MISSOURI WATER CENTER

AUGUST 2026 NEWSLETTER

Welcome to this edition of our newsletter

We highlight groundbreaking research, global collaborations, and upcoming opportunities to connect with colleagues across the region. At Mizzou, our faculty, students, and alumni continue to push the boundaries of knowledge and innovation. From investigating emerging contaminants in drinking water and soil to advancing global conservation efforts, their work demonstrates the power of research to protect public health, strengthen communities, and address pressing environmental challenges.

You'll read about:

- **Dr. Rebecca North,** core research faculty at the Missouri Water Center, **is named to ASLO Board of Directors**
- **University of Missouri Chancellor Mun Choi's shoutout**
- **Dr. Maryam Salehi and Noel Aloysius's work educating students across Missouri this summer**
- Faculty achievements, including **Pan Ni, Co-Director Baolin Deng and other Center researchers** being published in Environmental Engineering Science**.**
- The **Missouri Water Center's researchers and university partners** at the Missouri State Fair
- Upcoming events

Together, these stories showcase how Mizzou's researchers and students are not only advancing science but also making meaningful contributions locally, regionally, and globally.

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News & Research



Here we highlight several key research moments within the College of Engineering and College of Agriculture, Food and Natural Resources.

Rebecca North named to ASLO Board of Directors

Dr. Rebecca North, core research faculty at the Missouri Water Center and associate professor in the School of Natural Resources, will begin her term July 1.



June 7, 2026 Written by: Michelle Enger

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Rebecca North, associate professor in the School of Natural Resources, has been named to the Association for the Science of Limnology and Oceanography (ASLO) Board of Directors. North will begin her term July 1.

North is a limnologist, meaning she studies inland waters. Her research focuses on aquatic ecology and biogeochemistry, with expertise on nutrient and phytoplankton dynamics in water bodies.

Her lab seeks to answer the question: “What controls algal biomass of inland waters?”; in other words, “Why do lakes turn green?”

ASLO fosters a diverse, international scientific community that creates, integrates and communicates knowledge across the full spectrum of aquatic sciences, advances public awareness and education about aquatic resources and research, and promotes scientific stewardship of aquatic resources for the public interest.

A fresh source for water innovations

The Missouri Water Center, the Johnny Morris Institute of Fisheries, Wetlands & Aquatic Systems and the Mississippi River Basin Ag & Water Desk received a shoutout from University of Missouri Chancellor Mun Choi this summer.

June 22, 2026 Featured in: President Choi’s Blog

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As summer officially begins, Missourians and visitors from around the world are heading to our state's abundant lakes, rivers and other bodies of water. Missouri's water resources aren't just enjoyable, they connect communities and support critical industries that power our state's future.

At the University of Missouri, we're proud to partner with state leaders, industry experts and world-class faculty to address the water challenges we face, while also supporting the workforce and economy of Missouri. New, groundbreaking Mizzou research highlights the depth of our impact.

• Johnny Morris Institute of Fisheries, Wetlands and Aquatic Systems Director Dr. Rick Relyea and colleagues just published a study exploring how wood frog populations can reveal the health of freshwater areas, including in Missouri, and help guide how we protect them.

• The Mississippi River Basin Ag & Water Desk in the Missouri School of Journalism distributed 50 stories over the past year, reaching nearly 400 outlets (including MSN and Yahoo! News) covering the nation's largest watershed.

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- Missouri Water Center core research faculty **Dr. Brandon Sansom** recently received U.S. Geological Survey (USGS) funding for a collaboration with the Army Corps of Engineers, USGS and other partners to control invasive carp using an inventive barrier of bubbles.



Our water research is also supporting important national priorities. Missouri Water Center Co-Director **Dr. Baolin Deng**, scientist **Dr. Pan Ni** and other collaborators have secured nearly $3 million from the U.S. Department of Energy to recover critical rare earth minerals from mining wastewater.

Across campus, our community is advancing Missouri's water resources for recreation, business and innovation – helping ensure our state remains a great place to live and work during the summer and throughout the year.

— Mun

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Future engineers practice Missouri Method at summer camps

Students from across Missouri explored artificial intelligence, cybersecurity, robotics, environmental engineering and more while discovering what it means to be an engineering leader.



