

10th NATIONAL MONITORING CONFERENCE

Working Together for Clean Water

May 2 – 6, 2016

Tampa, Florida



Conference Program



Disclaimer

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The opinions expressed by presenters, speakers, discussion panelists, committee members and exhibitors are those of said individuals and are not necessarily those of the National Water Quality Monitoring Council, the North American Lake Management Society nor the conference sponsors.

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National Water Quality Monitoring Council

Working together for clean water



Welcome to the 10th National Monitoring Conference!

We are delighted to welcome you to sunny Tampa to share recent successes, new findings, and cutting edge developments in water-quality monitoring with colleagues from around the U.S. (and from even farther!). We have another outstanding program packed with a huge variety of presentations and opportunities for interaction and information sharing. Featured topics include:

- Latest approaches for monitoring harmful algae blooms, nutrients, and cyanobacteria
- Emerging technologies in the use of continuous, real-time sensors
- Assessing the quality of sensitive coastal areas
- Advances in promoting and implementing data-sharing programs
- Improving how we communicate science and data to decision-makers and the public
- Tools and resources for building and sustaining volunteer monitoring programs
- Monitoring emerging and legacy contaminants
- Assessing trends in water quality

We hope you will take full advantage of over 300 oral presentations, more than 70 poster presentations (special viewing time, Wednesday 1:00 pm – 2:00 pm), and a wide variety of panels, workshops, networking sessions and field trips. In addition, please be sure to:

- Visit our many **demonstrations** of data portals, software, new web pages, and apps. Check the conference program to see when demonstrations are scheduled at the EPA, USGS and National Water Quality Monitoring Council booths, or when a topic expert will be available to chat.
- Meet and connect with colleagues from all over at our topic-based **Networking Block** on Tuesday after lunch.
- Learn from our fascinating **plenary speakers** on Tuesday and Thursday – they have unique perspectives on the work we do.
- Explore **exhibits** in the Exhibit Hall all week, and speak with vendors and representatives. They have an amazing array of products and services of value to your monitoring program! Be sure to attend the Exhibitors' Reception on Tuesday evening, and get ready to be wowed by WaterVentures Florida's Learning Lab, parked outside during the day on Tuesday only.
- Participate in one of our **after-hours gatherings** on Wednesday evening – either social or work-related – and go out on the town. Look in your conference packet for information on restaurants and fun things to do in Tampa!

We sincerely hope this conference will help you in your continuing effort to advance water-quality monitoring programs and protect our precious water resources. On behalf of the many individuals who made this conference happen, we wish to express our thanks to YOU for all you do, and urge you to get involved in the National Water Quality Monitoring Council in the future. Learn about our vision, our goals, our products and our people, and let's work together for clean water.

Susan Holdsworth
Co-Chair, U.S. Environmental Protection Agency

Gary Rowe
Co-Chair, U.S. Geological Survey



National Water Quality Monitoring Council

Working together for clean water

Welcome volunteer monitors, friends and colleagues!

We are pleased to welcome you to the 10th National Monitoring Conference. We hope you will meet new colleagues, reconnect with old friends, share your perspectives and knowledge, learn about the latest developments in the field, explore areas of interest, and (of course) have fun.

2016 marks an exciting year for our community. The National Water Quality Monitoring Council has just passed a charter to establish a new Volunteer Monitoring Working Group. The purpose of the new working group is to engage key stakeholders in volunteer monitoring-related discussions; provide a conduit for our community to share resources, technology, and lessons learned; and facilitate the integration of volunteer monitoring activities with ongoing water-quality monitoring conducted by local, state, and federal agencies. Volunteer monitoring has been a key citizen science initiative for over fifty years. Passage of this charter offers us the opportunity to increase and improve communication between the volunteer monitoring community and our federal, state, and local partners, and to develop new national resources and tools to keep the movement vigorous. Stay tuned for updates on this working group and new initiatives, and contact us if you'd like to get involved!

Over the next few days, we hope you will take full advantage of the Conference's offerings that have a volunteer monitoring focus. These include extended sessions on enabling volunteer monitoring data sharing through the Water Quality Portal (D8) and effective science communication (I8 and J8), and concurrent sessions on integrated regional partnerships (C8), managing and sharing volunteer data (E7), doing more with less (G6), models for community initiatives local to global (H6), volunteer monitoring lessons learned (K7), Southern volunteer monitoring initiatives (L6), and a panel on global citizen science (M1). Your colleagues are speaking in many sessions and are presenting posters that will be on display throughout the conference. In addition, also look for:

- **Volunteer Monitoring Exhibitor Booth:** Located in the exhibit hall next to the EPA table, this will be “volunteer monitoring central” for the conference. Drop off materials to share, write down a volunteer monitoring topic/need, sign up for our Wednesday night dinner, learn about our volunteer monitoring webpage and resources, or just hang out to meet your colleagues.
- **Global Lake Ecological Observatory Network Lake Observer App Demo:** Come to the EPA booth at Tuesday's Exhibitor Reception (5:00 – 5:30 pm) to see a demonstration of the new Lake Observer mobile app and how it can be used for crowdsourcing lake and water quality observations. The app will be available for the annual Secchi Dip-In and data will be made publicly available for the first time via the Water Quality Portal.
- **Wednesday afternoon Florida LAKEWATCH field trip** (pre-registration required)
- **Wednesday Volunteer Monitoring Gathering and Dinner:** Wednesday after the concurrent sessions, we will gather to discuss the new Council Volunteer Monitoring Working Group and ideas for how to better connect and communicate between conferences. After the meeting, come for a fun dinner at a nearby restaurant.
- **Volunteer Monitoring “Fluid 5K” Run:** On Thursday at 7:00 am, join this race as a runner, walker, sponsor or volunteer. Funds raised will be applied toward the Eleanor Ely Memorial Volunteer Monitoring travel scholarships for the next conference in 2018; if you won't be running, consider sponsoring one of your friends or colleagues! (pre-registration required)

Last, we extend our very special thanks to the National Atmospheric Deposition Program, C.I.Agent Storm Water Solutions, Cooper Environmental, Diagnostic Technology Pty Ltd, LaMotte Company, and Turner Designs, who donated registrations that helped members of the volunteer monitoring community attend this conference.

Once again, welcome!

The Volunteer Monitoring Committee

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National Water Quality Monitoring Council

Working together for clean water

Working Together For Clean Water: 2015-2016 Council Highlights

Each day, water-quality issues become more complex and the need to address them more urgent. The demand for clean, pure water continues to grow. At the same time, budgets to monitor, assess, protect and restore our waters are tighter, forcing scientists and managers to attempt to do more with less. The National Water Quality Monitoring Council (Council) exists to bring together the diverse expertise needed to develop collaborative, comparable, and cost-effective approaches to monitor and assess our Nation's water quality

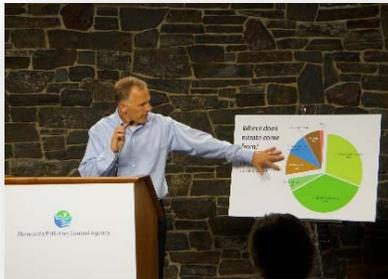
(<http://acwi.gov/monitoring/>). These approaches are fundamental to the successful management and sustainability of our water resources.



