

Alabama WATER RESOURCES Conference

SEPTEMBER 3-5, 2025

PERDIDO BEACH RESORT | ORANGE BEACH | ALABAMA

AGENDA OVERVIEW

WED - 9/3 AWRA AL Section Symposium

11:00 AM Registration Check-in Begins

1:00 PM Welcome | Greg Guthrie | Geological Survey of Alabama | AWRA Alabama Section President

1:10 PM Brenda Ortiz | Professor & Extension Specialist | Auburn University

2:05 PM Networking Break

2:30 PM Andy Carroll | Co-Founder & CTO | Skytec

Maheshwari Neelam | Earth Scientist | NASA Marshall Space Flight Center

Jonathan Frame | Assistant Professor | The University of Alabama

3:15 PM AI in Water Resources Panel

4:00 PM Announcements/Break Before Social

4:15 PM AWRA Board Meeting

5:30 PM Flora-Bama Seafood Social

THU - 9/4

7:00 AM Breakfast Buffet (Grand Reef)

8:00 AM Welcome | Dr. Bill Batchelor & Jessie Curl | Auburn University Water Resources Center

Chris Johnson | Alabama Department of Environmental Management | 2025 ALWRC Committee Chair

Keynote Address | COL. Kelcey R. Shaw | Mobile District Commander | U.S. Army Corps of Engineers

8:45 AM Break

9:15 AM Concurrent Session 1

Coastal Issues 1 | Ag & Irrigation 1 | Water Quality 1 | Aquatic Ecology | Extension, Outreach, & Partners 1

10:45 AM Concurrent Session 2

Coastal Issues 2 | Ag & Irrigation 2 | Water Quality 2 | Drought & Climate | Extension, Outreach, & Partners 2

12:15 PM Lunch (Grand Reef)

1:40 PM Concurrent Session 3

Restoration 1 | Water Quantity | Well Water Panel | CONSERVE Group 1 | Stormwater 1

3:00 PM Break

3:30 PM Concurrent Session 4

Restoration 2 | RESTORE | Water Law & Policy Panel | CONSERVE Group 2 | Stormwater 2

5:30 PM Social & Poster Session (Grand Reef) Refreshments are courtesy of sponsors

FRI - 9/5

7:00 AM Breakfast Buffet (Grand Reef)

8:00 AM Welcome | Dr. Bill Batchelor & Jessie Curl | Auburn University Water Resources Center

Chris Johnson | Alabama Department of Environmental Management | 2025 ALWRC Committee Chair

Keynote Address | Katie Butler | Water Division Director | U.S. EPA Region 4

8:45 AM Break

9:15 AM Concurrent Session 5

Lightning Talks - Outreach & Extension 1 | Lightning Talks - Research 1 | Water Law & Policy | Water Security & Risk | GIS

10:35 AM Break

10:55 AM Concurrent Session 6

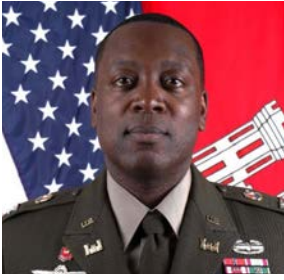
Modeling & Water Management | Lightning Talks - Research 2 | Water Monitoring | Social Sciences/Human Dimensions

12:15 PM Conference Adjourns

#2025ALWRC

CONFERENCE KEYNOTES

THURSDAY



COL. KELCEY R. SHAW

MOBILE DISTRICT COMMANDER, U.S. ARMY CORPS OF ENGINEERS

COL Shaw is from Saint Louis, Missouri and was commissioned as an Engineer Officer in 2001. As a junior officer, he served as an Airborne Platoon Leader in 30th Engineer Battalion, 20th Engineer Brigade (Combat)(Airborne), Fort Bragg, North Carolina; Executive Officer, Headquarters and Headquarters Company, 20th Engineer Brigade; Assistant Operations Officer, 30th Engineer Battalion and deployed to Afghanistan. COL Shaw later served as the Assistant Brigade Engineer, 2nd Brigade Combat Team, 1st Infantry Division, Schweinfurt, Germany; Deputy Team Chief, 2nd Battalion, 5th Brigade, 2nd Iraqi Federal Police Division, Baghdad, Iraq; Headquarters and Headquarters Company Commander, 40th Engineer Battalion and Assistant Brigade Plans Officer, 2nd Brigade Combat Team, 1st Armored Division, Baumholder, Germany, completing two deployments to Iraq; then as Senior Small Group Leader/Instructor/Writer for Engineer Captains Career Course, Maneuver Support Center of Excellence, Fort Leonard Wood, Missouri.

Following completion of the Air Command and Staff College, COL Shaw served as Executive Officer to the Deputy Commanding General and Deputy Chief of Engineers, Headquarters, U.S. Army Corps of Engineers, Washington, D.C. He then served as Operations Officer, later Executive Officer, for 249th Engineer Battalion (Prime Power), Fort Belvoir, Virginia. He subsequently served as an Interagency Fellow assigned to the U.S. Department of State, Washington, D.C. Following his Fellowship, COL Shaw served as Chief of Engineer Plans, U.S. Central Command, MacDill Air Force Base, Florida. COL Shaw commanded 27th Engineer Battalion (Airborne), 20th Engineer Brigade, XVIII Airborne Corps, Fort Bragg, North Carolina and deployed to Kuwait. Following battalion command, COL Shaw served in the Immediate Office of the Secretary of the Army as a Military Assistant to the Under Secretary of the Army.

COL Shaw's awards and decorations include the Bronze Star Medal (with oak leaf cluster), Defense Meritorious Service Medal, Meritorious Service Medal (with four oak leaf clusters), Army Commendation Medal (with two oak leaf clusters), Joint Service Achievement Medal, Joint Meritorious Unit Award (with three oak leaf clusters), Meritorious Unit Citation, Sapper Tab, Combat Action Badge, Army Staff Badge, Master Parachutist Badge, German Jump Wings, and Chilean Jump Wings. He is the recipient of the U.S. Army Engineer Association's Bronze Order of the de Fleury Medal. COL Shaw is a graduate of the Marine Corps War College, the Joint and Combined Warfighting School, and the United States Air Force Command and Staff College. He holds a Bachelor of Science in Aerospace Engineering from Tuskegee University, a Master of Science in Engineering Management from the University of Missouri, a Master of Operational Art and Science from the U.S. Air Force Command and Staff College, and a Master of Strategic Studies from Marine Corps War College. COL Shaw is a licensed Professional Engineer (PE) and Certified Project Management Professional (PMP). COL Shaw is married to Mrs. Erica Shaw, an Army Civilian and U.S. Air Force Veteran and has two children, twin sons: Emerson and Anderson.