Aug. 17, 2026 Written by: *Mizzou Engineering*

At Mizzou Engineering, the Missouri Method means learning by doing. Through hands-on experiences, mentorship and access to cutting-edge technology, the College of Engineering inspires young learners to become innovators, problem-solvers and leaders who will shape tomorrow's world.

This summer, students from across Missouri came to Mizzou Engineering to explore coding, cybersecurity, robotics, environmental sustainability and other engineering disciplines through eight STEM-focused youth camps.

Among them were eighth grader Barima Eshun, fifth grader Amir McKinnon and fifth grader Caden Ruffin, who were enrolled in the Underwater Robotics Camp.

Nearly 50 campers gathered at MizzouRec's 50-meter pool to test robots they had built of battery powered propellers, PVC tubing and pool noodles. Eshun, McKinnon and Ruffin took turns piloting their robot, which they had named Junebug.

"The thing I like about it is making the robot from scratch," Eshun said. "I haven't done that before."

Ruffin maneuvered Junebug in a holding position, waiting for another team's robot to clear a plastic hula hoop anchored to the bottom of the pool and taking care not to get entangled in the other robot's umbilical.

"It's hard to get it back through the ring," Ruffin said. "There's a lot of stuff to get snagged in."

Problem-solving was a primary focus of all the camps.

"We want students to begin seeing themselves as future engineers and leaders," said Professor Kevin Gillis. "They're designing, building, testing and solving problems while gaining confidence in their ability to make a difference."

AI as a Tool for Future Engineers

AI as a Tool for Future Engineers introduced middle school and high school students to machine learning through real engineering problems and an AI-assisted coding approach.

Using Google Colab and the Gemini coding assistant, campers learned a step-by-step workflow for applying machine learning to engineering problems and employed AI tools to lower the barrier to programming. This approach allowed campers to focus on understanding the engineering problem, working with real data and building predictive models.

"Students developed models to predict air quality, chemical reaction conversion, and jet engine reliability and classify medical images and everyday objects for computer vision applications," said camp organizer Campbell Sweet, a graduate student and NSF Graduate Research Fellow at Mizzou Engineering.

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AI and Neuro-Robotics

High school students explored foundational concepts in artificial intelligence and data science through interactive coding exercises and machine learning projects.

Along the way, they learned how algorithms influence technologies ranging from social media platforms to autonomous vehicles.

Campers also experimented with different machine-learning architectures and programmed robots to address engineering problems.

“This camp helps students build a foundation for understanding emerging technologies,” said Professor Satish S. Nair, who helped organize the camp. “By engaging directly with AI concepts and applications, they begin developing skills that will be valuable throughout their education and future careers.”

“It’s an opportunity to reveal the science and mathematics behind technologies students use every day,” co-organizer and undergraduate researcher Shokhsanam Uktamova said. “We also want them to leave with a better understanding of the learning pathways available if they decide to pursue AI and related fields.”

Additionally, Mizzou Engineering hosted five students from the Illinois Mathematics and Science Academy June 14-27 for a research experience in neuro-AI architecture for learning and control.

Experiencing Environmental Engineering

Led by Associate Professor **Maryam Salehi,** this camp challenged middle school and high school students to tackle real-world environmental issues. Campers designed solutions to mitigate agricultural plastic pollution, including recycling programs and composting of biodegradable plastic mulch.

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Maryam Salahi, left, taught students how to use environmental engineering to promote sustainability and prevent pollution.

“We want students to recognize that engineers play a vital role in protecting natural resources and improving communities,” Salehi said. “By applying creativity and critical thinking, they can develop solutions that make a meaningful impact.”

Experiencing Electrical and Computer Engineering

Participants explored the fundamentals of electrical engineering and electronics while gaining hands-on experience with electrical circuits, microcontrollers, embedded systems and the C programming language.

Students also became familiar with foundational electronic components and technologies, including CMOS and BJT transistors, and gained an introductory understanding of silicon fabrication and the principles behind designing modern computer processors.

Through interactive projects, demonstrations and laboratory tours, campers further explored AI-powered technologies and robotics, connecting fundamental engineering concepts to real-world applications and emerging computing technologies.

They also completed hands-on projects using Arduino boards, where they learned how to integrate AI into different applications and explore its potential for developing intelligent engineering systems.