The Council and its partners have made significant advances in setting priorities, including data management and information dissemination; compatible web services; State and regional councils; volunteer monitoring;

assessment and statistical tools; sensors and real-time monitoring; and various tools for sharing and communicating developments and innovations in the monitoring community. Many Council products and services are now available to help meet water needs across the Nation.

Created in 1997, the National Water Quality Monitoring Council (Council) is a national forum for coordination of comparable and scientifically defensible methods and strategies to improve water quality monitoring, assessment and reporting. The Council brings together scientists, managers, and citizens to ensure that information about the quality of our water resources is accurate, reliable, and comparable. The Council fosters collaborative and cost-effective approaches to improve and advance the science of water-resources monitoring. The Council is chartered as a subgroup of the Advisory Committee on Water Information (ACWI) under the Federal Advisory Committee Act.



The Monitoring Framework

Council Workgroups

Methods and Data Comparability Board (Methods Board) – Provides a forum for evaluating and promoting methods that facilitate comparability among water-quality monitoring and analytical methods. (**Contact:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

The **Aquatic Sensor Workgroup** is a subcommittee of the Methods Board that has focused on quality control and data management of sensor data. (**Contacts:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

Water Information Strategies Workgroup – Defines and promotes strategies for monitoring designs; data management, access, and exchange; data integration and analysis; and information reporting to address water needs. (**Contacts:** Mary Skopec, mary.skopec@dnr.iowa.gov, (319) 335-1579, Doug McLaughlin, douglas.mclaughlin@wmich.edu, (269)-276-3545)

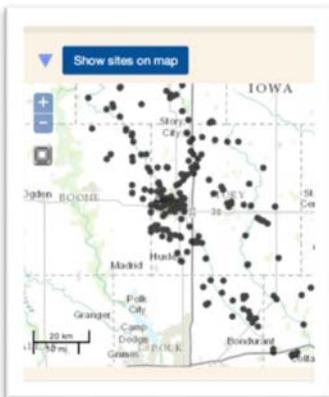
Collaboration and Outreach Workgroup – Works to build partnerships that foster collaboration and communication within the water-quality monitoring community. (**Contacts:** Candice Hopkins, chopkins@usgs.gov, (208) 387-1331, and Danielle Donkersloot, Danielle.Donkersloot@dep.nj.gov, (609) 633-9241)

National Network of Reference Watersheds – Defines and promotes strategies for improved coordination and collaboration for sharing and accessing reference watershed information and water-quality data for freshwater streams (**Contacts:** Mike McHale, mmchale@usgs.gov)

Volunteer Monitoring Working Group – Engages key members of the Council in volunteer monitoring-related discussions to better encourage integration of volunteer monitoring activities with ongoing water-quality monitoring conducted by local, state, and federal agencies. (**Contacts:** Danielle Donkersloot, Danielle.Donkersloot@dep.nj.gov, (609) 633-9241 and Julie Vastine, vastine@dickinson.edu, (717) 245-1135).

Water Quality Portal – Strategic Plan for the Future

The Water Quality Portal is a collaborative effort of the Council, USEPA, and USGS that creates a single, user-friendly web interface to locate water-quality data collected by Federal, State, and tribal partners. It contains over 150 million public water-quality data records that can be accessed and downloaded in a variety of formats. Since it was launched in 2012, over 36,000 unique visitors have accessed the Portal for water quality data records. On a given week day, there are between 50-150 visits and as many as 24,000 downloads via the Portal web services. The increased use of the services means that there are now more users accessing the Portal through automated processes than person visits, a clear demonstration of the value of the Portal. In fact, in a recent 24 hour period, web service calls successfully downloaded nearly 5.5 billion rows of data.



Map output from the **Water Quality Portal** showing sites where water nutrient samples have been collected in the South Skunk Basin. The merged dataset includes NWIS, STORET, and STEWARDS sites.

In early 2014, the Portal Team – supported by EPA and USGS – worked with the USDA Agriculture Research Service to make their water-quality data available through the Portal. STEWARDS (Sustaining the Earth's Watersheds, Agricultural Research Data System) is the USDA ARS's repository of data from ARS research watersheds. The teams have worked together over the past two years to map ARS data to the Water Quality eXchange (WQX) schema and resolve other technical data migration issues. Users can now query data from USGS National Water Information System (NWIS), USEPA Storage and Retrieval Data Warehouse (STORET), and USDA STEWARDS databases simultaneously. To date, ARS has contributed 1,103,291 sample results from 169 sites.

The Portal continues to expand its utility by accessing monitoring methods in the National Environmental Methods Inventory (NEMI). It leverages the NEMI analytical method catalogue, which allows an immediate display of station and data queries on a NEMI mapping interface. Now, water managers and data analysts can quickly link a sample result to the full method that was used to

determine that result. Other major functionality added includes the ability to query for and retrieve biological collection data and an open web mapping service.

In 2016, the Portal team developed a strategic plan that will guide Portal development during the next few years. The need for such a strategic plan emerged as demand for Portal functions continued to expand and increase in complexity from both a data management and data retrieval viewpoint. To access a copy of the strategic plan, please visit <http://acwi.gov/monitoring/>. Visit the **Water Quality Portal on the Web** at www.waterqualitydata.us. (**Contacts:** Jim Kreft, jkreft@usgs.gov, (608) 821-3919).

Establishing a National Network of Reference Watersheds for Freshwater Streams



A unique national network of pristine and minimally disturbed watersheds is the focus of the

Council's effort to address the need for reliable long-term data and information about watersheds that are minimally disturbed by human activities. The National Network of Reference Watersheds (NNRW) is a web-based data delivery system with a collaborative, multipurpose design that emphasizes chemical, physical, and biological aspects of water quality and integrates, to the extent possible, with existing networks. The NNRW has defined a set of "core" reference watersheds that includes the least disturbed watersheds having the longest periods of record for selected water-quality data. The NNRW web-based resource allows users to define their own reference criteria to identify watersheds that best meet their specific needs and objectives. Membership in the network is voluntary and open to interested individuals and institutions. More information and access to the NNRW at:

<https://my.usgs.gov/nnrw/main/home> (Contact: Mike McHale, mmchale@usgs.gov, (518) 285-5675).