FRIDAY



KATIE BUTLER

WATER DIVISION DIRECTOR, U.S. EPA REGION 4

Katie serves as the EPA Region 4 Water Director where she leads a team of engineers, scientists, public policy experts, and communicators to help improve water quality in the Southeastern U.S.

She has spent her career studying what makes good environmental programs work and how to make all environmental work more successful. Over the course of her career, Katie has evaluated more than 50 environmental programs and strategies, analyzing scientific data use, utility, and needs for private companies, environmental NGOs, and the federal government, including the Environmental Protection Agency, the US Peace Corps, and the US Joint Global Change Research Institute. Her work has led to improved protections for people from pollution through better strategies, increases in U.S. Congressional funding for federal environmental programs, and revisions to U.S. federal laws.

Katie holds a Master of Science in Environmental Engineering Sciences and a Master of Arts in Geographic Information Sciences and has conducted academic research ranging from the ancient (paleolimnology) to the futuristic (satellite remote sensing). Katie is also a Certified Sustainability Excellence Associate (ISSP), an FAA Certified Part 107 pilot, and an amateur musician.

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EXHIBITORS

AL Department of Environmental Management
Alabama Rural Water Association
Alabama Water Institute
Auburn University Water Resources Center
Choccolocco Creek Watershed/Calhoun SWCD
C.C. Lynch & Associates

Geosyntec
Mobile Bay National Estuary Program
Moffatt & Nichol
National Poultry Technology Center at Auburn University
Solmax
Stantec Consulting Services

The Jones Center at Ichauway
The University of Alabama in Huntsville
Trutta Environmental Solutions
Volkert, Inc.
Xylem

Alabama Section of the American Water Resources Association **SYMPOSIUM**

WEDNESDAY | SEPT. 3 | 1:00PM - 4:00PM

*Artificial Intelligence in Water Resources:
From Research to Real-World Use*

11:00 AM	Registration Desk Opens (Lobby)
1:00 PM	Welcome & Introductions Greg Guthrie AWRA Alabama Section President
1:10 PM	The Role of AI in Strengthening Agriculture and Natural Resources Brenda Ortiz Professor & Extension Specialist Auburn University
2:05 PM	Networking Break
2:30 PM	Applying GeoAI Techniques to Update Wetlands Mapping & Monitoring: A Tennessee Case Study Andy Carroll Co-Founder & CTO Skytec
2:45 PM	Building Hydroclimate and Watershed Resilience with AI Maheshwari Neelam Earth Scientist NASA Marshall Space Flight Center
3:00 PM	Water Resources for Expanding AI Infrastructure Jonathan Frame Assistant Professor The University of Alabama
3:15 PM	AI in Water Resources Panel & Audience Discussion
4:00 PM	Announcements
4:15 PM	AWRA Board Meeting (all new members are welcome!)
5:30 PM	Social & Dinner (Flora-Bama - Casual Beach Attire)

ALABAMA SECTION OF THE AMERICAN WATER RESOURCES ASSOCIATION

The Alabama Section of the American Water Resources Association (AWRA), founded in 1987, is a regional branch of a national organization dedicated to advancing water resources knowledge and collaboration. It provides a multidisciplinary forum for professionals in academia, government, and industry to share ideas and lead in water research and management. The Section promotes innovation in research, technology, policy, and planning, and connects agencies with qualified experts to support effective water resource protection and use.

2025 OFFICERS

Past President – Bennett Bearden | Geological Survey of Alabama
President – Greg Guthrie | Geological Survey of Alabama
Incoming President – Shannon Weaver | USDA Natural Resources
Conservation Service

Treasurer – Lee Ellenburg | The University of Alabama in Huntsville
Secretary – Ann Ojeda | Auburn University
Membership – Brett Connell | Trutta Environmental Solutions
Advisors – Patrick O'Neil and Eve Brantley

SYMPOSIUM SPEAKERS

Keynote Speaker



Dr. Brenda Ortiz is a Full Professor in Auburn University's Crop, Soil, and Environmental Sciences Department with a PhD in Biological and Agricultural Engineering from the University of Georgia. She is internationally recognized for precision agriculture research, focusing on site-specific management, precision irrigation, and climate impacts on Southeast crops. A recent Fulbright Fellow (December 2024), her group uses AI for crop yield prediction and irrigation scheduling. Dr. Ortiz has authored 47 peer-reviewed articles, received federal USDA-NIFA funding, collaborated with universities across six countries, and advised governmental agencies and the FAO.

Panelists



Andy Carroll is Co-Founder and CTO at Skytec, a remote sensing and geospatial technology company specializing in satellite monitoring and spatial data analytics for natural resource management. Previously, he managed the Interdisciplinary Geospatial Technology Lab at the University of Tennessee at Chattanooga and served as Project Manager at the Tennessee Department of Environment and Conservation. A licensed Professional Geologist and certified GIS Professional, Andy currently serves on the Board of Trustees for the Lyndhurst Foundation and the Appalachian Carbon Exchange.



Dr. Maheshwari Neelam is an Earth scientist specializing in climate science, water resources, and societal resilience. She holds a Ph.D. in Water Resources Engineering from Texas A&M University and focuses on climate extremes and their impacts on air quality, water security, agriculture, and public health. Dr. Neelam integrates climate science, remote sensing, and AI to provide actionable insights for decision-makers. She translates scientific findings into practical tools, collaborating with stakeholders to develop climate resilience solutions including early warning systems and sustainable water management. Her current work centers on AI-driven climate modeling to anticipate extreme events and support adaptation and mitigation strategies.



Dr. Jonathan Frame is Assistant Professor in the Department of Geological Sciences at the University of Alabama. He holds a Faculty Fellowship with the Alabama Water Institute and is an affiliate researcher at the National Water Center. Prior to academia, Jonathan worked as a civil engineer in California designing water resources infrastructure. His research interests span all components of the hydrosphere and fluid dynamics of geophysical systems.



