

From the Director's Desk ...

The 2019 year has gone by quickly. It's nearly time for graduation the end of this week. We wish all of the graduates success in starting another chapter in their life.

We had a very successful 2019 Mississippi Water Resources Conference April 2-3 in Jackson. Attendance is up – there were 180 registered to hear 89 oral presentations and review 20 posters. As presentations are received, they are uploaded to the conference website. If you have not already done so, please email your presentation to Jessie Schmidt, jessie.schmidt@msstate.edu. The survey link has been sent out to all attendees. Please take a few minutes to respond by May 31. Your responses will help us provide an even better conference in 2020. Also, all presenters have received format instructions and a deadline date of July 1 to submit a full paper for inclusion in the 2019 MWRC *Proceedings*. This publication should be available for viewing before the end of 2019.



Again in this issue, we feature one of the MWRRI funded researchers. Dr. James Cizdziel, Associate Professor in the Department of Chemistry and Biochemistry at the University of Mississippi. Dr. Cizdziel is funded with both a USGS 104b and 104g research project on “Microplastics in the Mississippi River and Mississippi Sound: concentrations, sources, sizes, types, and loadings to the northern Gulf of Mexico.”

Watch your email for updates on funding opportunities, job opportunities, as well as legislation. Previous newsletter issues are available for review on the institute's website, www.wrri.msstate.edu. Click on the Publications tab and scroll down for past Proceedings and Newsletter.

We hope you have a good summer.

Jason

Jason Krutz, Ph.D.

2019 Mississippi Water Resource Conference

April 2-3, 2019

The annual Mississippi Water Resources Conference, hosted by MWRRI, will be held at the Jackson Hilton on April 2-3, 2019. Researchers and students from colleges and universities as well as water resources planners, managers, and policy-makers from state and federal agencies, industry, are invited to submit an abstract for technical sessions on the following topics:

- Stream Health Assessment and Restoration
- UAV – Emerging Technologies in Coastal Processes
- Row Crop Water Management
- Aquatic Ecosystem Function
- Groundwater Recharge and Supply
- Coastal Processes
- Dam Safety
- What Impacts Your Drinking Water?
- Hydrologic Data Collection and Analysis
- Water Quality
- Emerging and Innovative Technologies – Unmanned Aircraft systems Use in Water Resources
- Hydrologic Data Collection and Analysis
- Update on USGS Baseline Flows RESTORE Project
- Delta Water Quality I – Lakes and Aquatic Ecology
- Groundwater Management
- USGS MAP Project I & II
- Delta Water Quality II – Measuring and Modeling Agriculture Runoff
- Biology, Ecology, and Management of Aquatic and Wetland Plants
- Water Resources Characterization and Use in Northeast Mississippi



Additionally, 20 posters were presented informally during a welcome reception held at the end of the day Tuesday. The reception also provided opportunities for conference participants to network over hors d'oeuvres and refreshments.

Dr. Jason Krutz, opened the conference and welcomed this year's attendees. He introduced the Opening Plenary speaker, Dr. LaDon Swann, Director of Mississippi-Alabama Sea Grant and Sea Grant Aquaculture Liaison. Tuesday's lunch plenary featured Dr. Jeff Johnson, Head, Delta Research and Extension Center, Mississippi State University and Universities Council on Water Resources (UCOWR) President of the Board of Directors for 2018-2019. Wednesday's plenary featured Wade Kress, USGS Lower MS Gulf scientist.

Student Competition

Again this year, students had opportunities to be involved in both an oral and/or poster presentation competition. Through sponsorship of Weyerhaeuser and an anonymous gift, cash prizes of \$150 for 1st place, \$100 for 2nd place, and \$75 for 3rd place were awarded to the winners in both categories.