Volunteer Monitoring and Citizen Science

Connecting volunteer monitoring groups to existing and new resources as well as to each other and with other monitoring efforts is the purpose of the Council's new Volunteer Monitoring Working Group. The group's web page contains an explanation of why volunteer monitoring is effective and important, provides information and links to the USEPA's volunteer monitoring list serve, highlights volunteer monitoring success stories, links to a "how-to" library compiled by the National Water Resource project, and lists other key resources. The website also includes an interactive map of where volunteer monitoring programs are located. The Council's Working Group aims to increase volunteer monitoring opportunities, enhance national communication, and promote volunteer monitoring as a viable tool for agencies and organizations. For more information, visit the group's webpage at <http://acwi.gov/monitoring/vm> (Contact: Danielle Donkersloot, Danielle.Donkersloot@dep.nj.gov, (609) 633-9241 and Julie Vastine, vastine@dickinson.edu, (717) 245-1135).

National Environmental Methods Index

The National Environmental Methods Index (NEMI) one of the Council's flagship products since 2002, is an online resource of laboratory methods and field protocols, including more than 1,200 methods for chemical, biological, and physical monitoring (see <http://www.nemi.gov>). NEMI methods are linked to sample results in the Water Quality Portal, allowing water managers and data analysts quick access to method information used to produce water-quality results.

(Contact: Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869 or Jim Kreft, jkreft@usgs.gov, (608) 821-3919).



Water Quality Monitoring: A Guide to Informed Decision Making

The Water Information Strategies (WIS) group has created a fact sheet series to help managers, non-technical audiences, policy makers, and the public understand how monitoring programs are designed to meet management needs. The fact sheets seek to improve understanding of how to design monitoring that addresses specific objectives and to further clarify that multiple designs may be needed to address a variety of Clean Water Act and management water information needs. Overall, the goal of the fact sheets is to provide succinct information to a less technical audience about basic elements of different monitoring designs, the questions answered by a particular design, the limitations and strengths of a design, and links to resources that may help with the implementation of a design. Fact sheets may also explain how existing monitoring may be leveraged to meet as many objectives as possible. Fact sheet topics include:

Monitoring designs (probabilistic/statistical surveys; targeted monitoring; rotating basins; fixed trend networks); and

Using monitoring data (water quality reporting through indices and report cards; statistical decision illustrator, and modeling of water quality data).

The fact sheets are intended to be templates that can be modified using local examples to customize the message for the appropriate audience. Water Quality Monitoring Fact Sheets will be available online at the NWQMC's website (<http://acwi.gov/monitoring/>). (Contact: Mary Skopec, mary.skopec@dnr.iowa.gov, (319) 400-0442.)

Decision Illustrator now Available!

Water resources professionals regularly rely on monitoring data to make important decisions regarding public health and safety and natural resource conditions. However, while monitoring is essential to making good water management

decisions, it always carries with it an element of uncertainty. Understanding how to characterize, communicate, and manage that uncertainty presents an important challenge to good water resources decision-making.

One important type of uncertainty can be described in terms of the statistical confidence with which some value used in decision-making can be estimated from a set of monitoring results. Statistical confidence is often influenced by a sometimes-complicated interaction between the number of measurements made, measurement precision, and the variability encountered in the environment, and this complexity can be difficult to communicate to environmental managers and interested stakeholders.

To help support the NWQMC monitoring framework fundamentals of Coordination, Communication, and Collaboration on this important topic, members of the WIS workgroup are developing an interactive Microsoft Excel® spreadsheet tool called the "Water Resources Statistical Confidence Illustrator" (the "Illustrator" for short). The Illustrator focuses on a specific, common water quality assessment challenge, i.e., comparing an average of several measurements with a numeric threshold used to distinguish between desirable and undesirable water quality conditions. It provides a simplified but useful way to explore factors that can influence the confidence in statistically supported decision-making in water quality assessments. Because it is intended primarily as a learning and communication tool, WIS hopes that the Illustrator can foster improved dialogue and understanding of how monitoring can best reduce uncertainty and improve water resources decision-making. A beta version of the Illustrator is currently available for use, and feedback is welcome. (Contact: Doug McLaughlin, douglas.mclaughlin@wmich.edu, (269)-276-3545).

Aquatic Sensor Workgroup (ASW)

The ASW worked with partners in public and private sectors on a variety of efforts in the past two years. A position paper, "Emerging Tools for Continuous Nutrient Monitoring Networks: Sensors Advancing Science and Water Resources Protection" was recently published in the Journal of the American Water Resources Association (JAWRA) and is available at <http://onlinelibrary.wiley.com/doi/10.1111/1752-1688.12386/full>. Ongoing ASW collaborative efforts include the Nutrient Sensors Challenge and the Watershed Interoperability Experiment, both of which are featured at this year's



conference, along with a workshop to plan for the next round of sensor innovation. An illustrated deployment guide is in development and is available at <http://acwi.gov/methods/sensors/> (Contact: Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869).

The Council Continues to Reach Out to the Water Monitoring Community by:

Sponsoring this biennial **National Monitoring Conference** to help water stakeholders exchange information and technology related to water monitoring, assessment, research, protection, restoration, and management, as well as to develop new skills and professional networks.

Publishing the bi-annual online issues of **National Water Monitoring News**, highlighting recent activities of the national, State, regional, and tribal councils, watershed partnerships, and volunteer monitoring groups; projects, publications, tools, findings or announcements of interest to the water monitoring community (<http://acwi.gov/monitoring/newsletter/>).

Hosting **webinars** representing a wide range of topics, speakers, and audiences such as:

- Effective Science Communication
- Continuous Monitoring for Nutrients: State of the Technology and State of the Science
- Microplastics in Great Lakes Tributaries
- Science-based Response to Bitumen Spills in Rivers

Webinars are recorded, transcribed, and posted to our **YouTube channel** ([youtube.com/nwqmc](https://www.youtube.com/nwqmc)) for convenient viewing. Sign up for our webinar listserv to stay informed of our upcoming webinars (<http://acwi.gov/monitoring/webinars>).

Announcing products and information relevant to the monitoring community through our **LinkedIn Group** and **Twitter Account** (@NWQMC).

The Council is dedicated to supporting and sustaining partnerships within the water monitoring community, including State, regional and tribal councils, as well as watershed groups and alliances, through these and many other outreach activities. (Contacts: Candice Hopkins, chopkins@usgs.gov, (208) 387-1331, and Danielle Donkersloot, Danielle.Donkersloot@dep.nj.gov, (609) 633-9241).

Additional information on Council activities can be found at the Council website, <http://acwi.gov/monitoring/>.

Conference Sponsors



Thank You!

To our generous sponsors who have made the 10th National Monitoring Conference a success!