SESSION QUICK REFERENCE

THURSDAY

BREAKFAST BUFFET IN GRAND REEF 7:00 - 7:45am

	BALLROOM C	BALLROOM D	BALLROOM E	BALLROOM F	CORAL
1	COASTAL ISSUES 1	AG & IRRIGATION 1	WATER QUALITY 1	AQUATIC ECOLOGY	EXTENSION, OUTREACH & PARTNERS 1
2	COASTAL ISSUES 2	AG & IRRIGATION 2	WATER QUALITY 2	DROUGHT & CLIMATE	EXTENSION, OUTREACH & PARTNERS 2

LUNCH IN GRAND REEF 12:15 - 1:30pm

3	RESTORATION 1	WATER QUANTITY	WELL WATER PANEL	CONSERVE 1	STORMWATER 1
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BREAK 3:00 - 3:30pm

4	RESTORATION 2	RESTORE ACT FUNDING	WATER LAW & POLICY PANEL	CONSERVE 2	STORMWATER 2
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**POSTER SESSION & SOCIAL
IN GRAND REEF 5:30 - 7:30pm**

FRIDAY

BREAKFAST BUFFET IN GRAND REEF 7:00 - 7:45am

	BALLROOM C	BALLROOM D	BALLROOM E	BALLROOM F	CORAL
5	LIGHTNING TALKS- OUTREACH & EXTENSION	LIGHTNING TALKS - RESEARCH 1	WATER LAW & POLICY	WATER SECURITY & RISK	GIS

BREAK 10:35 - 10:55am

6	MODELING & WATER MANAGEMENT	LIGHTNING TALKS - RESEARCH 2	WATER MONITORING	SOCIAL SCIENCES & HUMAN DIMENSIONS
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ADJOURN

www.aub.ie/alwrc

REMINDERS

ALL ATTENDEES:

Check the back of your nametag for:

- **QR Code** for the ALWRC LinkTree (see below)
- **Pink dot** = paid for Wed. night's Flora-Bama Social; number in dot = number of guest tickets purchased
- **Yellow dot** = poster judge
- **Green dot** = standby judge
- **Red ticket** = Friday raffle for a 2-day stay at the PBR following the Keynote Thursday

MODERATORS:

Please pick up your moderator packet at the Registration Desk; arrive to your Session room 5-10 minutes early.

ORAL PRESENTERS:

Speakers are responsible for ensuring their presentations are submitted prior to their scheduled sessions. Please review the updated Speaker Ready Room hours and visit the room if you have any questions or concerns regarding your upload

LIGHTNING TALK PRESENTERS:

Please report to your Session Room 5-10 minutes early to check in with your Moderator.

POSTER PRESENTERS:

You are responsible for setting up your poster in Grand Reef on your assigned easel number between 4:45 - 5:30pm on Thursday.

POSTER JUDGES:

Meet at the Registration Desk on Thursday after Session 4 concludes (~5:00pm) for your judge packet and instructions.



SCAN THE QR CODE

Digital Program
ALWRC Webpage
Abstract Index
PollEverywhere
PhotoStream
Participant List

SPEAKER READY ROOM HOURS (LOCATED IN AZURE)

WEDNESDAY 9/3:

11:00 AM - 1:00 PM
4:00 PM - 5:00 PM

THURSDAY 9/4:

7:30 AM - 8:00 AM
1:00 PM - 1:30 PM
3:00 PM - 3:30 PM

FRIDAY 9/5:

7:30 AM - 8:00 AM
10:35 AM - 10:55 AM

#2025ALWRC

USE THE CONFERENCE HASHTAG ON INSTAGRAM!

Share your conference photos!

Tag the AU Water Resources Center @auburnwater to be reposted

SESSION 1 THURSDAY | SEPT. 4 | 9:15AM - 10:35AM

COASTAL ISSUES 1

MODERATOR: KENNETH ODOM, KLEINSCHMIDT

BALLROOM C

1. **Alabama Floodplain Assessment Project: An Assessment of Flood Risk at State-Owned Properties.** Carl Ferraro, Stantec Consulting Services Inc. (#10)
2. **A Shore Thing: Planning a Resilient Future for Mobile County's Coastline.** Christian Miller, Mobile Bay National Estuary Program. (#33)
3. **Co-Producing Resilience: Rethinking Frameworks for Equitable Climate Planning.** Emma Lowe*, The University of Alabama. (#59)
4. **Modeling Submarine Groundwater Discharge and Contaminant Pathways in a Rapidly Developing Coastal Region: A Case Study of Baldwin County, Alabama.** Maryam Daneshvar*, The University of Alabama. (#162)

AG & IRRIGATION 1

MODERATOR: SHANNON WEAVER, USDA NATURAL RESOURCES CONSERVATION SERVICE (RETIRED)

BALLROOM D

1. **Advancing Irrigation and Watershed Planning in Alabama: Updates from Ongoing Projects.** Thorsten Knappenberger, Auburn University. (#60)
2. **The Relative Profitability of Adopting Irrigation on Alabama Corn Farms: Preliminary Results from an Economic Simulation.** Adam Rabinowitz, Auburn University. (#115)
3. **Coupled Modeling of Diverse Adaptation Behaviors and Land-Atmosphere Interactions to Identify Transformative Adaptation Pathways in Agri-Food systems.** Nicholas Magliocca, The University of Alabama. (#62)
4. **Influence of Biochar Types on Poultry Litter Based Phosphorus and Nitrate Immobilization in Saturated Soils.** Atiqur Rahman*, Auburn University. (#174)

WATER QUALITY 1

MODERATOR: KELLY KIRVEN, KLEINSCHMIDT

BALLROOM E

1. **Fish Sludge to Energy, Feed, and Fertilizer.** Qichen Wang, Auburn University. (#14)
2. **Mechanistic Insights into Phosphate Removal by Hybrid Anion Exchange Resins: Advancing Sustainable Nutrient Recovery from Wastewater.** Neha Sharma, Auburn University. (#57)
3. **Efficacy of Biochar Variants and Application Rates in Phosphorus Runoff Mitigation Under Low and High Simulated Rainfall Events.** Temitope Popoola*, Auburn University. (#117)
4. **The Status of Phosphorus in Alabama Soil: What's in the Horizon?** Rishi Prasad, Auburn University. (#155)

