May you and yours find magic and goodness this holiday season and peace and joy in the new year!
MESSAGE FROM DIRECTOR MARKET

2020 has been a strange and stressful year, and I'm sure that most of us are happy to see it draw to a close. In spite of all challenges, our SNR students, staff, and faculty rose to the occasion and powered through. I am grateful to be a part of this School, and thankful for your tenacity, patience and perseverance. I want to wish you and your families a restful holiday season and a most happy and healthy new year.

HONORS and AWARDS

The Isaac M. Cline Award is presented to individuals and teams who have made significant contributions in support of the National Weather Service. In Hydrometeorology from the National Centers for Environmental Prediction (NCEP): Cody Fritz was recognized for leading the research and development of new modeling and forecasting capabilities and storm surge products at the National Hurricane Center (NHC) and the Central Pacific Hurricane Center (CPHC) resulting in improved guidance and communication to the public. In Program Management/Administration: Paul Fike, Larry Hinson, Scott Minnick, Aviation Weather Center (AWC), were recognized for superior organization and persistence while testing, configuring, and planning for Advanced Weather Interactive Processing System (AWIPS) transition on two AWC desks. Both Cody and Scott graduated from the SEAS/Atmospheric Science program. (Submitted by Brian Pettegrew.)

SNR undergraduate students: Madisyn Branch (Environmental Science/Water Emphasis), Peter Mallett (Environmental Science), Kathryn Vanden Hoek (Environmental Science/Atmospheric Science Emphasis), and Mackensie Wagner (Environmental Science/Outreach and Education Emphasis), have received recognition as STARS as part of the pivot of Mizzou to new forms of learning and engagement in Fall of 2020. Find out more about the program at this link: https://undergradresearch.missouri.edu/helpful-tools/s-t-a-r/
Students working with Chung-Ho Lin in Agroforestry: Shu-Yu Hsu (pictured left) won 2nd place in the 37th Annual Research & Creative Activities Forum (RCAF) presentation competition for her PhD atrazine remediation project (under Engineering category). Mohamed Bayati won the 2020 Civil and Environmental Engineering Outstanding Doctoral Student Award. Below is a link with Dean Elizabeth G. Loboa (former MU Dean of Engineering and Vice Chancellor for Strategic Partnerships) congratulating Mohamed: https://www.youtube.com/watch?v=iD3eso20paE&feature=youtu.be

Salah Alagele, recent PhD graduate from Natural Resources/SEAS, received the 1st Place Poster Award from the Soil and Water Management and Conservation Division, Soil Science Society of America.

Jamshid Ansari, PhD student in Natural Resources/SEAS, won the Poster Award from the Forest, Range and Wildland Soils Division, Soil Science Society of America.

Campus Dining Services held its sixth annual unit Student Employee of the Year Scholarship Contest. Thirteen (13) students were selected by their management teams for this honor, based on their reliability, quality of work, initiative, teamwork and contribution to their employer. Kaitlin Lewis, Natural Resource Science and Management (NRSM) undergraduate, representing Coffee Houses & Cafes, was one of the thirteen winners.

David Diamond, Director of the Missouri Resource Assessment Partnership (MoRAP) and Craig Paukert, Leader and Cooperative Professor, Missouri Cooperative Fish and Wildlife Research Unit, were recognized as “Drivers of Distinction” by CAFNR’s Office of Research. This honor is given to faculty members who had the highest total shared credit research expenditures over the past 10 years (2011-2020). https://cafnr.missouri.edu/accolades/cafnr-office-of-research-recognizes-drivers-of-distinction/

PRESENTATIONS/PUBLICATIONS/RESEARCH HIGHLIGHTS

Emerson MR, Hall DM, Gilbertz SJ. 2021. Pipeline pipedreams: Oil spills, pipeline accidents, and the local truths embedding fossil fuels in the Yellowstone River valley, United States. Energy Research & Social Science, 72, 101859 https://authors.elsevier.com/a/1c9Ci7tZ6ZqyD


Steve Anderson was invited to give a virtual presentation as part of the University of Baghdad’s Scientific International Symposium entitled “New Technology for the Management and Improvement of Soil to Combat Desertification” sponsored by the University of Baghdad’s President and Professor Dr. Emad Al Husseini and the Dean and Professor Dr. Nasser Salman Kadhim of the College of Agricultural Engineering Sciences. His presentation was entitled “Improved Soil, Water and Environment Under Conservation Buffer Management Systems”.