Co-sponsors



Sponsors



Elizabeth Jester Fellows Award



Elizabeth Jester Fellows was the Director of the EPA's Assessment and Watershed Protection Division until her death in November 2000. She dedicated her career to natural resources management, environmental protection, and public service. Elizabeth was the EPA cochair of the Intergovernmental Task Force on Monitoring (ITFM) and envisioned the creation of its successor, the National Water Quality Monitoring Council. She was a strong and effective advocate for developing a nationwide framework for coordinating, collecting, assessing, and communicating water quality monitoring information and results. Elizabeth was the personification of the goals and ideals of the monitoring Council, and her legacy has been an inspiration to those who have followed her and continue the Council's work. In her memory, the Council has established the Elizabeth Jester Fellows Award to recognize individuals for outstanding achievement, exemplary service, and distinguished leadership in water quality monitoring and environmental protection.

William G. Wilber, USGS, Chief, National Water Quality Assessment Program (retired) 2016 Elizabeth J. Fellows Award Recipient

William G. "Bill" Wilber devoted the majority of his 37-year career with the US Geological Survey (USGS) to creating and leading the USGS National Water Quality Assessment (NAWQA) Program. The NAWQA Program is the largest and most ambitious water-quality program ever undertaken by USGS, with the goals to assess water quality conditions in the Nation's streams and aquifers, evaluate how water quality is changing over time, determine how natural factors and human activities affect status and trends, and forecast future water quality conditions. Although creation and oversight of NAWQA over the years was a team effort, it was Bill's tireless leadership, first as a leader of the pilot phase of NAWQA beginning in 1986, then as National Synthesis Chief, and finally as NAWQA Program Coordinator, that made NAWQA the highly respected program it is today.

Since the early 1990s, Bill has done one-day field trips with 7th graders from Langston Hughes Middle school (Reston, Va.) in the fall each year. Bill says, "During these trips we work with the students on different aspects of hydrology, water quality, mapping, and other earth science topics in small groups. At two streams, the kids collect and compare aquatic organisms. The two streams are close to each other but typically have very different aquatic communities. We talk with the students about the various environmental and other factors that account for these differences."



Throughout his career Bill insisted on the highest data-quality standards for NAWQA and had the program conduct rigorous lab- and field-based QC studies to document the quality of NAWQA data. Bill also made sure that NAWQA was not just a "monitoring program;" instead he advocated that water-quality data, models, and interpretative studies be integrated with national-scale geographic data on natural and human factors that affect water quality, such as climate and land use, to better understand how, why, where, and when water-quality conditions vary across the country. This approach was used to construct water-quality models that can extrapolate concentrations of selected water-quality parameters to unmonitored areas across the conterminous US, evaluate sources of contaminants, and determine the quantity and timing of contaminant delivery to important receptors such as estuaries or public supply wells. Getting NAWQA water-quality findings out to those who needed it, in a wide variety of formats, technical levels, and venues (including the National Monitoring conferences), was also something Bill promoted and oversaw.

Bill worked with Elizabeth Fellows on the Interagency Task Force on Monitoring Water Quality (ITFM) and was greatly impressed with her passion and willingness to work with others to improve water-quality monitoring across the Nation. One of the major recommendations of the ITFM was the creation of the National Water Quality Monitoring Council and Bill has been a strong advocate of the Council over the years. This includes his support for the Water Quality Portal and most recently, his leadership in helping create the National Network of Reference Watersheds.

Barry Alan Long Award



Barry Long was a hydrologist and water quality specialist with the National Park Service, Bureau of Land Management, and the U.S. Forest Service. In June 2000, Barry was diagnosed with acute myeloid leukemia. His colleagues and supporters were moved by the tremendous perseverance, spirit, and courage he displayed during his long struggle with the disease. Barry continued his career as a tactful advocate for the protection of water resources and through his work on the Council, which included organizing the 2010 National Monitoring Conference in Denver, Colorado. In his memory, the Council established the Barry A. Long award to honor an individual who has demonstrated exceptional perseverance, positive spirit, and significant contributions to water resource protection.

Faith Zerbe, Director, Delaware Riverkeeper Monitoring Network 2016 Barry Alan Long Award Recipient

For 18 years, Faith Zerbe has provided the leadership and vision that has helped the Delaware Riverkeeper Network (DRN) Monitoring Program achieve broad success.

Spanning four states, the Delaware River watershed encompasses a multitude of habitats and contains numerous historic and emerging threats to water quality. Thus the challenges to DRN's monitoring not only span a broad scientific spectrum but a diverse political one as well.

DRN was the first organization to develop citizen watchdogs around large pipeline projects in the Delaware River basin, and now receives data from over 50 trained citizen pipeline watchers. Faith has held workshops to train Pipeline Watch volunteers in New York, New Jersey, and Pennsylvania. Since 2011 when DRN's Pipeline Watch was begun, DRN staff and volunteers have conducted over 180 field visits, generated 140 field observation reports, and inventoried over 10,000 photos and videos related to baseline or pipeline construction work in New York, New Jersey, and Pennsylvania.

Faith also leads DRN efforts to coordinate with agencies that conduct monitoring in the region including the Delaware River Basin Commission, the Pennsylvania Department of Environmental Protection, the US Geological Survey, the National Park Service, as well as universities and research institutions such as the Stroud Water Research Center and the Academy of Natural Sciences of Drexel University. Faith recently helped develop a new partnership with Rider University to conduct heavy metals testing for DRN for existing stream stations while also examining road salt impacts.

In 2004, a major oil spill impacted the Delaware Bay. Faith worked with the New Jersey Department of Environmental Protection to develop an oil spill field protocol and training materials, mobilize volunteers looking for injured wildlife, and document area where oiling occurred in three states. Prior to DRN's involvement, the Coast Guard opposed volunteer involvement in catastrophic response; now volunteers are embraced by that agency and included in the Delaware River contingency plan.

Faith's work can take her from the Delaware Bay to the New York Highlands. At times that means that a trip to New York to train volunteers must come immediately after a full night of tagging horseshoe crabs along Delaware Bay beaches. Such demands might be daunting to others, but Faith's passion and commitment sustain her. She always believes she should be doing more. Faith is receiving the Barry A. Long Award for the exemplary commitment she has made to monitor and protect the health of the Delaware River watershed, for the leadership she has demonstrated in expanding monitoring protocols and monitoring opportunities for private citizens, and for her advocacy in support of citizen science to safeguard our streams.

Congratulations Faith!

In recognition of significant contributions to water resource protection, the National Water Quality Monitoring Council is pleased to present the 2016 Barry Alan Long Award to:

Faith Zerbe
Director

Delaware Riverkeeper Monitoring Network



Vision Award



The National Water Quality Monitoring Council's Vision Award recognizes a monitoring council or group that has demonstrated extraordinary vision and cooperation in the field of water quality monitoring on a local or regional level to enhance the management and protection of aquatic resources.

Georgia Adopt-A-Stream 2016 Vision Award Recipient

For 23 years, the Georgia Adopt-A-Stream (AAS) program has demonstrated extraordinary dedication and commitment to educating and training the citizens of Georgia in protecting water quality.