AQUATIC ECOLOGY

MODERATOR: TODD FOBIAN, AL DEPT. OF CONSERVATION & NATURAL RESOURCES

BALLROOM F

1. **Structural Control of Groundwater/Surface Water Interactions and Imperiled Species Habitats, Alabama Foreland Fold and Thrust Belt.** Gregory Guthrie, Geological Survey of Alabama. (#16)
2. **Aquaculture Education: A Three-Pronged Approach.** David Cline, Alabama Cooperative Extension System, Auburn University. (#58)
3. **Understanding how Different Gulf Killifish (*Fundulus grandis*) Populations Respond to Osmotic Stress.** Antrelle Clark*, Auburn University. (#97)
4. **Understanding Phenology of Invasive Aquatic Plants to Inform Management Initiatives in the United States.** Gray Turnage, Mississippi State University. (#146)

EXTENSION, OUTREACH & PARTNERS 1

MODERATOR: MONA DOMINGUEZ, AUBURN UNIVERSITY WATER RESOURCES CENTER

CORAL

1. **Coastal Commitment: Building a Stronger Volunteer Network for Alabama's Waterways.** Mona Dominguez, Auburn University Water Resources Center. (#107)
2. **The Water-R2O NSF Research Traineeship: Leveraging Experiential Learning to Translate Operational Hydrology Research into Practice.** Abby Davies, The University of Alabama. (#125)
3. **Enhancing Estuarine Education and Outreach Through Immersive Story Mapping: A Case Study of Weeks Bay National Estuarine Research Reserve.** Dixie Cartwright, Mississippi State University, Geosystems Research Institute. (#127)
4. **Integrating Community Revitalization and Watershed Health: Leveraging Clean Water Act Section 319(h) Funding to Mitigate Urban Nonpoint Source Pollution in Athens, Alabama.** Cody Watson, Alabama Department of Environmental Management. (#137)

*STUDENT PRESENTER

The number after each presentation refers to the Abstract Index found at www.aub.ie/alwrc

SESSION 2 THURSDAY | SEPT. 4 | 10:45AM - 12:05PM

COASTAL ISSUES 2

MODERATOR: MATT WOMBLE, ALABAMA WATER INSTITUTE

BALLROOM C

1. **Forest Ecology and Productivity of the Lower Mobile Tensaw River Delta.** Andrew Balder*, Auburn University. (#95)
2. **Adapting GSSHA for Coastal Flood Modeling: Capturing Tidal Impacts on Roadway Vulnerability.** Luiz Morgado*, Auburn University. (#100)
3. **Measured Retreat - Using a Multi-Proxy Approach to Contextualize Long-Term Back-Barrier Erosion and Eco-Geomorphic Response to Sea-Level Rise, Storms and Anthropogenic Influence in Coastal Alabama.** Emily Elliott & Lexie Thornton, The University of Alabama. (#160)

AG & IRRIGATION 2

MODERATOR: BILL BATCHELOR, AUBURN UNIVERSITY WATER RESOURCES CENTER

BALLROOM D

1. **Nutrient Dynamics in Broiler Litter: Impact of Storage Methods and Environmental Implications.** Shruthi Koneti*, Auburn University. (#18)
2. **Does Land Tenure Affect Adoption of Cover Crops and No-till?** Emmanuel Okonkwo*, Auburn University. (#69)
3. **Manure Application in Conventional Tillage.** Chhabi Raj*, Auburn University. (#114)
4. **Assessing Irrigated Acreage Response to Drought Severity and Water Availability in Alabama.** Tej Gautam, Tuskegee University. (#175)

WATER QUALITY 2

MODERATOR: CHRIS JOHNSON, AL DEPT. OF ENVIRONMENTAL MANAGEMENT

BALLROOM E

1. **The State of Alabama's Estuaries and Coast: An Update on the Health of Our Coastal Ecosystems and Communities.** Blair Morrison, Mobile Bay National Estuary Program. (#56)
2. **Addressing Microbiological Impediments to Oyster Growing Through Cooperative Monitoring and Transparent Communication.** Melissa Partyka, Auburn University. (#143)
3. **Understanding Basic Wastewater Math and Permit Parameters.** Jason Barrett, Mississippi Water Resources Research Institute. (#171)
4. **Co-Transport and Retention of Arsenic and Pine Wood Biochar in Saturated Porous Media: Fate and Interaction Mechanisms Under Solution Chemistry and Practical Feasibility.** Rakesh Kumar, Auburn University. (#173)

DROUGHT & CLIMATE

MODERATOR: LEE ELLENBURG, THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

BALLROOM F

1. **ACFS Sponsored Drought Exercises.** Bradford Moore, Apalachicola, Chattahoochee, Flint Stakeholders. (#35)
2. **Lessons Learned from the 2023 Southeast Fall Drought.** Brianne Minton, Alabama Office of the State Climatologist. (#53)
3. **Predicting Subterranean Drought and Ecological Risk using Hydrologic Indicators.** Shaelyn Deal*, The University of Alabama in Huntsville. (#67)
4. **A Southeastern US Regional Flash Drought Review and Agricultural Impact Assessment.** Lee Ellenburg, The University of Alabama in Huntsville. (#168)

EXTENSION, OUTREACH & PARTNERS 2

MODERATOR: LYNN SISK, JACOBS

CORAL

1. **How Are Oyster Farmers and Harvesters Responding to Climate Change?** Christopher Anderson, Auburn University. (#73)
2. **A Case Study of a Commercial Broiler Farm in Cullman County, Alabama Utilizing a Rainwater Harvesting System to Offset Rising Water Cost.** Carson Edge, Auburn University. (#74)
3. **Empowering Women in Natural Resources: Insights from the Bennett Trust Land Stewardship Program.** Leanne Wiley, Texas A&M AgriLife Extension. (#76)
4. **The Waters We Share – Charting Coastal Alabama's Next Comprehensive Conservation Management Plan.** Jason Kudulis, Mobile Bay National Estuary Program. (#176)

