

# 2020 Kentucky Water Resources Annual Symposium

March 23, 2020

Marriott Griffin Gate Resort, Lexington, Kentucky

Registration and Continental Breakfast (7:30 a.m. - 8:00 a.m.)

PLENARY SESSION (8:00 a.m. - 9:30 a.m.)

Location: Salons E and F

- 8:00 *Welcome & Introduction*, Dr. Lindell Ormsbee, Director, Kentucky Water Resources Research Institute
- 8:15 Michael Griffin, Director, USGS Ohio-Kentucky-Indiana WaterScience Center
- 8:35 Paul Miller, Director, Kentucky Division of Water (*Invited, Not Confirmed*)
- 8:55 Ron Brooks, Director of Fisheries, Kentucky Department of Fish and Wildlife Resources
- 9:15 Panel Discussion and Q & A

Break (9:30 a.m. - 9:40 a.m.)

SESSION 1 (9:40 a.m. - 11:00 a.m.)

Location: Salons E and F

## Track 1A: Climate Change

Moderators: TBD

- 9:40 *Kentucky Climate Consortium*, Carmen Agouridis, Dept. of Biosystems & Ag. Engineering, UK, and Alice Turkington, Dept. of Geography, UK.
- 10:00 *Assessment of Water Temperature Trends at 40 Sampling Locations in the Ohio River Basin*, Lynn Jarrett, US Army Corp of Engineers (Retired).
- 10:20 *A Comparison of River Flooding on the Ohio River at McAlpine Upper During Two Months in 2018 with Record Setting Rainfall*, Andrea Schoettmer, National Weather Service, Louisville, Kentucky.
- 10:40 *The New Norm in Kentucky - It's Not the Heat, It's the Humidity*, Joe Sullivan, National Weather Service, Louisville, Kentucky.

## Track 1B: Karst and HAB Case Studies

Moderators: TBD

- Investigation and Remediation of an Urban Karst Gasoline Leak at Lost River Cave, Bowling Green, Kentucky*, Jason Polk, CHNGES & HydroAnalytical Lab, WKU.
- Nitrogen Fate and Transport Dynamics in Karst Agroecosystem Bedrock Channels of Central Kentucky: Insight from Numerical Modeling and High-Resolution Sensors*, Nolan Bunnell, Dept. of Biosystems and Ag. Engineering, UK.
- Correlating Nutrient Availability and Environmental Conditions with Algal Bloom Formation: A Case Study of Private Ponds in Madison County, Kentucky*, Lauren Sutton, Dept. of Chemistry, EKU.
- Seasonal Primary Productivity in the Greenup Pool of the Ohio River*, Mindy Armstead, Dept. of Natural Resources and the Environment, Marshall University.

Break (11:00 a.m. - 11:10 a.m.)

SESSION 2 (11:10 a.m. - 12:10 p.m.)

Location: Salons E and F

## Track 2A: PFAS

Moderators: TBD

- 11:10 *Evaluation of Kentucky Community Drinking Water for Per- & Poly-Fluoroalkyl Substances*, Rob Blair, Kentucky Division of Water.
- 11:30 *Fabrication of a Novel Reactive Membrane for Degradation of Polyfluorinated Compounds*, Joyner Eke, Dept. of Chemical & Materials Engineering, UK.
- 11:50 *Temperature Swing Adsorption of Perfluoroorganics By Poly(N-isopropylacrylamide) Hydrogels and Membranes*, Rollie Mills, Dept. of Chemical & Materials Engineering, UK.

## Track 2B: Studies in Forested Watersheds

Moderators: TBD

- Normalized Hydrograph Recession Analysis of Ridgetop Perched Groundwater-Vernal Pool Systems in the Daniel Boone National Forest: Preliminary Insights from 3 Years of Data*, Jonathan Malzone, Dept. of Geosciences, EKU.
- Forty Years of Data: Challenges and Opportunities Afforded by Long-Term Data Sets*, Kenton Sena, Lewis Honors College, UK.
- High Frequency Monitoring and Modeling of Sedimentation Dynamics in River-Tributary Backwater Confluences*, Ciara Pickering, Dept. of Biosystems & Ag. Engineering, UK.