Georgia AAS is a volunteer citizen science program that encourages individuals and communities to monitor and improve sections of streams, wetlands, lakes or estuaries. Volunteers monitor chemical, bacterial, and biological conditions throughout the state. Achievements in 2015 included over 480 quality assured / quality controlled workshops certifying thousands of water quality monitoring volunteers and over 5,500 water quality testing events at more than 650 sites.

In recognition of extraordinary vision, collaboration, and leadership in water quality monitoring and environmental protection, the National Water Quality Monitoring Council is pleased to present the 2016 Vision Award to:

Georgia Adopt-A-Stream
Program Manager: Harold Harbert
Georgia Environmental Protection Division

From left to right, the Georgia AAS staff of Seirisse Baker, Chelsea Hopkins, and Harold Harbert work with many local partners and thousands of volunteers to monitor and/or improve sections of streams, wetlands, lakes or estuaries.



Starting in 2008, Georgia Adopt-A-Stream launched its innovative, user-friendly and publicly-accessible online database (www.GeorgiaAdoptAStream.org/db). The online database revolutionized the program; within two years the number of monitoring events per year doubled and have been increasing rapidly ever since; active monitoring sites have grown from less than 200 sites in 2007 to over 650 sites in 2015!

AAS continues to grow partnerships with over 70 government, nonprofit, university and local coordinators serving as leaders that implement the program in their communities. In the late 2000s, AAS strengthened its involvement with EPA's 319(h) grant program by developing monitoring training programs for grant awardees. Some of these programs collected regulatory level data for state 305(b) reports. Since 1999, AAS has partnered with Alabama Water Watch through a Memorandum of Agreement allowing volunteers certified in either program to work with and submit data to both programs. Citizens from other bordering states such as South Carolina, North Carolina, Tennessee, and Florida have come to Georgia to be certified as trainers, taking the program back into their states, conducting workshops to certify new volunteers and using the AAS database to house their volunteers' data and certifications. AAS is a leader in volunteer water quality monitoring and continues to strengthen its program to protect Georgia's waterways.

Congratulations to the leadership, staff and dedicated volunteers of Georgia Adopt-A-Stream!

Acknowledgments



The National Water Quality Monitoring Council would like to acknowledge the commitment and hard work of all who helped make this conference run smoothly: the abstract reviewers, session moderators, workshop leaders and panel organizers, field trip leaders, oral and poster presenters, and legions of volunteers. The Council would like to offer its deepest gratitude to those who served on the 2016 Conference Planning Committee and its Subcommittees. Listed below are the many individuals who helped organize this 2016 National Monitoring Conference.

Conference Planning Committee Chairs

Alice Mayo, US Environmental Protection Agency

Callie Oblinger, US Geological Survey

Jeff Schloss, University of New Hampshire / NALMS

Conference Planning Committee

Alice Mayo, USEPA
Callie Oblinger, USGS
Jeff Schloss, Univ. of New Hampshire/
NALMS
Candice Hopkins, USGS
Gary Rowe, USGS
Susan Holdsworth, USEPA
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Danielle Donkersloot, Volunteer Monitoring
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Monitoring

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Simona Platukyte, USEPA
Dave DeWitt, Southwest Florida Water
Management District
Patricia Metz, USGS (retired)
Terrie Lee, USGS (retired)

Sponsor and Exhibitor Committee

Gary Rowe, USGS
Candice Hopkins, USGS
Erik Host-Steen, HACH Co.
Michele Wheeler, Wis. Dept. of Natural
Resources
Philip Forsberg, NALMS
Greg Arenz, NALMS

Volunteer Monitoring Committee

Danielle Donkersloot, Volunteer Monitoring
Representative, NWQMC
Julie Vastine, Alliance for Aquatic Resource
Monitoring
Barb Horn, Colo. Parks and Wildlife
Kris Stepenuck, Univ. of Vermont
Alice Mayo, USEPA
Harold Harbert, Ga. Dept. of Natural
Resources
Shelly Krueger, Univ. of Florida
Elizabeth Herron, Univ. of Rhode Island
Watershed Watch
Linda Green, Univ. of Rhode Island
Watershed Watch
April Perry, Mo. Dept. of Conservation

Extended Sessions Committee

Mary Skopec, Ia. Dept. of Natural Resources
Michele Wheeler, Wis. Dept. of Natural
Resources
Danielle Donkersloot, Volunteer Monitoring
Representative, NWQMC
Susan Holdsworth, USEPA
Chuck Dvorsky, Tex. Commission on
Environmental Quality
Aaron Borisenko, Oreg. Dept. of
Environmental Quality
Jon Marshack, Calif. State Water Resources
Control Board

Program Committee

Monty Porter, Okla. Water Resources Board
Mary Skopec, Ia. Dept. of Natural Resources
Dave Chestnut, S.C. Dept. of Health and
Environmental Control
Jeff Thomas, ORSANCO
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Environmental Quality
Mike Higgins, USFWS
Martha Clark Mettler, Ind. Dept. of
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Steve Wolfe, Univ. of South Florida
Gary Rowe, USGS
Candice Hopkins, USGS
Danielle Donkersloot, Volunteer Monitoring
Representative, NWQMC
Barb Horn, Colo. Parks and Wildlife
Jim Dorsch, Metro Wastewater Reclamation
District, Colo.
Chuck Dvorsky, Tex. Commission on
Environmental Quality
Alan Ellsworth, NPS
Nancy Schultdt, Fond du Lac Band of Lake
Superior Chippewa

Awards Committee

Dan Sullivan, USGS
Alan Ellsworth, NPS
Alice Mayo, USEPA
Aaron Borisenko, Oreg. Dept. of
Environmental Quality
Mary Skopec, Ia. Dept. of Natural Resources
Jeff Thomas, ORSANCO

Plenary Committee

Glenn Skuta, Minn. Pollution Control
Agency
Gary Rowe, USGS
Susan Holdsworth, USEPA
Leslie McGeorge, N.J. Dept. of
Environmental Protection
Doug McLaughlin, Western Michigan Univ.

Conference Information



Registration

Conference registration is located in the Ballroom C & D Prefunction Area.

Hours:

Monday, May 2	12:00 pm – 6:00 pm
Tuesday, May 3	7:00 am – 5:00 pm
Wednesday, May 4	7:00 am – 5:00 pm
Thursday, May 5	7:00 am – 3:30 pm

Meal Functions

All meals listed below are provided to all full conference registrants on Tuesday, Wednesday and Thursday. Daily registrants receive all meals on the day that they attend the conference.