The book “Ozark Outdoors: Hunting Lore & Fishing Stories”, edited by Dr. Mark Morgan (SNR Associate Professor) includes some natural history, excerpts from early explorers / settlers, stories from modern-day participants, and finishes with a section on supernatural creatures that prowl the area.

At Jefferson Farm and Garden, students from Dr. Noel Aloysius’ Hydrology Research Group spent a beautiful fall afternoon spray painting and arranging pumpkins and sunflowers leftover from various research plots to make their own tiger-themed MU. The team captured this image using a drone to photograph their spectacular creation.


Summary: Climate change and non-point source nutrient pollution are two key stressors currently threatening aquatic ecosystems’ ability to support ecologically and economically important fish species. This study explored potential effects of anticipated climate change and the implementation of realistic agricultural conservation practices and forecasts on fish populations, offering new avenues of research relating to climate and land-management change going forward.


Summary: Watershed-scale hydrologic models help identify critical source areas (CSAs), so this study assessed uncertainty in CSA simulations. The research found that simulated CSA locations are highly uncertain and may vary substantially across models, leading to the conclusion that further research is necessary to avoid inefficient use of limited resources.
Kujawa, H., Kalcić, M., Martin, J., Aloysius, N., Apostel, A., Kast, J., Murumkar, A., Evenson, G., Becker, R., Boles, C., Confesor, R., Dagnew, A., Guo, T., Logsdon Muenich, R., Redder, T., Scavia, D., Wang, Y. C., (2020). "The hydrologic model as a source of nutrient loading uncertainty in a future climate.” *Science of the Total Environment* **724**: 138004. [https://doi.org/10.1016/j.scitotenv.2020.138004](https://doi.org/10.1016/j.scitotenv.2020.138004) **Summary:** This study characterized uncertainty from both climate models and hydrologic models in predicting riverine discharge and nutrient loading to address the issue of hydrologic models and climate models producing wide ranges of predictions based on various factors. The study found variation among climate models was the dominant source of uncertainty in predicting future total discharge, tile discharge, evapotranspiration and total nitrogen loading; hydrologic models were the main source of uncertainty in predicted surface runoff and phosphorus loadings.

Martin, J. F., Kalcić, Margaret M., Aloysius, Noel, Apostel, Anna M., Brooker, Michael R., Evenson, Grey, Kast, Jeffrey B., Kujawa, Haley, Murumkar, Asmita, Becker, Richard, Boles, Chelsie, Confesor, Remegio, Dagnew, Awoke, Guo, Tian, Long, Colleen M., Muenich, Rebecca L., Scavia, Donald, Redder, Todd, Robertson, Dale M., Wang, Yu-Chen, (2020). "Evaluating management options to reduce Lake Erie algal blooms using an ensemble of watershed models." *Journal of Environmental Management* **111710**. [https://doi.org/10.1016/j.jenvman.2020.111710](https://doi.org/10.1016/j.jenvman.2020.111710) **Summary:** This study focused on determining how best to reach bi-national water quality targets for total and dissolved phosphorus loads in the goal of approximately nine years. There are multiple pathways to approach the established water quality goals, but based on the scenario results this study produced, greater adoption rates of practices than those tested here will likely be needed to attain management targets.

Hydrology Research Group members presented at the American Geophysical Union Fall Meeting, 1-17 December, 2020 - [https://www.agu.org/Fall-Meeting](https://www.agu.org/Fall-Meeting) **presenting author Authors:** **Thakshajini Thaasan¹, Noel R Aloysius¹,², Quang Phung¹, Veronica Fritz¹ and Andrew M Williams², (1) Biomedical, Biological, and Chemical Engineering, (2) School of Natural Resources, University of Missouri Columbia, Columbia, MO, United States **Title:** Uncertainty Characterization in Watershed Models of Managed Landscapes URL: [https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/662338](https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/662338)

**Authors:** **Andrew Williams¹, Noel R Aloysius¹,², Martin Appold³, Ranjith Udawatta¹ and Stephen Anderson¹, (1) School of Natural Resources, (2) Biomedical, Biological, and Chemical Engineering and (3) Department of Geological Sciences, University of Missouri Columbia, Columbia, MO, United States **Title:** Evaluating Wetland Enhancement: Impacts on Groundwater and Surface-Water URL: [https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/771667](https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/771667)

