen concentrations in reservoirs: Findings from sediment records
		Mark Hill Nutrient and Sediment Reductions Associated With Cover Crop - Minimum Tillage Best Management Practices
	Water Use Efficiency & Reuse <i>Junior Ballroom B</i>	Darla Huff - ADS Pipe Agriculture Water Management in the SE: Reducing water use while increasing yields through drainage and sub-surface irrigation
	Modeling and Water Management <i>Junior Ballroom C</i>	Yaoxin Zhang Integrating watershed and surface water models for simulating flow, sediment, and nutrient dynamics in channel networks
		Madhav Dhakal Water footprint of cotton and sorghum production under conservational management practices
		Wesley Bolton Improving water availability modeling capacity through the development of a data management system and automated workflow to develop geologic frameworks
	Agriculture/ Irrigation <i>Junior Ballroom D</i>	Mahesh Maskey Modeling Farm-Scale Watersheds to Study Impacts of Winter Cover Crops on Water Quantity and Quality of Farms in the Mississippi Delta using Agricultural Policy Environmental Extender
		Gary Feng Develop sustainable and resilient management practices and cropping systems to deal with waterlogging in rain season and drought in dry season
		Shane Stocks Improving Water Availability Modeling Capacity Through the Collection of Aquaculture and Irrigation Water Use Data
	12:30 pm	LUNCH

DAY 2

THURSDAY | October 10

2:15 pm	CONCURRENT SESSION 3	
	Water Quality (students) <i>Junior Ballroom A</i>	Hafez Ahmad Remote Sensing of Water Quality Parameters over Western Mississippi Sound by Using Sentinel-3 OLCI and Machine Learning
		Abduselam Mohammed Nur Integrating Autonomous Surface Vessel Data and UAS Imagery for Accurate Turbidity Estimation over the Oyster Reef in the Western Mississippi Sound: A Machine Learning Approach
		Cassia Cabellero Remote Sensing and Machine Learning for Monitoring and Mapping Total Suspended Solids in the Mississippi Sound
	Drinking Water <i>Junior Ballroom B</i>	Paul Jackson PFAS Sample Cross-contamination Caused by Sampling?
		Justin Palmer MSU Extension Service's SipSafe Program
		Paul Jackson PFAS Method Considerations for Water Professionals (Water Monitoring)
	Modeling and Water Management (students) <i>Junior Ballroom C</i>	Raihan Uddin Ahmed Rapid Flood Extent Mapping from Satellite Images in a Heavily Clouded Region
		Md Ilias Mahmud Developing machine learning-based pedotransfer function to produce high-resolution soil saturated hydraulic conductivity map
		Md Salman Bashit Optimizing UAS Bathymetric Sonar Data Collection and Interpolation Methods for Accurate Mapping of Mississippi Waterbodies
	Agriculture/ Irrigation (students) <i>Junior Ballroom D</i>	Dillon Russell Evaluating Irrigation Scheduling Methods and Telemetry Services on Soybean Production under Sharkey Clay in the Mississippi Delta
		Lane Galloway Implementation of Site-Specific Management of Nitrogen, Phosphorus and Seeding Rate to Accelerate Nutrient Reduction
Graham Oakley Life After the Flood: An Automated, Low-Water-Use Rice Production System		
3:30 pm	BREAK	