Continental Breakfast

Wednesday, May 4	7:00 am – 8:30 am	Ballroom C & D
Thursday, May 5	7:00 am – 8:30 am	Ballroom C & D

Morning Break

Tuesday, May 3	10:00 am – 10:30 am	Ballroom C & D
Wednesday, May 4	10:00 am – 10:30 am	Ballroom C & D
Thursday, May 5	10:00 am – 10:30 am	Ballroom C & D

Lunch

Tuesday, May 3	12:15 pm – 1:30 pm	Ballroom C & D
Wednesday, May 4	12:00 am – 1:00 pm	Ballroom C & D

Afternoon Break

Tuesday, May 3	3:00 pm – 3:30 pm	Ballroom C & D
Wednesday, May 4	3:30 pm – 4:00 pm	Ballroom C & D
Thursday, May 5	3:30 pm – 4:00 pm	Location TBD

Exhibitor Reception

Tuesday, May 3	5:00 pm – 7:00 pm	Ballroom C & D
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Plenary and Awards Luncheon

Thursday, May 5	12:00 pm – 2:00 pm	Ballroom C & D
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National Water Quality Monitoring Council Networking Block

Tuesday, May 3 | 1:30 pm – 3:00 pm

Meet Your Peers – Who is Working On What You Care About?

Look in your program for an insert that will display specific rooms for topic breakout locations.

Ever wish you had more time to ask peers about a challenge you're facing? Or perhaps vet a new approach, strategy or technology? Great ideas often come from conversations with new people about a shared interest. The purpose of this unique, facilitated networking session is to share perspectives with a subset of your peers working on the same topic. Meet your peers, start a discussion, and continue it throughout the week and beyond.

Here are the FAQs for this session:

How do I know what topic to attend?

When you registered, you selected a first and second priority topic based on conference themes presented in a menu. Your selection is printed on your registration receipt. Where possible we have honored your first choice. *Please attend the topic session printed on your receipt as we have made room arrangements based on it.*

Where will my topic be meeting during this Networking Block?

Look in your program for an insert that will display specific rooms for topic breakout locations. Find your topic and associated room number. Several topic groups might be meeting in the same room, so yell out your topic title so others can find you. **To maximize discussion time, look to create groups of 6–10 members** — split into smaller groups quickly as possible.

Once we are a group of 6-10, then what?

Identify a leader or several folks willing to be time keepers and to facilitate several rounds of discussion. Review ground rules and begin one of two rounds of exchange (see below). These are meant to get discussions going; your group can decide collectively (not a takeover by one or two individuals) to deviate from this format.

Ground Rules:

- 1. BREVITY.** Don't tell the whole story. Pick the valuable items relevant to others in the group. Be selective.
- 2. HERE HERE.** If someone has said what you think, experienced or believe, even if it is in different words, say "here here" instead of repeating so more variety can be shared.
- 3. 3 OR Pass.** Three minutes or Pass. Sharing is optional: you do not have to share, you can listen. If you do share, please honor your 3 minutes or agreed time and do not hold the entire group hostage. See number 1. If you have more to share with someone, agree to go off line with that person or set another time to continue the topic discussion.
- 4. ACCOUNTABILITY.** Take responsibility for your experience. If everyone is the time keeper, everyone honors the time. Decide to share names and who will do that within the group.

Two suggested rounds of exchange:

You have less than 90 minutes. For guidance, if each person speaks for 3 minutes per round, 10 people, each round is 30 minutes. You have time for 3 possible rounds.

The first round will be introductions, where each participant shares their name, state, organization and primary roles or duties as they pertain to the topic under discussion.

The second and possible third round will include a share from the following choices, in context with the topic: share a specific strategy/vision, challenge, or request with the group.

How do we continue to network?

If your group wants to stay in touch, agree on who in the group will collect names and send contact information to the group after the conference (a handout will be provided for this). You can choose to just exchange business cards or whatever works for your group.

Fluid 5K Run



Thursday, May 5, 2016 | 7 am

Come one, come all! Participate in the Fluid Five, a 5K fun run/walk that not only gets you outside exploring the beauty of the Tampa area, but which benefits the Eleanor Ely Memorial Scholarship to help volunteer monitoring coordinators (or others in need) attend future National Monitoring Conferences. The event will take place on Thursday morning, May 5 at 7:00 am. The race course will follow the waterfront along the Bayshore Boulevard sidewalk – said to be the longest continuous sidewalk on Earth – offering beautiful views to start your day. The cost to participate is \$30, which guarantees you a race t-shirt and prizes for the top three men and women finishers. You can also select the “non-racer” option to get a t-shirt, but not participate in the Fluid Five event, or can simply make a donation to the scholarship fund.





National Water Quality Monitoring Council

Working together for clean water



The Council is coordinating various demos on data portals, mobile apps, software and models, new apps, and more!

The National Water Quality Monitoring Council (Council) is coordinating various demos at 3 booths: the ACWI/Council booth; the EPA booth; and the USGS booth. The purpose of the demos is to showcase products and activities related to Council workgroups and goals. The demonstrations will include data portals, new software and models, new mobile apps, and other technical topics. Be sure to check the demo schedules at these 3 booths to be sure you are aware of all the demos that will be scheduled, and some of the technical experts who will be on hand to chat. A complete schedule for demos will be available at the conference. In the meantime, some demos are already scheduled (times are subject to change). In some cases, you can arrange a different time for a one-on-one demo ... check with staff at the booths.

Sharing Water Sensor Information

Tuesday, 1:00 pm – 1:30 pm | EPA Booth

EPA has initiated two demonstration projects to explore approaches for sharing continuous monitoring data. This demo will describe the approaches that are being evaluated and show how EPA envisions this new system would work.

Presenter: Dwane Young, IT Specialist, USEPA

Global Lake Ecological Observatory Network Lake Observer App

Tuesday, 5:00 pm – 5:30 pm | EPA Booth

This will be a demonstration of the new Lake Observer mobile app and how it can be used for crowdsourcing lake and water quality observations across the globe. The app was developed by the Global Lake Ecological Observatory Network (GLEON) for use by research scientists and citizen scientists. Through a partnership with the North American Lake Management Society (NALMS) and USEPA, the app will be available for use in the annual Secchi Dip-In event and data will be made publicly available for the first time via the Water Quality Portal. In partnership with the U.S. Geological Survey, ESRI, and other institutions, GLEON will be further developing the Lake Observer mobile application with new mapping and data-visualization features. Project partners will be on-hand to demo the app and answer questions.

Presenters: Dr. Kathleen C. Weathers, co-chair of GLEON and senior scientist at Cary Institute; Lisa Borre, Lake Observer app project coordinator; Julie Chambers, president of NALMS; Lauren Salvato, Secchi Dip-In coordinator; Emily Read, USGS; and Laura Shumway, USEPA, OW

National Wetland Condition Assessment Electronic Forms App Demonstration

Tuesday, 5:30 pm – 6:00 pm | EPA Booth

EPA began making electronic field forms available in 2012 to support improved field collection and data management for the National Aquatic Resource Surveys (NARS). During the summer of 2016, states, tribe, EPA, and other field crews will be collecting data for the second National Wetland Condition Assessment (NWCA). Field crews can use the NWCA app on tablets to collect data and send those data directly into the NARS database – no scanning or transcription necessary. Come check out how the app works and the added benefits of apps over paper. Play around with the app on devices!