Beyond the technical activities, campers visited Mizzou Libraries and the MU Student Center, gaining a broader perspective on university life and experiencing how electrical and computer engineering connects with interdisciplinary education, research, innovation and the broader university community.

The camp aimed to help students understand how electrical and computer engineering powers modern life, while introducing them to the fundamentals of quantum computing and the emerging potential of Quantum AI, Assistant Teaching Professor Ali Shiri Sichani said. The experience enabled students to explore how quantum technologies can be integrated with AI to address future challenges and shape the next generation of computing.

“Our goal is to inspire students to see themselves not only as future engineers, but also as innovators and technology leaders who can bridge foundational engineering principles with emerging technologies such as artificial intelligence and quantum computing,” Sichani said. “By providing hands-on experiences and exposure to cutting-edge research, we want students to develop the curiosity, confidence and problem-solving skills needed to imagine and create technologies that can address real-world challenges and improve the world around them.”

Hacker Tracker Cybersecurity Camp

Over twenty middle and high school students learned how to defend systems, identify threats and think strategically during the camp led by Curators’ Distinguished Professor Prasad Calyam and AI engineer Roshan Neupane.

Cybersecurity professionals from MOREnet and Magnet Forensics also shared real-world stories about cyber defense to protect critical infrastructure, and digital forensics to solve cyber-crime cases.

Cybersecurity requires critical thinking, creativity and a strong understanding of how systems work together," Calyam said. "Students gain early skills and also valuable insights into the challenges professionals face while protecting digital infrastructure and investigating cyber incidents."

Participants were introduced to basic programming, database management and cloud computing concepts. Using a real-world active defense case study, they practiced network forensics, examined attack simulations and learned the fundamentals of ethical hacking.

Geospatial Science Camp

Students in grades 6-8 discovered how mapping technologies and spatial data can help address complex global challenges. They created interactive maps, analyzed satellite imagery and completed projects focused on local data collection and informed decision-making.



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Camp participants explored using drones and other geospatial technologies.

“Geospatial technologies are transforming how we address issues ranging from water resources and food security to urban development,” said Associate Professor Noel Aloysius.

“It’s rewarding to see students develop the analytical skills and curiosity that can help them become tomorrow’s leaders in these fields.”

Game Development and 3D Modeling Camp

Under the guidance of Associate Teaching Professor Fang Wang and Assistant Teaching Professor Michael Tompkins, high school students used Unity, Blender and scripting tools to create their own video games.

“Game development gives students an engaging way to build problem-solving, logical reasoning and design skills,” Wang said. “Watching them transform ideas into playable experiences helps them realize they have the creativity and technical ability to bring concepts to life.”

By the end of the week, students had developed playable prototypes and gained experience in the game design process.

Underwater Robotics Camp

One of the college’s most popular offerings, the Underwater Robotics Camp returned with two sessions to meet strong demand. Guided by Gillis and members of the Army Ants high school robotics team, students in grades 3-8 designed, built and tested remotely operated vehicles capable of completing underwater tasks.

“Engineering leadership often begins with learning from both success and failure,” Gillis said. “As students test and improve their robots, they develop resilience, teamwork and creative problem-solving skills that will serve them well in any field.”

Whether campers discovered a new interest or strengthened an existing passion, each program offered a glimpse into the possibilities within engineering and encouraged students to explore, experiment and grow.

“My favorite part is seeing the moment when a concept finally makes sense and a student realizes what they’re capable of accomplishing,” Gillis said. “That confidence and excitement can become the foundation for a lifetime of learning and leadership.”

MWC Moments

This section is where we highlight notable moments and key faculty successes such as awards, grants or other forms of recognition.

New publication!

Pan Ni, Yufei Duan, Qingqing Sun, **Jiamin Mai, Feng "Frank" Xiao, Co-Director Baolin Deng** and the Missouri Water Center team were featured in Environmental Engineering Science for their research: "Boosting the Removal Rate of PFAS by Algae Through Coagulant-Assisted Algae-Bubble Matrix."

The team developed a novel Coagulant-Assisted Algae-Bubble Matrix (CAABM) system for enhancing the removal of PFAS, the persistent "forever chemicals" that remain among the most difficult contaminants to treat.