DAY 2

THURSDAY | October 10

3:45 pm	CONCURRENT SESSION 4	
	Water Quality (students) <i>Junior Ballroom A</i>	Jason Hampshire On-farm efficacy of cover crop treatments on sediment/nutrient load transport abatement and crop yields
		Mohammad Shakiul Dynamic monitoring of phycocyanin concentration in Western Mississippi Sound: Integrating Machine Learning Algorithms and Feature Selection Techniques with Uncrewed Aircraft Systems Imagery and Autonomous Surface Vessel Data
		Emre Dumlu Investigating Overtopping Failures in Earthen Levees Using Anura3D
	Water Misc. <i>Junior Ballroom B</i>	Sara Martin The Mississippi Sound Estuary Program Comprehensive Conservation & Management Plan (Coastal Issues)
		JaeYoung Ko Low NPDES compliance rates in financially challenged municipalities and adopting natural wetlands assimilation as a nature-based solution for increased compliance in Mississippi (Wastewater System Management)
		Ann Arnold WaterSTAR: A Foundation for Water Budgets and Shaping Water Policy in Alabama (Water Monitoring)
	Water Misc. (students) <i>Junior Ballroom C</i>	Md Abu Zafor Storm surge predictions for tide gauges along the Gulf of Mexico and U.S. East Coast with deep learning and explainable AI through a unified predictor domain. (Coastal Issues)
		Justin Gleason Exploring hydroecological impact on bald cypress if water is impounded in oxbows for managed aquifer recharge. (Aquatic Ecology)
	Agriculture/Irrigation (students) <i>Junior Ballroom D</i>	Morgan Hutton Modeling Farm-Scale Watersheds to Study Impacts of Winter Cover Crops on Water Quantity and Quality of Farms in the Mississippi Delta using Agricultural Policy Environmental Extender
		Md Abdus Samad Electromagnetic Induction for Rapid Estimation of Infiltration Rates
	5:30 pm	POSTER SESSION/HAPPY HOUR

POSTERS

STUDENT POSTERS

Elsie Buskes, University of Mississippi

Application of electrical resistivity tomography (ERT) and electromagnetic induction (EMI) for groundwater site investigation

Edward Heinen, University of Mississippi

Microplastic Pollution in Runoff and Standing Water from Flooded Farms in the Mississippi Delta, and Potential Remediation with Biochar

Md Nasrat Jahan, University of Mississippi

Delineation of Groundwater Stress Zones in Coastal Lowland Aquifers Using Downscaled GRACE Satellite Data

Brianna Janssen, University of South Alabama

An analysis of microbial source tracking metadata in coastal Alabama

Nyla Jones, Mississippi State University

Impacts of Biodiversity of Short-Rotation Woody Crops on Water Quality

Anush Kasaragod, University of Mississippi

Utilizing Soil Spectra and Machine Learning techniques to Identify USDA and USCS Soil Classification System

Rejane Paulino, Mississippi State University

Exploring the sun- and sky-glint effect correction of Sentinel-3A/B images over coastal waters

Rui Peng, Mississippi State University

Predict the effect of subsurface drainage systems on soil workability in wet spring across the eastern Mississippi

Rui Peng, Mississippi State University

Design subsurface drainage systems to optimize crop production in RAINFED agricultural fields across Mississippi

William Pilgram, Mississippi State University

Impact of cover crops and field conservation on water runoff quantity and quality in cotton production

Andrew Rosson, University of Mississippi

Effects of Off-Season Fall-Winter Crop Field Flooding on Nitrous Oxide Production

Ahmet Sahin, University of Mississippi

Exploring the potential incorporation of NHDPlus data in AIMS for hydrological terrain attribute extraction and modeling

Navin Tony Thalakkottukara, University of Mississippi

Improving Flood Delineation using Sentinel-1 SAR by Combining Histogram Thresholding and Digital Elevation Model in Earth Engine

PROFESSIONAL POSTERS

Damien Barrett, USDA

Investigating the tree bark microbiome of bald cypress (*Taxodium distichum*) in the Yazoo-Mississippi Delta as a function of hydrologic and water quality dynamics.

Wei Dai, USDA

The synergy of cover cropping and nutrient management improves soil health in a no-till dryland soybean cropping system in Mississippi

Jiayu Fang, University of Mississippi

Coupled Numerical Surface and Groundwater Flow Model for Complex Eroded Topography with Gullies using a Conservative, Meshfree, Mimetic Method

Megan Fleming, MDMR

Cyanotoxin Testing of Mississippi's Seafood During a Cyanobacteria Bloom

Zahra Ghaffari, University of Mississippi

Tracking groundwater changes with GRACE-FO during irrigation season

Marcus McGrath, University of Mississippi

New Capabilities of DSS-WISE Web, A Web-Based, Automated Flood Inundation Modeling Decision Support System

Jacob Ousley, Mississippi State University

Aquatic Macroinvertebrate Assessment of Restored Wetlands in the Lower Mississippi Alluvial Valley

Ishret Shuchana, University of Mississippi

Effect of evapotranspiration data sources on runoff and erosion simulation results for the Pelahatchie Bay watershed