Winners of the Student Oral Presentation Competition were:

- 1st Place Raul Osorio Morillo, Ph.D. student, Department of Agricultural and Biological Engineering, Mississippi State University, “Assessment of Marsh Terraces Performance in Coastal Louisiana U.S. Using Multi-Temporal High-Resolution Imagery”
- 2nd Place Corey Bryant, Ph.D. student, Department of Plant and Soil Sciences, Mississippi State University, “Increasing Mid-Southern USA Furrow-Irrigation Efficiency Through In-Field Cultural Practices”
- 3rd Place Michael Gratzler, Ph.D. student, Department of Geology and Geological Engineering, University of Mississippi, “Groundwater Recharge from oxbow Lake-Wetland Systems to Alluvial Aquifers”



Raul Osorio Morillo



Corey Bryant



Michael Gratzler

Winners of the Student Poster Presentation Competition were:

- 1st Place Dave Spencer, Ph.D. student, Department of Plant and Soil Sciences, Mississippi State University, “management Practices to improve Infiltration and Decrease Nutrient Transport Under Furrow”

- 2nd Place Corey Bryant, Ph.D. student, Department of Plant and Soil Sciences, Mississippi State University, “Increasing Mid-Southern USA Furrow-Irrigation Efficiency Through In-Field Cultural Practices”

- 3rd Place Jane Kunberger, graduate student, Department of Biology, University of Alabama, “Investigating Variables Which Could Affect Unionid Abundance and Biodiversity”



Dave Spencer



Corey Bryant

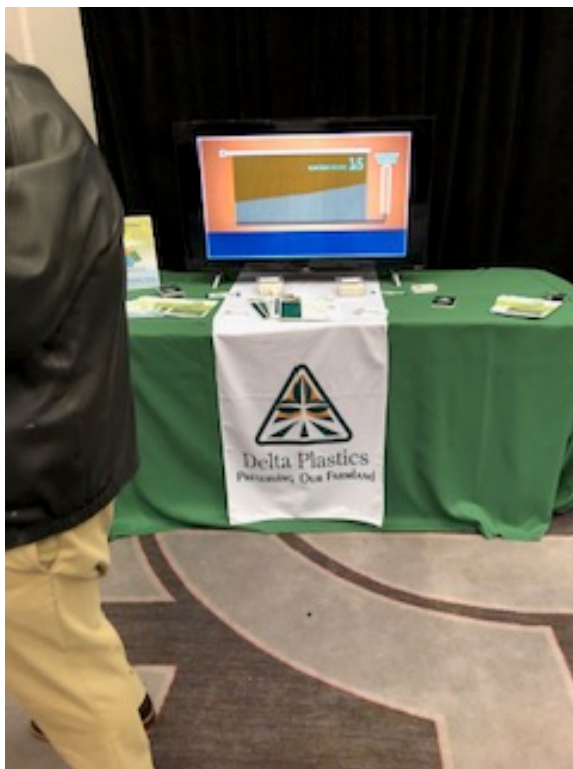
The Institute would like to thank our sponsors and exhibitors this year:

Sponsors

- Mississippi Farm Bureau Federation
- Weyerhaeuser Company

Exhibitors

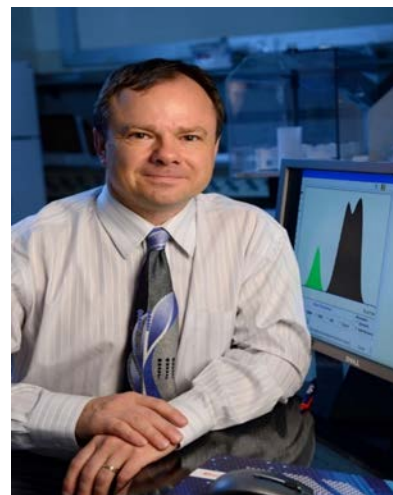
- Delta Plastics
- Mississippi Aquatic Invasive Species Council (MAISC)
- Neel-Schaffer, Inc.



Special thanks to the Mississippi Department of Environmental Quality and U.S. Geological Survey for their assistance with conference planning, and to all of our technical session facilitators/coordinators who identified and solicited speakers for their sessions.