Presenter: Gregg Serenbetz, U.S. EPA

Water Quality Portal Data Discovery Tool Using 'R-Shiny'

Tuesday, 6:00 pm – 6:30 pm | EPA Booth

To support the discovery of data from the Water Quality Portal, EPA has developed an open source tool in R that allows a user to retrieve data from the Portal, do some preliminary QA/QC on that data, plot the data on the map, and evaluate that data to determine if the data can be used for water quality assessment or analysis. This demo will show how the tool works, and what kinds of questions you can answer with this tool. EPA will also discuss a new companion tool that is under development that can be used for performing water quality assessments.

Presenter: Dwane Young, IT Specialist, USEPA

What's New with NHDPlus?

Tuesday, 6:30 pm – 7:00 pm | EPA Booth

The growing community of National Hydrography Dataset Plus (NHDPlus) users are delivering a variety of enabling applications in support of improved water quality. NHDPlus is a geospatial hydrologic framework that combines the analytical horsepower of a national digital stream network with associated catchments (local drainage areas). A rich collection of landscape attributes that have been allocated to individual catchments and accumulated upstream for full watersheds now exists to support user applications. An existing set of web-based services and viewers can be leveraged for enhanced display and analysis using NHDPlus. This demo will showcase NHDPlus concepts, tools and a sampling of the latest NHDPlus applications.

Presenter: Tommy Dewald, IT Specialist, USEPA

Catchment Indexing Process

Wednesday, 10:00 am – 10:30 am | EPA Booth

The Catchment Indexing Process (CIP) is a way for EPA headquarters to better assimilate 305(b), 303(d), and TMDL data by translating the data to catchments. Through the process, EPA-HQ can take any format or resolution data that is provided by the states and/or regions and compare it consistently across the country. The process takes geospatial data and translates it to the corresponding catchments based not only on a spatial intersection but also by incorporating logic, such as flow, to appropriately assign or not assign Assessment Units (AUs) or priority areas to catchments. This demo will show the cloud-based CIP process and the outputs from the process.

Presenter: Dwane Young, IT Specialist, USEPA

ATTAINS Cloud User Interface

Wednesday, 1:00 pm – 1:30 pm | EPA Booth

The ATTAINS system is being redesigned to help EPA, and states to better track, report, and approve water quality decisions under CWA 305(b) & 303(d). The ATTAINS redesign will take what is currently a manual and paper process, and convert that to an electronic process with the goal of aligning the IT system processes with the water quality program processes. This demo will highlight the new cloud user interface for sharing and approving Integrated Report (IR information) with states, regions, and the public.

Presenter: Dwane Young, IT Specialist, USEPA



We want you to share your insights, knowledge, questions, and creativity with us and with each other. Take advantage of these interactive opportunities:

Wednesday Evening Informal Networking Opportunities

We recognize that it can be challenging to meet others at a large conference, grow your peer network and have time for quality discussions. So, the Council created two informal networking opportunities to help you meet others and share with them in a meaningful context.

You can meet in the designated spot at 6:00 pm on Wednesday and decide to go to happy hour, go to dinner, or just take a walk along the river. These gatherings are informal and organic. **You decide** when you have enough folks to move to a place to eat or drink and when you are done. *Refer to the local dining guide for beverage and dining options.*

Early Career Professionals

If you have been in your career for ten years or less, you are building your peer network. Join others in the early stages of their careers and compare career tracks and discuss professional or water quality ideas, issues or challenges that dominate your life.

360 Inquiry Mentoring

We spend all day learning technical aspects of our work. This is a chance to share what makes our careers memorable, fun or successful. We are all teachers and students. We all have some advice we were given, a lesson we learned along the way, or a question we're seeking to answer. This is a chance to mentor each other. Perhaps you can find someone in your same sector (agency, educator, consultant, service provider, etc.), or of the same gender, geographic region or another interest as common ground. Perhaps you have a vision of the difference you want to make in your career and you can exchange where you both are on that path.

Come to the gathering place and call out a category, hold up a sign or just ask others who have come. Find your common ground and connect. Keep it simple, have some fun. Who knows, the next movement or million-dollar idea may be birthed right here this evening!

Haiku or Limerick It!

Join us in a fun, expressive and creative outlet for our busy technical minds. Create a Haiku or Limerick about the conference, water quality, your field or something related. Get a form from the registration desk and turn your poem back to registration. A few will be chosen and read at the Thursday plenary lunch and others will be used on the NWQMC website and other publications. Don't know what a Haiku or Limerick is?

Haiku is a three-line poem. First line has 5 syllables, second line 7 syllables and third line is back to 5 syllables. You can illuminate a problem or solution in a Haiku.

Chicken or the Egg?
No Egg, No Chicken Dummies
It's a no brainer!

This is my Onesie
It has a Haiku on it
My parents are nerds

Limerick is a seven-line poem. The 1st, 2nd and 5th lines all rhyme and are usually 7–9 syllables or so. The 3rd and 4th lines rhyme and are shorter in syllables.

Conference Exhibitors



Registered Exhibitors as of April 11, 2016.

Abraxis LLC

124 Railroad Drive
Warminster PA 18974
215-357-3911
www.abraxiskits.com

ACWI / National Water Quality Monitoring Council

417 National Center
12201 Sunrise Valley Dr.
Reston, VA 20192
703-648-6810
acwi.gov

Aquatic Informatics Inc.

2400 – 1111 West Georgia Street
Vancouver BC V6E 4M3
Canada
604-637-4601
aquaticinformatics.com

C.I.Agent Storm Water Solutions

203 Parkside Dr.
St. Augustine FL 32095
253-732-5319
www.ciagent.com

Campbell Scientific, Inc.

815 W. 1800 N.
Logan UT 84321
435-227-9000
www.campbellsci.com

Cooper Environmental

9403 SW Nimbus Ave.
Portland OR 97008
503-608-4444
cooperenvironmental.com

Diagnostic Technology Pty Ltd

7 Narabang Way
Suite 45
Belrose 2085
Australia
61299862011
www.diagnosticttechnology.com.au

Eco Analysts, Inc.

1420 S. Blaine St., Suite 14
Moscow ID 83843
208-310-1396
www.ecoanalysts.com

Eureka Water Probes

2113 Wells Branch Parkway
Suite 4400
Austin TX 78728
512-302-4333
www.waterprobes.com

FTS

1065 Henry Eng Place
Victoria BC V9B 6B2
Canada
250-507-1021
ftsenvironmental.com

Gold Systems, Inc.