**Authors:** **Quang Phung¹, Noel R Aloysius¹, Claire Baffaut², Allen Thompson¹, Thakshajini Thaasan¹, Andrew M Williams¹, Veronica Fritz¹ and Claire Blodgett¹, (1) University of Missouri Columbia, Columbia, MO, United States, (2) Cropping Systems and Water Quality Research Unit, Columbia, MO, United States **Title:** Evaluate the performance of the Soil Vulnerability Index using a high spatial resolution hydrological model URL: [https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/755746](https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/755746)
Authors: **Bolor Altansukh** and **Noel Aloysius**, University of Missouri, Columbia, MO, United States

Title: Data-driven estimates of hydro-logic fluxes and its drivers in Mongolia

URL: [https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/772092](https://agu.confex.com/agu/fm20/meetingapp.cgi/Paper/772092)

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**Dr. Noel Aloysius** (right front) and members of his research and drone team. (Photo by Bailey Stover.)

**Noel Aloysius** delivered lectures at the following institutions as part of the department seminar series: (1) Department of Earth and Climate Sciences, San Francisco State University and (2) Department of Civil and Environmental Engineering, University of California Los Angeles.

**Noel Aloysius** (Principal Investigator) Project: Lower Grand Watershed Nonpoint Source Pollution Reduction Plan Funding Agency: Missouri Department of Natural Resources.

Kerry Clark (Principal Investigator) and **Noel Aloysius** (Co-Principal Investigator) Project: Documenting Impacts of Artisanal Mining and Land Clearing on Cocoa Cultivation in Ghana Funding Agency: USDA Foreign Agricultural Service Collaborator: Elizabeth Obeng (SNR PhD, 2017), Senior Research Scientist, Forest Policy, Governance and Livelihoods Division, CSIR-Forestry Research Institute of Ghana.

Investigators: Kathleen Trauth (PI), Lauren Sullivan (Co-PI), **Noel Aloysius** (Co-PI) and Henry Brown (Co-PI) Project: Pollinator Habitat Along Highway Right of Way Funding Agency: Missouri Department of Transportation.
Limnological characteristics of Missouri reservoirs: synthesis of a long-term assessment. **John R. Jones, Anthony P. Thorpe & Daniel V. Obrecht.** To cite this article: John R. Jones, Anthony P. Thorpe & Daniel V. Obrecht (2020) Limnological characteristics of Missouri reservoirs: synthesis of a long-term assessment, Lake and Reservoir Management, 36:4, 412-422. This paper summarizes the major findings of publications during 1977 to 2020, which address characteristics and processes in Missouri reservoirs. The work emphasizes how landscape features, morphology and hydrology determine reservoir trophic state and mineral turbidity, and quantifies how nutrients regulate algal biomass. Jack Jones authored the paper with Tony Thorpe and Dan Obrecht; both have been directly involved in the discovery process since joining the lab as undergraduates. DOI: [https://doi.org/10.1080/10402381.2020.1756997](https://doi.org/10.1080/10402381.2020.1756997)

**Li, C. J.** (2020). *Enhancing Environmental Education and Community Engagement at College Level through Climate Youth Engagement*, Panel Presentation at 15th Environmental and Ecology Education Research Seminar, Beijing Normal University – Hong Kong Baptist University – United International College, Virtual Conference, December 12. This was an invited presentation at the international level. Dr. Li is pictured in the bottom left Zoom screen shot.
Making the Best of Things: In mid-October, I shared with my ENV SC 2600/BIOL EN 2600 Sustainability Foundations class, the results of a [CDC study](https://www.cdc.gov) showing 31% of adults reported symptoms of depression related to the pandemic—four times higher than 2019. For college-aged people, the isolation was most troubling. Our group of 106 students met online synchronously. For most of us, this was our first online class experience. I used the study to ask “How could we build community in this online class in a global pandemic where everyone feels isolated?” A freshman suggested, “Dress up for Halloween?” Evolutionary biologist David Sloan Wilson writes that holiday decorations exemplify pro-social behaviors, altruistic behaviors that benefit groups, and belong to a class of effective evolutionary strategies ([Wilson 2011](https://www.pubmedcentral.nih.gov)). So on the Thursday before Halloween, completely optional, students joined in costumes and with silly Zoom backgrounds/filters (picture). More students joined by video that day than a typical class day; more in costume than captured in this screenshot. It brought the class together. A student in a full-body shark costume (not pictured) with an ocean video backdrop kept me laughing throughout. In a very abnormal year, where we are missing interpersonal connections, dressing up in costumes was a taste of normal, a way to connect with each other and build community in our socially-distanced class. It was a fun day. I am proud of this group and all of our students for their perseverance in a difficult year. Most of all, I give credit to SNR staff and leadership for giving students and faculty a sense of normal through both seen and unseen efforts. (Submitted by [Damon Hall](#).)
Craig Paukert gave a plenary talk at the International American Fisheries Society meeting. Paukert’s talk focused on how climate change may affect fish and fisheries and adaption strategies managers can help. Paukert was also part of an expert panel on climate change and fisheries after the plenary sessions. The photo left is a screen shot of the panel.