LUNCH IN GRAND REEF: 12:15 - 1:30 PM

SESSION 3 THURSDAY | SEPT. 4 | 1:40PM - 3:00PM

RESTORATION 1

MODERATOR: LISA HARRIS, CHOCTAWHATCHEE, PEA & YELLOW RIVERS WMA

BALLROOM C

1. **Elba Hydroelectric Dam Removal Project on the Pea River: Biomonitoring and Outreach Efforts.** Brian Helms, Troy University. (#118)
2. **An Overview of FEMA Flood Risk Products Available for Communities in Alabama.** Kelley Rich, WSP USA Inc. (#121)
3. **Hydrologic and Hydraulic Modeling of a Robust Gully System to Support a Blend of Natural and Traditional Stabilization.** Benhur Asefaw & Katie Fox, Geosyntec Consulting. (#138)
4. **It's All About the Roots.** Perry Oakes, Alabama Soil and Water Conservation Committee. (#183)

WATER QUANTITY

MODERATOR: ROY McAULEY, ALABAMA WATER RESOURCES COMMISSION

BALLROOM D

1. **A Comparison of Rain Gauges and Soil Sensors at the South Alabama Mesonet.** Sytske Kimball, The University of South Alabama. (#19)
2. **Quantifying the Contributions of Stochastic and Deterministic Factors in Streamflow Dynamics of United States Rivers.** Krzysztof Raczynski, Mississippi State University. (#26)
3. **Streamflow as a Stressor: Disentangling Hydrology and Water Quality Impacts to Characterize Flow-Ecology Relationships Across Two Southeastern Landscapes.** Joshua Hubbell, Geological Survey of Alabama. (#29)
4. **Water Use Trends, How Water Use Has Changed in Alabama Since 2010.** Michael Harper, ADECA Office of Water Resources. (#38)

WELL WATER PANEL

MODERATOR: ANN OJEDA, AUBURN UNIVERSITY

BALLROOM E

Power in Partnerships: Linking Research, Extension, and Communities to Support Well Water Users (#177).

- Jessica Curl, Auburn University Water Resources Center
- Erin Ling, Virginia Tech & Virginia Cooperative Extension
- Joel Pigg, Texas A&M AgriLife Extension
- Jason Barrett, Mississippi Water Resources Research Institute

CONSERVE GROUP 1

MODERATOR: MICHAEL FEDOROFF, THE UNIVERSITY OF ALABAMA CONSERVE

BALLROOM F

1. **Rooted in Culture and Code: Advancing Rivercane Restoration Through Genomic Research and Tribal Leadership.** Michael Fedoroff, The University of Alabama CONSERVE. (#61)
2. **From Alabama to Oklahoma: Bridging Culture and Environmental Science Through Mixed Method Storytelling.** Ekaterina Menkina*, Alabama Water Institute. (#65)
3. **What We Know about Sea-Level Rise and Storms in Alabama from the Geologic Record.** Rebecca Totten, The University of Alabama. (#142)
4. **Real-Time Microplastic Detection: Developing a Low-Cost, Portable Sensor for Water Monitoring in Coastal Alabama and Mississippi.** Anthony Vedral, The University of Alabama CONSERVE. (#179)

STORMWATER 1

MODERATOR: ASHLEY McVICAR, ALABAMA POWER COMPANY

CORAL

1. **Evaluation of Floating Surface Skimmer Flowrates Through Experimental Testing.** Caroline Harrison*, Auburn University. (#40)
2. **Removal and Recovery of Phosphorus Using Modified Geotextiles.** Aidan Bosman*, Auburn University. (#41)
3. **Improving Rock Check Dam Installations Through Full-Scale Testing.** Brian Roche*, Auburn University. (#101)
4. **Phosphorus Removal and Recovery from Stormwater via Iron-Biochar Augmented Geotextiles.** Jean Pierre le Roux*, The University of South Alabama. (#108)

*STUDENT PRESENTER

BREAK: 3-3:30 PM

SESSION 4 THURSDAY | SEPT. 4 | 3:30PM - 4:50PM



RESTORATION 2

MODERATOR: MICHAEL HARPER, ADECA OFFICE OF WATER RESOURCES

BALLROOM C

1. **:Has No Dam Purpose! Making the Case for Ecological Restoration.** Steve Newton, TTL, Inc. (#4)
2. **Freshwater Restoration Across Alabama's Rural Landscape-Bolstering Resiliency in a Changing Climate.** Alana Reynolds, The Nature Conservancy. (#30)
3. **Rebuilding Alabama's Mississippi Sound One Project at a Time.** Mary Kate Brown, The Nature Conservancy. (#47)
4. **Lower Alabama River Fish Passage: Policy and Implementation.** Jason Throneberry, The Nature Conservancy. (#109)

RESTORE ACT FUNDED PROJECTS

MODERATOR: ANN OJEDA, AUBURN UNIVERSITY

BALLROOM D

1. **Integrated Assessments of Social, Infrastructural, and Environmental Vulnerabilities in Mobile Bay, Alabama.** Wanyun Shao, The University of Alabama. (#86)
2. **Quantifying Wetland Changes in the MTA Delta Using Deep Learning and Remote Sensing Approaches.** MD Mozahidul Islam*, Auburn University. (#87)
3. **Assessing Infrastructure Vulnerability and Evacuation Routes to Flooding Using Spatial Database Management: A Case Study of Mobile City, Alabama.** MD Munjurul Haque*, The University of Alabama. (#90)
4. **Functional Assessment and Mapping of Headwater Slope Wetlands in Coastal Alabama.** Christopher Anderson, Auburn University. (#157)

WATER LAW & POLICY PANEL

MODERATOR: NICHOLAS MAGLIOCCA, THE UNIVERSITY OF ALABAMA

BALLROOM E

Policy Needs for the Future of Alabama's Agriculture-Water Nexus II. (#68)

- Bennett Bearden, Geological Survey of Alabama
- Lee Ellenburg, The University of Alabama in Huntsville
- Heather Elliott, The University of Alabama Law School
- Cindy Lowry, Alabama Rivers Alliance
- Darrell McGuire, Deep South Food Alliance
- Marie McGruder, McGruder Farms
- Preston Roberts, Alabama Farmers Federation