Aqil Tariq, Mississippi State University


Spatio-temporal variation in surface water in the Mississippi using machine-learning methods with time-series remote sensing data and driving factors

Jobin Thomas, University of Mississippi

Rural Hazard Resilience Tools: Bridging Hydrology, Geospatial Technology and Citizen Science to Enhance Flood Disaster Resilience of Rural Communities in Data-Scarce Regions of the US

DAY 3

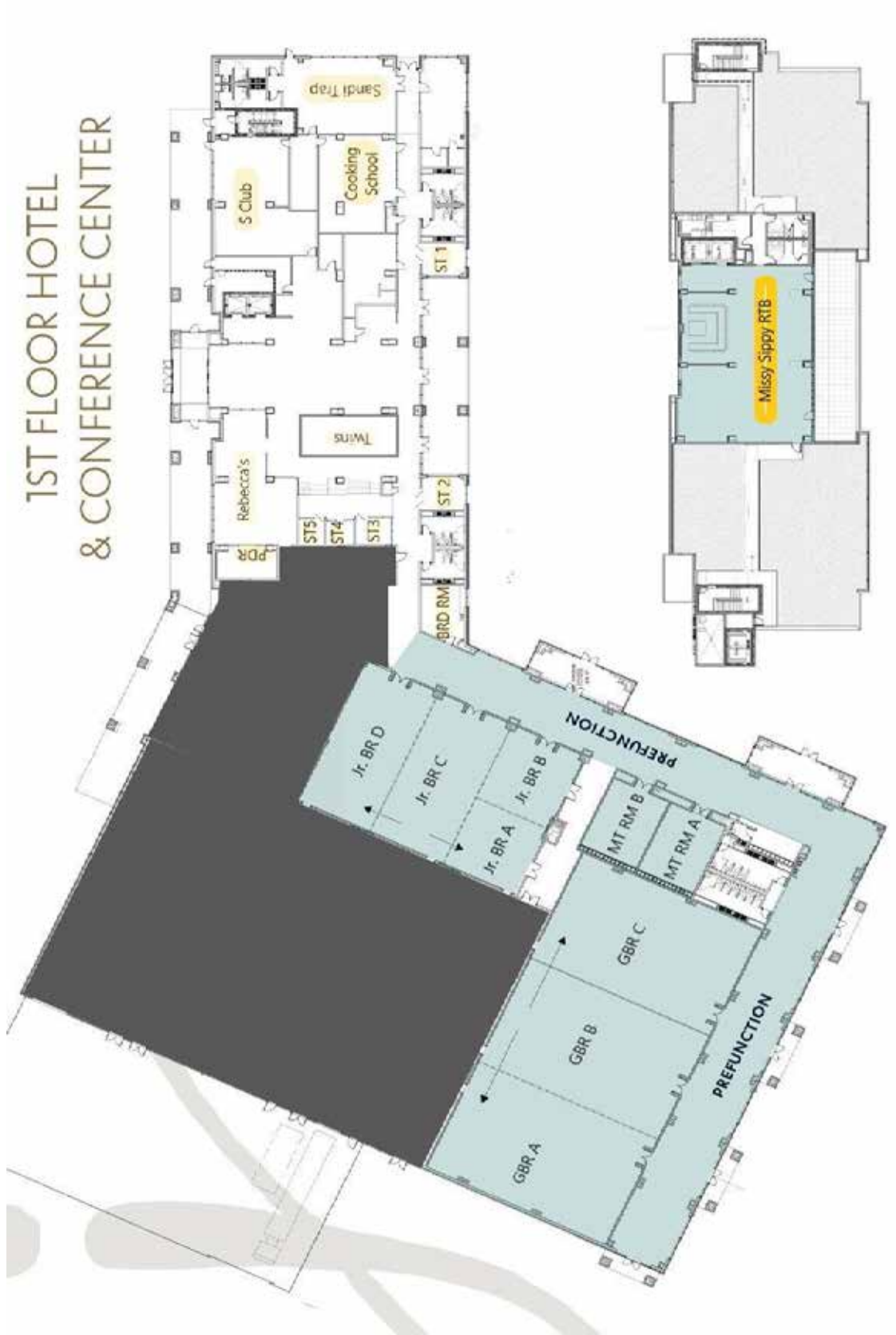
FRIDAY | October 11

7:00 am	BREAKFAST
8:00 am	<p>KEYNOTE ADDRESS</p> <p>INTRODUCTION OF KEYNOTE SPEAKER Dr. Jason Barrett <i>Interim Director, Mississippi Water Resources Research Institute, Mississippi State University</i></p> <p>SPEAKER Dr. Prasanna Gowda - USDA-ARS Southeast Area</p> <div style="display: flex; align-items: flex-start;">  <div> <p>DR. PRASANNA GOWDA has been an Associate Area Director for the USDA-ARS Southeast Area since 2019. He provides leadership and administration for the research program and scientific staff in the USDA-ARS Southeast Area. Dr. Gowda received his PhD from the Ohio State University and an MBA from the University of Minnesota. Dr. Gowda joined USDA-ARS in 2005 as an agricultural engineer at the Conservation and Production Research Laboratory, Bushland, TX, and conducted irrigation management research in the Ogallala Aquifer Region.</p> <p>In 2015, he became the Research Leader of the Forage and Livestock Production Research Unit of the USDA-ARS Grazing Lands Research Laboratory in EL Reno, Oklahoma. His past research includes forage and rangeland management, remote sensing, water resources management, and greenhouse gas emissions in the Southern Great Plains. Dr. Gowda has authored/co-authored more than 600 technical publications including 250 articles in national or international refereed journals with more than 10,000 citations. He was the lead author of the "Agriculture and Rural Communities Chapter" in the Fourth National Climate Change Assessment Report (NCA4).</p> <p>Dr. Gowda has received numerous awards including a mentoring award from the tri-societies for his effort to encourage women's participation in agricultural sciences. He is a Fellow of the American Society of Agronomy (ASA), Soil Science Society of America (SSSA), and the American Association for the Advancement of Science.</p> </div> </div>