Craig Paukert was invited to participate in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) to develop the scoping document for the nexus assessment of the interlinkages among biodiversity, water, food and health in the context of climate change. The 40-person panel was selected because of their expertise on biodiversity, human health, agriculture. Paukert was one of two fisheries experts selected and the only one from the United States.

Craig Paukert will be part of a new Discovery Channel Documentary on the uniqueness of the natural worlds. The new show is tentatively titled Planet Snoop because it will be hosted by Snoop Dogg. Paukert will be netting paddlefish, a unique species in in the Midwest, with Oklahoma Department of Wildlife Conservation and discussing the biology and management of paddlefish and the role they play in the ecosystem. (Photo by Jason Schooley.)


The University of Missouri Center for Agroforestry (UMCA) and the Horticulture and Agroforestry Center (HARC) launched the Mizzou Agroforestry YouTube channel for the annual Missouri Chestnut Roast Festival. On the day of the virtual event, more than 1,500 YouTube views were documented, in addition to all the Facebook views. [https://www.youtube.com/channel/UCUOh8LRAf21gW2dt3uPf_UA/featured](https://www.youtube.com/channel/UCUOh8LRAf21gW2dt3uPf_UA/featured)

**Chung-Ho Lin’s** COVID-19 wastewater monitoring team is nominated for the Governor’s Award for Quality and Productivity. [https://www.training.oa.mo.gov/erp/](https://www.training.oa.mo.gov/erp/). To read about Ching-Ho and his team’s research from its beginnings, please see the link below:


**EVENTS/MEETINGS/ANNOUNCEMENTS**

**Jenna Fusinatto**, Senior Academic Advisor, doing Summer Welcome via Zoom for the first time.
After much deliberation and review, the Missouri Natural Resources Conference (MNRC) will be held this year in a virtual format – February 2-4, 2021. [https://mnrc.org](https://mnrc.org)
*[A different kind of announcement]*

Rye Moon Hemmelgarn Pilcher is pictured here with his mom **Hannah Hemmelgarn**, Education Program Coordinator, University of Missouri Center for Agroforestry.

L-R: Bo, **Zhen (Cai)**, Assistant Research Professor, and baby Evan Yuan.
Mizzou SPRTA (Sport, Parks, Recreation, and Tourism Association) held its final meeting of 2021 by hosting Mizzou Parks, Recreation and Sports (PRS) alum Zach Younker for a Q&A discussion. Zach is an Account Executive/Night Sales Manager for the Milwaukee Bucks of the NBA. Previously, Zach had worked with the Milwaukee Brewers and the St. Louis Cardinals. During the Zoom meeting, Zach shared his experiences and career advice with the students to help them navigate their career paths. The meeting was the final part of a three-part guest speaker series that SPRTA had coordinated throughout the semester. Earlier in the year, they hosted (through Zoom) members from the Ballparks of America organization in Branson, MO and Dr. Michelle Brimecombe in a special “welcome/get to know the new faculty member” meeting. (Submitted by Jason Young.)

From our house to your house.
Merry Christmas and a Happy New Year!
Joe G. Dillard, Room 47 Archivist

The SNR Monthly Reader will be distributed electronically the last working day of the month (except during breaks). Please send announcements (or if you’d like to unsubscribe) to Cindy Greenwood, Editor (greenwoodci@missouri.edu).