A short attendee survey has been distributed for responses to topics and location. We hope everyone had an enjoyable time in Jackson and we hope to see you again next year for the 23020 Mississippi Water Resources Conference. The link for providing your feedback by May 31 is https://msudafvm.co1.qualtrics.com/jfe/form/SV_eycnRpBE2QJ7yZ.

Researcher Profile: James Cizdziel, Associate Professor, Department of Chemistry and Biochemistry, University of Mississippi



Tell us a little about your background and current position

I grew up the youngest of six in a working-class family in a Buffalo, NY. While attending SUNY Buffalo, I worked as a chemical technician at a metallurgical company. After receiving my BS degree in chemistry, I was promoted to Lab Manager. After two years I decided to advance my career and pursue a Ph.D. in Environmental Analytical Chemistry at UNLV. My dissertation research was centered on assessing residual radioactive fallout from the Nevada Test Site. Afterward, I remained in Las Vegas, serving as a NRC Postdoctoral Fellow at the US EPA and as a Senior Scientist at the Harry Reid Center for Environmental Studies. My group developed analytical methods and spearheaded research to determine, among other things, groundwater flows and unsaturated zone infiltration at Yucca Mountain, the proposed site for geologic storage of nuclear waste. In 2008, I moved my young family to Oxford, MS and joined the Chemistry faculty at Ole Miss. We are blessed to live and work in such a wonderful and welcoming community. Currently, as an Associate Professor, I teach courses in spectroscopy, quantitative analysis, and instrumental analysis, and supervise student research in analytical, environmental, and forensic chemistry. I am also active in the American Chemical Society.

What are your current research activities and interests?

Chemistry is considered the central science, as it is fundamental to many other scientific disciplines. Analytical chemistry, which involves measuring matter, either qualitatively or quantitatively, is key to all aspects of chemistry. Thus, I tell my students that analytical chemistry is *central* to the central science! Indeed, analytical chemists work with scientists and engineers from many disciplines to address key issues in our world today, so it is not unusual for me to collaborate with geologists, biologists, toxicologists, and more! This leads me to my current research activities and interests. I have a number of ongoing projects, including research on microplastics, trace evidence from 3D-printed guns, unmanned aerial vehicles for atmospheric sampling, and development and application of passive mercury samplers. I'll briefly highlight my microplastics project as it pertains to MWRRI. Microplastics are prevalent in natural waters and are entering the food chain. However, accurately detecting, quantifying,



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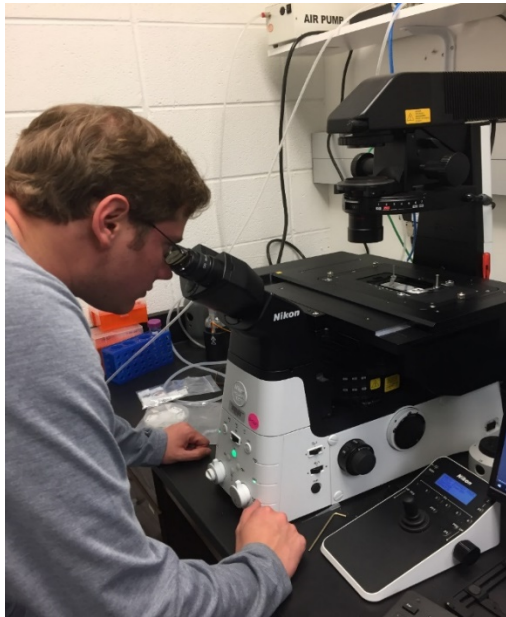
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and identifying the small particles is very challenging and standard methods are needed to compare results from different studies. The primary goals of my research are to: 1) develop reliable methods for sampling, isolating, and characterizing microplastics in environmental and biological samples; 2) assess microplastic pollution in the Mississippi River System and at oyster reefs along the northern Gulf Coast; 3) determine the sorption behavior of toxic mercury species with microplastics; and 4) train the next generation of water researchers in this rapidly emerging field. Although we have only just begun, we already learned so much and are amazed at the high level of microplastic pollution in the river system and coastal areas. My students and I look forward to continuing this challenging work and presenting our findings at the Mississippi Water Resources Conference and elsewhere.