CONSERVE GROUP 2

MODERATOR: MICHAEL FEDOROFF, THE UNIVERSITY OF ALABAMA CONSERVE

BALLROOM F

1. **'We Only Hear Because You Know Somebody Who Knows About it': Role of Social Networks in Irrigation Adoption in Alabama.** Ruchie Pathak*, The University of Alabama. (#64)
2. **Spatial Patterns of Power and Water in Alabama's Food System.** Sydney Turpin*, The University of Alabama. (#78)
3. **Exploring the Potential of Transdisciplinary Research for Community-Oriented Conservation: The CONSERVE Future Ecologies Research Portfolio.** Michael McKain, The University of Alabama. (#111)
4. **Unraveling the Diet of the Dominant Shredding Caddisfly in Southeast Watersheds Using Shotgun Metagenomics: A Better Approach to Understanding Stream Food-Web Dynamics.** Kyle Breault*, The University of Alabama. (#178)

STORMWATER 2

MODERATOR: LYNN SISK, JACOBS

CORAL

1. **Engineered Media Removal of Nutrients.** Grace Kerr*, Auburn University. (#32)
2. **Improving Silt Traps: Full-Scale Performance Evaluation Under Regional Conditions.** Lillian Krueger*, Auburn University. (#72)
3. **Performance Implications of Erosion Controls on Different Soil Types.** Wesley Donald, Auburn University. (#79)
4. **Assessing Private Well Vulnerability to Flood Risk in Mobile and Baldwin Counties Using Remote Sensing and Climate Projections.** Abraham Alvarez*, Auburn University. (#159)

*STUDENT PRESENTER

POSTER SESSION & SOCIAL

THURSDAY | SEPT. 4 | 5:30PM-7:30PM | GRAND REEF

REFRESHMENTS ARE COURTESY OF 2025 ALWRC SPONSORS

STUDENT POSTERS

- 1. Assessing the Pollution Potential of Onsite Wastewater Treatment Systems in Coastal Mississippi and Alabama Counties Under Sea Level Rise.** Katie Bendall, Auburn University. (#129)
- 2. Long-Term Analysis Reveals Hidden Patterns in Drought Variability and Characteristics.** Ehsan Foroumandi, The University of Alabama. (#104)
- 3. Groundwater Drought Monitoring Across the CONUS: Insights from Data Assimilation and Land Surface Modeling.** Parnian Ghaneei, The University of Alabama. (#103)
- 4. Connecting Streambed Groundwater Quality to Failing Septic Systems in Coastal Alabama.** Megan Jones, Auburn University. (#131)
- 5. Modeling Spatiotemporal Salinity Dynamics Within the Mobile-Tensaw River Delta Using Machine Learning.** Thomas Kavoo, Auburn University. (#92)
- 6. Hydrodynamic Modeling of Wind-Induced Flood Risk in a Critical Coastal Transportation Link.** Ali Maleki, Auburn University. (#99)
- 7. Developing Time Integrated Technology to Detect Cryptosporidium in Waterways.** Sean McKinney, Auburn University. (#152)
- 8. Coastal Flood Risk Assessment of Wastewater Treatment Facilities in the Great Egg Harbor Watershed.** Rumman Mowla Chowdhury, Rowan University. (#134)
- 9. Detection of Shoreline Changes in Mobile Bay.** Fatema Tuz Johra Nourin, The University of Alabama. (#94)
- 10. Water Quality Assessment in Moore's Mill Creek Watershed: A Comparative Modeling Approach.** Ashmita Poudel, Auburn University. (#31)
- 11. Water and Wastewater Based Planning for Workforce and Economic Development in Rural Alabama Black Belt.** Barsha Pudasaini, The University of South Alabama. (#55)
- 12. Understanding the Nutrient Dynamics of Reservoirs and their Implications for Downstream Water Quality Across the Southeast United States.** Mumtahina Rahnuma, Auburn University. (#82)
- 13. Evaluating the Impact of Biochar Rates for Reducing Greenhouse Gas Emissions in Cotton Fertilized with Manure and Commercial Fertilizer.** Maryam Saeed, Auburn University. (#110).
- 14. Global Sensitivity Analysis of Hydrodynamic Urban Flood Inundation Mapping and Modeling in a Coastal River Basin in the South United States.** Reza Saleh Alipour, The University of Alabama. (#42)
- 15. Simulating Velocity Over a Large Lock and Dam Using 3D Hydrodynamic Modeling.** Indronil Sarkar, Auburn University. (#98)
- 16. Improving Drought and Soil Moisture Monitoring in Alabama.** Dylan Schmidt, The University of Alabama in Huntsville. (#75)
- 17. Stormwater Recharged: Innovating with Electrical Flocculation.** Grace Kerr, Auburn University. (#126)
- 18. Explainable Deep Learning Framework for Assessing Terrestrial Hydroclimate Impacts on Coastal River Discharge.** Ajeeta Shrestha, Auburn University. (#24)
- 19. Dissolved Organic Matter Affects PFAS Fate in the Soil-Water Continuum.** Soleil Sklencar, Auburn University. (#154)
- 20. Optimizing Microplastic Removal Using Carbon-Based Technology.** Jianqiao Song, The University of South Alabama. (#15)
- 21. Use of Bioindicators to Characterize Blackwater Wetland Reference Sites in Alabama.** Barrie Sullivan, Troy University. (#128)
- 22. Sediment Dynamics and Coastal Resilience: Investigating Geomorphic Changes on Dauphin Island, AL from 2015-2023.** Lauren Talkington, Auburn University. (#91)
- 23. Flushing Down Stream – Assessing the Association Between Fecal Load from Failing Septic Systems and Straight Pipes into Local Waterways and Precipitation Driven Runoff in the Alabama Black Belt.** Harley Tandy, The University of Alabama. (#133)
- 24. Similar Habitats, Different Watersheds: Identifying Geomorphological Commonalities in Endangered Shoal Lily (*Hymenocallis coronaria*) Habitats.** Sarah Tash, Auburn University. (#44)

POSTER SESSION & SOCIAL

THURSDAY | SEPT. 4 | 5:30PM-7:30PM | GRAND REEF

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STUDENT POSTERS

- 25. **Are Cover Crops a Potential Risk to Water Quality?** Gibi Thomas, Auburn University. (#151)
- 26. **Decoding Problematic Wetland Soils of the Alabama Blackland Prairie Region.** Jade Ulbrich, Auburn University. (#37)