## AWARDS LUNCHEON (12:15 p.m. - 1:15 p.m.)

Location: Salon C and D

## SESSION 3 (1:20 p.m. - 2:20 p.m.)

Location: Salons E and F

### Track 3A: Community Engagement

Moderators: TBD

- 1:20 *Community-Engaged Science to Address Drinking Water Contaminant Exposure in Martin County Kentucky*, Jason Unrine, Dept. of Plant and Soil Sciences, UK.
- 1:40 *Strategic Depaving- Community Engagement in Green Infrastructure Design as a Means to Build Urban Water Resilience*, Steven Mathisen, Hatch Something New.
- 2:00 *Rethinking Community Engagement Strategies in the North Fork of the Kentucky River Watershed Plan*, Caitlin Myers, Headwaters, Inc.

### Track 3B: Groundwater Data

Moderators: TBD

- Recent Efforts to Improve Usefulness of, and Access to, Kentucky Groundwater Data*, Chuck Taylor, Kentucky Geological Survey, UK.
- Improving Groundwater and Karst Data Content and Curation*, Sarah Arpin, Kentucky Geological Survey, UK.
- Patterns in Kentucky Groundwater Geochemistry: Utilizing Multivariate Statistics to Assess Groundwater Systems*, Benjamin Tobin, Kentucky Geological Survey, UK.

## POSTER SESSION (2:20 p.m. - 3:30 p.m.)

Location: Dixiana & Lands End and Calumet & Darby Dan

## SESSION 4 (3:30 p.m. - 4:50 p.m.)

Location: Salons E and F

### 4A - Innovations in Water & Wastewater Treatment and Env. Management

Moderators: TBD

- 3:30 *Tetracycline Sorption-Desorption Equilibrium and Kinetics from Municipal Biosolids and Poultry Litter by Diffusive Gradients in Thin Films (DGT)*, Elisa D'Angelo, Dept. of Plant and Soil Sciences, UK.
- 3:50 *\*Metal-Oxide Photocatalyst Hybrid Materials for Environmental Cleaning Applications*, Matthew Nee, Dept. of Chemistry, WKU.
- 4:10 *Comprehensive Utility-Wide Greenhouse Gas Inventory for Wastewater Treatment Facilities*, Milad Ebrahimi, Louisville/Jefferson County Metropolitan Sewer District.
- 4:30 *Watershed Management and Hazard Mitigation Planning: Collaborative Benefits in a Changing Climate*, Mahtaab Bagherzadeh, Kentucky Division of Water.

### 4B - BMP Monitoring and Stream Restoration

Moderators: TBD

- Optimizing Stormwater Management for Stream Integrity- a Northern Kentucky Case Study on the Science and Implementation*, Matt Wooten, Sanitation District No. 1 of Northern Kentucky.
- Monitoring McConnell Springs Stormwater Quality Wetland Pond and Gainesway Pond Retrofit: 2010-2019*, David Price, Division of Water Quality, Lexington Fayette Urban County Government.
- Use of Small Unmanned Aircraft Systems (sUAS) in the Kentucky Division of Water*, Wesley Turner, Kentucky Division of Water.
- Stream Restoration and Infrastructure Protection: North Branch Sycamore Creek*, Amy Schultz, Beaver Creek Hydrology.

## 4:50 p.m. Announcement of Student Awards and Adjourn

Location: Salon F

\* Denotes project supported by USGS 104b grant funds.