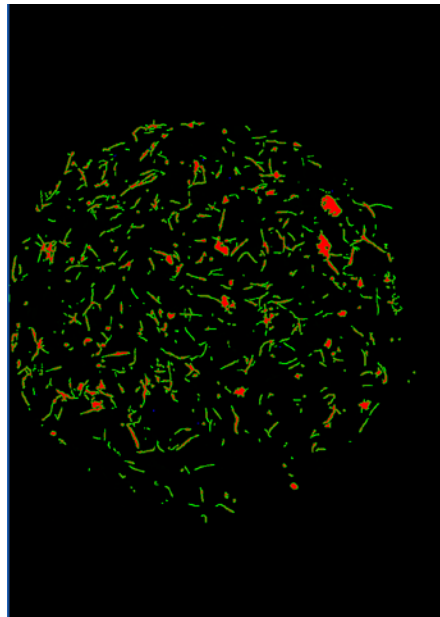
How does the Water Resources Research Institute fit into your future plans? How can we help you be successful?

I am very grateful to MWRRI for their support of junior faculty. In my second year as an Assistant Professor, I received a grant from the Institute for developing rapid methods for dating sediments using ICPMS. This catalyzed my research program and facilitated new and fruitful collaborations with Dr. Gregg Davidson at UM, scientists at the National Sedimentation Laboratory, and others. More recently, MWRRI was awarded a USGS 104g grant to expand my microplastics research. This extremely competitive grant was the first 104g grant that our Institute received in many years. MWRRI was extremely helpful in answering my questions and guiding me on various aspects of the proposal, as well as ushering the proposal through the submission and award process. Regarding how the Institute fits into my future plans, I intend to use it as a resource to help disseminate our research findings to stakeholders and policy makers, and to facilitate outreach and training on the methods we develop. With its network of water experts (with years of valuable experience and insight on water quality and quantity), I will also continue to use MWRRI to help establish collaborations and to seek input and feedback on my research. So, how can WRRRI help me (and others) to be successful? Continue doing what you are doing!

Let me end with a quick plug: I am co-chairing a session at the SETAC Meeting in Helsinki in May that aims to bring together researchers to discuss current understanding of the risks posed by microplastics alone and combined with other contaminants, and to address improved methods for sampling, detection, and characterization of microplastics. Please contact me if you have an interest in this or on microplastics in general.



Graduate student Austin Scircle using fluorescence microscopy to detect microplastics.



Typical fluorescence image of a filter showing particles suspected of being microplastic. Many of the particles appear to be fibers and fragments.



Sampling for microplastics in the Gulf of Mexico



Upcoming Events

UCOWR/NIWR Annual Conference – Snowbird, UT – June 11-13, 2019

Do you have a publication that you would like to share? Consider distribution through the MWRRI newsletter. Contact Jessie Schmidt for information.

Do you have an upcoming event that all those interested in water-related issues and agriculture would find interesting? Considering adding it to the newsletter and/or listserv. Also available is the MWRRI Twitter account - @MS_WRRI.

About the Mississippi Water Resources Research Institute (MWRRI)

The institute exists as both a federal and a state research unit. Established in 1964, the MWRRI is one of 54 institutes (one in each state, The District of Columbia, Guam, Puerto Rico, and the Virgin Islands) that form a national network to solve water problems of state, regional, or national significance. In 1983, the Mississippi legislature formally designated the MWRRI as a state research institute. Federal funds designated for the institute are used to consult with state water officials to develop coordinated research, technology transfer and training programs that apply academic expertise to water and related land-use problems. These various activities are funded through an annual grant from the United States Geological Survey (USGS). Mississippi state appropriations provide additional funds for cost share. The institute also assists state agencies in the development of a state water management plan, maintaining a technology transfer program, and serves as a liaison between Mississippi and federal funding agencies.

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