WATER PROFESSIONAL POSTERS

- 27. **Characterization and Quantification of Organic Matter and Pyrogenic Carbon in Coastal Forest Soils Subjected to Fire Prescription and Wind Damage.** Sushant Bhandari, Auburn University. (#156)
- 28. **NEON in Alabama's Aquatic Ecosystems: An Introduction to NEON and Demonstration of Data Applications.** Nicole Conner, National Ecological Observatory Network (Battelle). (#39)
- 29. **Perfluorooctane Sulfonic Acid (PFOS) Removal by Delaminated Titanium Carbide MXene: Impact of MXene Surface Chemistry on Adsorption Mechanisms and Removal Efficiency.** Milad Esfahani, The University of Alabama. (#181)
- 30. **An Interactive Geospatial Portal for Climate and Natural Resource Data in Alabama.** Krel Haynes, The University of Alabama in Huntsville. (#54)
- 31. **Spatial Optimization for Wastewater Infrastructure Planning in Lowndes County, Alabama.** Mallory Jordan, Auburn University. (#34)
- 32. **Opportunities to Integrate Satellite Remote Sensing into Turbidity Monitoring in Alabama.** Meryl Kruskopf & Kelsey Herndon, The University of Alabama in Huntsville. (#145)
- 33. **Mapping Ecological Zones Using Terrain-Derived Environmental Models Across the Cumberland Plateau and Cumberland Mountains.** M'Kayla Motley, Geological Survey of Alabama. (#130)
- 34. **Investment Costs for Center Pivot Adoption in Alabama.** Roshell Rosales Aguilar, Alabama Cooperative Extension System. (#149)
- 35. **Developing a Statewide Flood Inundation Mapping and Communication Platform for Alabama.** Junho Song, Alabama Water Institute. (#161)
- 36. **Explainable Video Vision Transformer for Tackling Accuracy and Sparsity in Remotely Sensed Precipitation Observations.** Fang Wang, Auburn University. (#180)



POSTER JUDGES: Meet at the Registration Desk on Thursday after Session 4 concludes (~5:00pm) for your judge packet and instructions.

POSTER SESSION & SOCIAL SCHEDULE
5:30–6:00 PM – Poster Scoring (No Students Present)
6:00 PM – Student Authors Join Posters
6:00–6:20 PM – Judges Engage with Student Authors

SESSION 5 FRIDAY | SEPT. 5 | 9:15AM - 10:35AM

LIGHTNING TALKS - OUTREACH & EXTENSION

BALLROOM C

MODERATOR: MONA DOMINGUEZ, AUBURN UNIVERSITY WATER RESOURCES CENTER

1. **ARSNiC and InBOLD: Addressing Longitudinal Connectivity for Habitat and Humanity.** Daniel West, The University of Alabama. (#7)
2. **Air Related Community Engagement.** Jennifer Barker, Alabama Department of Environmental Management. (#22)
3. **The Alabama Climate Observing Network: Connecting Data, Tools, and Users.** Michael Solomon, University of Alabama in Huntsville. (#50)
4. **Improving the Management of Evaporative Cooling Systems.** Kelly Griggs, Auburn University. (#71)
5. **Understanding Bats: Benefits and Regulatory Review for Development Projects.** Nick Sharp, TTL, Inc. (#77)
6. **Concentrating Nature-Based Solutions to Stormwater for Ecosystem Benefits.** Ben Wegleitner, The Nature Conservancy. (#132)
7. **Water and Wastewater Education and Outreach Impacts in the Rural Alabama Black Belt.** Rachel Chai*, University of South Alabama. (#144)
8. **Woods, Water, and Wildlife: Education & Outreach Opportunities with The Jones Center at Ichauway.** Rachel McGuire, The Jones Center at Ichauway. (#163)
9. **Alabama Envirothon: Engaging the Next Generation in Environmental Stewardship.** Courtney Curenton Baker, Alabama Association of Conservation Districts. (#165)

LIGHTNING TALKS - RESEARCH 1

BALLROOM D

MODERATOR: PAT O'NEIL, CAWACO RC&D COUNCIL

1. **Impact of Agricultural Land Use on Sedimentation of Geographically Isolated Wetlands with Partial and Full Agricultural Catchments.** Suranjana Chatterjee*, Auburn University. (#21)
2. **Investigating the Impacts of Calcium Additive to Drainage in Blackland Prairie Soil.** Alistair Bebbington*, Auburn University. (#25)
3. **Evaluating Nitrogen Losses under the Precipitation Variability in the Winter Wheat Using the DSSAT-CERES-Wheat Model.** Vaibhav Shelar*, Auburn University. (#63)
4. **Novel Approaches to Understanding the Hydrology of Geographically Isolated Wetlands.** Frances O'Donnell, Auburn University. (#93)
5. **Effect of Broiler Litter Application Rate on Phosphorus, Nitrogen, and Sediment Loss from 4 Consecutive One Acre-Inch Rainfall Events.** Carson Archie*, Auburn University. (#120)
6. **An Integrated Hydrologic Atlas of Opportunity and Risk for Enhanced Water Resource Management in Alabama.** Sifan A Koriche, The University of Alabama. (#141)
7. **Evaluating the Potential of Commercial and Modified Biochar to Mitigate Phosphorus Loss in No-Till Agricultural Systems with Cover Crops.** Gibi Thomas*, Auburn University. (#148)
8. **A Novel Approach for Nitrate Removal and Recovery from Wastewater Using Pseudomonas Nitrate Binding Proteins.** Daniel Servos* & Nidhi Purav, The University of South Alabama. (#170)

WATER LAW & POLICY

BALLROOM E

MODERATOR: BENNETT BEARDEN, GEOLOGICAL SURVEY OF ALABAMA

1. **Water Policy and Law in the "Anthropocene": Changing With the Times.** Bennett Bearden, Geological Survey of Alabama. (#3)
2. **Geoscience Impacts on State Water Policy in Alabama.** Gregory Guthrie, Geological Survey of Alabama. (#17)
3. **These Chips are Making Me Thirsty: Data Center Water Use in Alabama.** Charles Miller, Alabama Rivers Alliance. (#81)
4. **"Water" We Doing?—A Stakeholder Friendly Approach to Communicating Water Research.** Rebecca Bearden, Geological Survey of Alabama. (#116)