**Poster Session (2:20 p.m. - 3:30 p.m.)**

1. *Climate Change Impacts on Surface and Subsurface Water Pathways in a Mature Karst System, Cane Run Royal Spring Basin*, Nabil Al Aamery, Department of Civil Engineering, University of Kentucky.
2. *\*Causes and Extent of Elevated Groundwater Methane Concentrations in Eastern Kentucky*, Cristopher Alvarez, Department of Earth and Environmental Sciences, University of Kentucky.
3. *\*Assessment of Predictive Measures of Cyanobacteria in Three Recreational Lakes in the South-Central Kentucky*, Swade Barned, Department of Environmental Health Science, Eastern Kentucky University.
4. *Source, Fate, and Transport of Sediment Using Stable Carbon and Nitrogen Isotopes in Mature and Immature Karst Systems*, Leonie Bettel, Department of Civil Engineering, University of Kentucky.
5. *Monitoring of Suspended Sediment Load and Runoff-plots Soil Loss in an Agroforestry Watershed at Karst Plateau, Southwest of China*, Le Cao, State Key Laboratory of Environmental Geochemistry, Institute of Geochemistry, Chinese Academy of Sciences.
6. *Developing ANN Model for Predicting Lake Michigan E. Coli Counts*, Chandra Chandramouli, Department of Civil Engineering, Purdue University Northwest.
7. *Examining Long Term Trends in Rainfall and Stream Flow at Upper Wabash River Basin Using Self Organizing Map*, Chandra Chandramouli, Department of Civil Engineering, Purdue University Northwest.
8. *\*Modeling Impacts of Seasonal Land Cover Change on Fluvial Sediment Loads of the Upper Floyds Fork Watershed, KY*, Andrew Day, Department of Geography and Geosciences, University of Louisville.
9. *Organic Matter Fingerprinting in Backwater Confluences of Regulated Rivers: Implications for Fluvial Nitrogen Budgets*, Gina DeGraves, Department of Biosystems and Agricultural Engineering, University of Kentucky.
10. *Quantifying Climatic Controlled Variation of Groundwater Recharge with a Water Budget Approach for Isolated Ridgetops in the Daniel Boone National Forest*, Daniel Draper, Department of Geosciences, Eastern Kentucky University.
11. *Hydrogeomorphic Classification of Ridgetop Wetlands in the Daniel Boone National Forest*, Robert Engleman, Department of Geosciences, Eastern Kentucky University.
12. *\*Comparison between PSC Water Loss and AWWA Free Water Audit*, Natalie Fields, Department of Civil Engineering, University of Kentucky.
13. *Stream Power in Correlation to Channel Morphology in Murray Central Park*, Morgan Franklin, Hancock Biological Station, Murray State University.
14. *Assessment of Nitrate Seasonality in the Ohio River Basin*, Morgan Gerlitz, Department of Civil Engineering, University of Kentucky.
15. *Seasonal Trends in Primary Productivity in Fourpole Creek*, Alice Hall, Department of Natural Resources and the Environment, Marshall University.
16. *Relationship between Topography Positions and Soil Properties in Agricultural Landscapes of Kentucky and Tennessee*, Kaitlin Hatchett, Huston School of Agriculture, Murray State.
17. *Assessment of Water Chemistry's Influence on Carbon Cycling and Microbial Respiration using Standardized Substrates in Upper Ohio River Watersheds*, Emily Huff, Department of Natural Resources and Mathematics, West Liberty University.
18. *Agricultural Runoffs in Karst Landscapes: Assessment of Glyphosate Concentration in Kentucky Watersheds*, Pedro Martin, Department of Civil Engineering, University of Kentucky.
19. *Reduced Graphene Oxide Membranes: Properties and Potential Drinking Water Applications*, Trisha Nickerson, Department of Chemical and Materials Engineering, University of Kentucky.
20. *Continuous Nutrient Sensors Used to Predict Harmful Algal Bloom Events in the South Elkhorn Watershed*, John Pike, Department of Civil Engineering, University of Kentucky.
21. *Quantifying the Dissolved Reactive Phosphate Dynamics in Karst Drainage of the Inner-Bluegrass using Oxygen Isotopes*, Cory Radcliff, Department of Biosystems and Agricultural Engineering, University of Kentucky.

**Poster Session (2:20 p.m. - 3:30 p.m.) cont.**

22. *Innovative Polymers and Nanocomposites for the Detection and Removal of Halogenated Organic Contaminants in Water Sources*, Rishabh Shah, Department of Chemical and Materials Engineering, University of Kentucky.
23. *Growing with the Flow: New Strategies for Volunteer Monitoring*, Perry Thomas, Watershed Management Branch, Kentucky Division of Water.
24. *Comparing the Characteristic Soil Moisture Curves of Natural, Constructed, and Experimental Ridgetop Wetland Soils*, James Thompson, Department of Geosciences, Eastern Kentucky University.
25. *An Assessment of the Predictive Capability of Water Quality Measures for Estimating Cyanotoxin Concentrations in Six Central Kentucky Lakes*, Amber Turner, Department of Environmental Health Science, Eastern Kentucky University.
26. *Thio-Functionalized Membranes for the Removal of Heavy-Metal Ions from Wastewater*, Ronald Vogler, Department of Chemical and Materials Engineering, University of Kentucky.
27. *Salinization and Alkalinization of Kentucky Lake: A Result of Human Activity?* David White, Hancock Biological Station, Murray State University.
28. *Elevated Streamwater Conductivity Reduces Carbon-Processing Rate*, James Wood, Department of Natural Resources and Mathematics, West Liberty University.

\* Denotes project supported by USGS 104b grant funds.

**The 2020 Kentucky Water Resources Annual Symposium was made possible with support from:**