Find the article here.

Grant win!

Dr. Binbin Wang, Associate Professor and William Andrew Davidson Professor in the Department of Civil and Environmental Engineering at Mizzou, received grant funding from NVIDIA to accelerate cutting-edge water research.

The unrestricted gift – along with a Jetson AGX Orin Developer Kit – powers Wang's transformative project Edge AI Real-Time Particle Image Velocimetry (PIV) for Underwater Applications.





More grant wins!



Dr. Brandon Sansom (CEE): NPS., $105,000 new funds (total award to date $105,000). Project title: “Process-Based Assessment of Bank Stability and Erosion Dynamics at Rush Landing and Campground, Buffalo National River”



Dr. Maryam Salehi Esfandarani (CEE): NSF, $411,181 new award (total award to date $411,181). Project title: “REU Site: Interdisciplinary Research on Plastic Pollution”



Drs. Binbin Wang (co-PI) & Brandon Sansom (PI): Geological Survey., $346,875 new funds (total award to date $346,875). Project title: “Advancing bubble deterrent technology for carp passage control using laboratory scaling studies and CFD modeling in the Mississippi River”

Congratulations to these grant winners who continue to innovate and advance water knowledge.

Did you see us at the State Fair?

We shared a booth with the **Mississippi River Basin Ag & Water Desk**, **Mizzou School of Natural Resources** and the **Lakes of Missouri Volunteer Program** and **MU Aquatic Ecology Laboratory**.

Fairgoers stopped by our booth to see a water demonstration from **Dr. Noel Aloysius'**s lab and learn more information about us, our research and water quality figures in Pettis and Boone County.

This is our first engagement event of the year. We plan on reuniting with our friends of the Desk and SNR for the Conservation Expo at Cooper's Landing!











Our time at the Missouri State Fair was educational and well needed. We had the chance to promote our research, provide educational materials with water quality data and tools and hear their most pressing water concerns and questions.

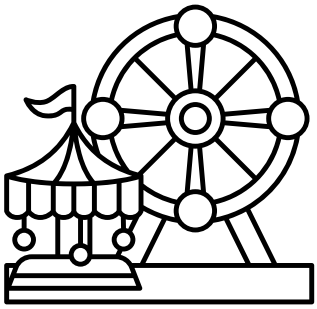
A recurring concern we heard from our time in Sedalia is data centers. Missourians want to know what the true water impact is.

This event showed us how important community listening is and how we as researchers can meet community needs.





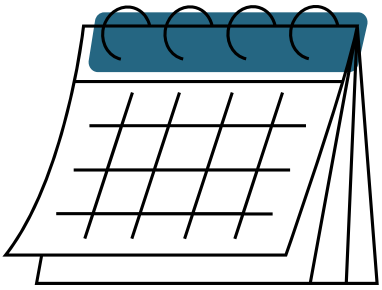
Thank you to all who attended and worked to make this event the best it can be.



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Events



This section holds upcoming events rooted in either research or community-focused events. Stay connected with us in case there are any scheduling changes.

Conservation Expo at Cooper's Landing

SEPT. 12 | 9:00 A.M. - 4:00 P.M. SEPT.13| 10:00 A.M. - 3:00 P.M.
11505 S. Hatchery Rd, Columbia, MO, 65203

The Missouri Water Center plans to table this event with the School of Natural Resources and the Mississippi River Basin Ag & Water Desk. Feel free to reach out to us for more information or if you'd like to sit with us at our table!

CAFNR Showcase

SEPT. 26 | 10:00 A.M. - 3:00 P.M.
3600 East New Haven Road, Columbia, MO, 65201

The Missouri Water Center plans to table this event with fun, educational kid and family activities. Reach out to us for more information or if you have any activity suggestions.

CUAHSI Water Exchange

November 12-14| Times and speakers are still being organized.
University of Missouri - Columbia

This is a two and a half day gathering where water science researchers will come together for skill-building workshops, field trips and science poster and presentation opportunities.

To stay up to date with this event's information, visit this **link.**

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Thanks for reading this edition of our newsletter

Missouri Water Center Brief & Highlights is a publication of the Missouri Water Center. For more information about the Center, visit our Web site at water.missouri.edu.

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