WATER SECURITY & RISK

BALLROOM F

MODERATOR: MATT WOMBLE, THE UNIVERSITY OF ALABAMA

1. **From Data to Design: Leveraging the Research of Water Resource Managers to Inform the Work of Landscape Architecture Along the Gulf Coast.** Helena Starnes & Rob Holmes, Auburn University. (#106)
2. **Paleohydrologic Analyses Reveals Insights into Longterm Hydrologic Volatility in the French Broad River.** Lisa Davis, The University of Alabama. (#5)
3. **PFAS Transport in Soil Columns: Impact of Dissolved Organic Matter.** Ziteng Song*, Auburn University. (#147)
4. **Adapting CIROH's Research to Benefit Water Resources Management in Alabama.** Steve Burian, The University of Alabama. (#158)

GIS

CORAL

MODERATOR: DARRELL LAMBETH, U.S. GEOLOGICAL SURVEY

1. **Extreme Makeover: Flood Risk.** Jeff Zanotti, WSP. (#13)
2. **Investigating the Spatiotemporal Patterns of Annual Water Yield in Alabama Watersheds.** Jan Joseph Dida*, Auburn University. (#36)
3. **Utilizing GIS For Dynamic Stormwater Utility Fee Management.** Tanya Gallagher, Jacobs. (#96)
4. **GeoCoast Tools.** John van der Zwaag, Mississippi State University. (#166)

SESSION 6 FRIDAY | SEPT. 5 | 10:55AM - 12:15PM

BREAK: 10:35-10:55 AM

MODELING & WATER MANAGEMENT

BALLROOM C

MODERATOR: BRETT CONNELL, TRUTTA ENVIRONMENTAL SOLUTIONS

1. **A Post-Processed NextGen Framework Reanalysis Dataset.** Savalan Naser Neisary*, The University of Alabama. (#23)
2. **Characterizing Water Budgets and Landscape Connectivity in Isolated Wetlands.** Kathryn Perkins*, Auburn University/The Jones Center at Ichauway. (#46)
3. **Investigating Model Reliability: A Twofold Evaluation of the National Water Model Using Time Series and Extreme Events.** MD Shahabul Alam, The University of Alabama. (#51)
4. **Reconstructing Historical Streamflow: Reanalysis via Strong Data Assimilation.** James Halgren, Alabama Water Institute. (#136)

LIGHTNING TALKS - RESEARCH 2

BALLROOM D

MODERATOR: ROY McAULEY, ALABAMA WATER RESOURCES COMMISSION

1. **Using Anthropogenic Biomarkers in Sediments to Assess Fossil Fuel and Fecal Pollution in Urban Estuaries.** Yuehan Lu, The University of Alabama. (#8)
2. **Characterization of Risks from Decentralized Water and Wastewater Infrastructure: A Multifaceted Approach.** Rebecca Etter*, Auburn University. (#70)
3. **Advancing Hydrologic Modeling through Community-Driven Development: The NextGen Framework.** Arpita Patel, The University of Alabama. (#89)
4. **A Method to Resolve Spatial Mismatches in Geospatial Exposure Modeling.** Helen Moylan*, Auburn University. (#102)
5. **Game Changer: How AI is Transforming Flood Resilience Education.** Hudson Markin*, The University of Alabama. (#123)
6. **Democratizing Data: A Low-cost, Real-time Monitoring Network for AL: Phase One Implementation of a Water Monitoring Strategy.** Ronald Bond, University of California, Davis. (#140)
7. **Urban Drainage Capacity Assessment Under Compound Coastal Flooding in Mobile, Alabama.** Michael Lewis*, The University of Alabama. (#169)

WATER MONITORING

BALLROOM E

MODERATOR: GREG GUTHRIE, GEOLOGICAL SURVEY OF ALABAMA

1. **Hydrogeological Monitoring of the Key Cave National Wildlife Refuge, Lauderdale County, Alabama.** Gheorghe Ponta, Geological Survey of Alabama. (#43)
2. **Groundwater Level Trends Across Alabama's Groundwater Provinces: Information from the 2024 Water Year.** Kyle Olsen, Geological Survey of Alabama. (#88)
3. **Evaluating Cover Crops Impact on Runoff and Nutrient Loss in South Alabama Row-Crop Systems.** Anh Nguyen, Auburn University. (#122)
4. **Cradle to Early Grave: Reaching No Further Action at the Robertsdale Elementary School ADEM Tank Trust Fund Site.** Kendall Rich, WSP USA Inc. (#139)

SOCIAL SCIENCES/HUMAN DIMENSIONS

BALLROOM F

MODERATOR: REBECCA BEARDEN, GEOLOGICAL SURVEY OF ALABAMA

1. **A Survey of Public Perceptions and Attitudes About Water Issues in Texas.** Joel Pigg, Texas A&M AgriLife Extension. (#45)
2. **Is Groundwater Good for Your Heart?** Matthew Loop, Auburn University. (#49)
3. **Assessing the Capacity of Local Officials in Alabama to Plan for Climate-Resilient Water Infrastructure and Management.** John Morris & Spencer Goidel, Auburn University. (#83)
4. **Assessing Social Vulnerability and Land Use Change Interactions Across the Gulf Coast: A Multi-Temporal Analysis in Alabama, Louisiana, and Mississippi.** Annyca Tabassum*, The University of Alabama. (#84)

*STUDENT PRESENTER



SPECIAL THANKS

2025 ORGANIZING COMMITTEE

Jessie Curl, Lead Organizer, AU Water Resources Center

Carolina Ruiz, Co-Organizer, AU Water Resources Center

Chris Johnson, 2025 Committee Chair, ADEM

Bill Batchelor, AU Water Resources Center

Bennett Bearden, Alabama State Bar

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Amy Gill, U.S. Geological Survey

Greg Guthrie, Geological Survey of Alabama

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AU WATER RESOURCES CENTER STAFF

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Laura Cooley

Jessie Curl

Mona Dominguez

Adam Newby

Sergio RuizCórdova

Carolina Ruiz

Sydney Zinner

Amy Zvonar

[illegible]

The background features a soft, painterly illustration of ocean waves in various shades of teal and light blue. In the bottom corners, there are stylized coral or seaweed elements in darker teal and green. A semi-transparent teal rectangle is centered in the middle of the image, containing white text.

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