9:15 am	BREAK

DAY 3

FRIDAY | October 11

9:30 am	CONCURRENT SESSION 5	
	<p>Water Quality <i>Junior Ballroom A</i></p>	<p>Stephen DeVilbiss Detecting Water-Quality Improvements from Nutrient Reduction Strategies in Delta Streams</p> <hr/> <p>Daniel Fleming Pesticide Runoff from Conventional, Minimum, and No-Tillage Cropping Systems: Meta-Analysis of Published North American Data</p> <hr/> <p>Beth Baker Mississippi Water Stewards: Building capacity for watershed protection through community-based monitoring</p>
	<p>Water Misc. <i>Junior Ballroom B</i></p>	<p>Ronald Bond Utilization of the Agricultural Water Inspections to Mitigate Risks on Farms</p> <hr/> <p>Amanda Roberts WaterAware- A National Weather Service Hydrology Outreach Initiative (Water Security/Risk)</p> <hr/> <p>Krzysztof Raczynski How Random are Extreme Streamflow Events? (Water Quantity)</p>
	<p>Modeling and Water Management <i>Junior Ballroom C</i></p>	<p>Yavuz Ozeren Development of the Agricultural Integrated Management System (AIMS): A web-based decision support tool for Watershed Management in the United States</p> <hr/> <p>Dalmo Vieira Advancing Modeling Tools for [Water and] Soil Conservation Planning</p> <hr/> <p>Chad Spain Phase A Bridge Recommendations Over Town Creek and Town Creek Tributary in Baldwin, Mississippi</p>
	<p>Agriculture/Irrigation <i>Junior Ballroom D</i></p>	<p>Wei Dai Boosting upland soil health by integrating soil amendments and cover cropping</p> <hr/> <p>Amanda Nelson A water quantity assessment for an established tailwater recovery system in the Mississippi Delta</p> <hr/> <p>Abdus Samad Investigating the Correlation of EM38 and Veris Apparent Electrical Conductivity to Soil Properties of Agricultural Fields</p>
10:45 am	BREAK	
11:00 am	<p>PANEL DISCUSSION: THE FUTURE OF LARGE-SCALE WATER UTILITY OPERATION AND REGULATION PANELISTS: Ted Henifin (JXN Water), Bill Moody (MSDH), Chris Thomas (Region 4 EPA)</p>	
12:15 pm	LUNCH WITH STUDENT AWARDS AND CLOSING REMARKS	





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