2121 S. McClelland St., Ste. 204
Salt Lake City UT 84106
801-456-6104
www.goldsystems.com

Green Eyes

28034 Holly Rd.
Easton MD 21601
443-746-2175
gescience.com

GreenWater Lab/CyanoLab

205 Zeagler Drive
Suite 302
Palatka FL 32177
386-328-0882
greenwaterlab.com

In-Situ

221 East Lincoln Ave.
Fort Collins CO 80524
970-498-1655
www.in-situ.com

KISTERS North America

7777 Greenback Lane
Suite 209
Citrus Heights CA 95610
916-723-1441
www.kisters.net

LaMotte Company

PO Box 329
802 Washington Ave.
Chestertown MD 21620
800-344-3100, Ext. 7015
www.lamotte.com

National Atmospheric Deposition Program

University of Illinois
2204 Griffith Drive
Champaign IL 61820
217-224-0462
nadp.sws.uiuc.edu

North American Lake Management Society (NALMS)

PO Box 5443
Madison, WI 53705
608-233-2836
www.nalms.org

OTT Hydromet

5600 Lindbergh Drive
Loveland CO 80539
772-932-7661
www.otthydromet.com

Peroxygen Solutions

405 Parkway, Suite F
Greensboro NC 27401
336-272-0127
www.peroxygensolutions.com

Sequoia Scientific, Inc.

2700 Richards Rd., Ste. 107
Bellevue, WA 98005
425-641-0944
www.sequoiasci.com

Solinst Canada Ltd.
35 Todd Rd.
Georgetown, ON L7G 4R8
Canada
905-873-2255
www.solinst.com

TE Connectivity
1000 Lucas Way
Hampton VA 23666
757-766-4480
www.te.com

Turner Designs
845 W Maude Ave.
Sunnyvale, CA 94085
408-749-0994
www.turnerdesigns.com

UNIBEST International, LLC
115 W. Main Street
Walla Walla WA 99362
509-525-3370
ecotrackservices.com

US Environmental Protection Agency
1200 Pennsylvania Ave.

Washington, DC 20460
202-566-1184
www.epa.gov

US Geological Survey National Water Quality Assessment Program (NAWQA)
413 National Center
Reston, VA 20192
703-648-5716
water.usgs.gov/nawqa

YSI
1725 Brannum Lane
Yellow Springs, OH 45387
937-767-7241, ext. 248
www.y.si.com

Zhuhai Yunzhou Intelligence Technology Co.,Ltd.
D2-214, Nanfang Software Park,
NO.1 Software Road
Zhuhai 519080
China
+86 138 2305 5941
www.yunzhou-tech.com

WaterVentures Florida's Learning Lab has come to the National Monitoring Conference!

WaterVentures provides top-quality environmental education that empowers youth and the public to be responsible stewards of Florida's diverse water resources and encourages them to make environmentally-conscious decisions. WaterVentures Florida's Learning Lab is a unique, traveling science center – a 53-foot semi-trailer customized for environmental education and outreach, with fun, high tech, hands-on, museum-quality exhibits and directed learning activities. If you're interested in water and science education, communication, and promoting watershed stewardship, drop by to visit Florida's Learning Lab! Tuesday, 10 AM-4 PM?, LOCATION?

2016 National Monitoring Conference-at-a-Glance

(Subject to change. Revised 3/11/2016)

§ = Carries fee

R = Requires pre-registration

MONDAY, MAY 2

10:00 – 5:00	Chassahowitzka Springs System Tour (§,R)								
10:00 – 5:00	Homosassa Springs State Park (§,R)								
1:00 – 5:30	Mote Marine Laboratory Tour (§,R)								
1:30 – 5:00	Florida Fish and Wildlife Research Institute and USGS Coastal and Marine Geology Science Center Tour (§,R)								
1:30 – 6:00	Robinson Preserve Wetlands Restoration Tour (§,R)								
	A1								
A Sessions 1:30 – 3:00	WORKSHOP: Discover, Retrieve, and Analyze Water Data in R: The dataRetrieval, EGRET (Exploration and Graphics for RivEr Trends) and EGRETci R packages, Part 1 (R)								
3:00 – 3:30	Break								
	B1								
B Sessions 3:30 - 5:00	WORKSHOP: Discover, Retrieve, and Analyze Water Data in R: The dataRetrieval, EGRET (Exploration and Graphics for RivEr Trends) and EGRETci R packages, Part 2 (R)								

TUESDAY, MAY 3

C Sessions 8:30 – 10:00	C1	C2	C3	C4	C5	C6	C7	C8	C9
	Continuous Monitoring: Past, Present, and Future	Advances in Harmful Algae Bloom Monitoring and Assessment Programs	Nutrient Reduction Effectiveness in Florida	Integration of Remote Sensing into Water Quality Monitoring and Applications, Part 1	Ecological Endpoints and Modeling in Great Lakes Monitoring	Recovery and Use of Historic Water Quality Data	Monitoring Reefs and other Sensitive Coastal Areas	Integrated Regional Collaborations	WORKSHOP: Relative Bed Stability – Using 'R' to Calculate Quantitative Physical Habitat Metrics (R)
10:00 – 10:30	Break								
10:30 – 12:00	Plenary								
12:00 - 1:30	Lunch								

1:30 – 3:00	Networking								
3:00 – 3:30	Break								
D Sessions 3:30 – 5:00	D1 Continuous Monitoring, Continually Improved	D2 Monitoring in the Mississippi River Basin: Efforts of the Hypoxia Task Force and Its Partners	D3 Contaminants of Emerging Concern	D4 Integration of Remote Sensing into Water Quality Monitoring and Applications, Part 2	D5 Using WRTDS to Determine Long and Short Term Trends	D6 National Scale Monitoring Perspectives	D7 Monitoring Groundwater Quality in Areas of Energy Development	D8 PANEL: Reducing Barriers to Publishing to the Water Quality Portal: Enabling Data Sharing for States, Tribes, Citizen Scientists, Volunteers, and Other Local Groups	D9 SHORT COURSE: Are Soil Health Management Systems a Solution to Agricultural Water Quality Issues? - the School Branch Project (R)
5:00 – 7:00	Exhibitor Reception								

WEDNESDAY, MAY 4

7:00 – 8:30	Breakfast								
E Sessions 8:30 – 10:00	E1 Great Lakes Restoration Monitoring	E2 Assessing Water Quality with Remote Sensing	E3 Ecosystem Indicators of Coastal and Freshwater Health	E4 Cool Applications of R for Scientific Workflows, Part 1	E5 Emerging and Legacy Contaminants	E6 Regional Scale Monitoring Perspectives	E7 Managing and Sharing Volunteer Data	E8 PANEL: How to Assess and Mitigate HABs and Hypoxia Challenges	E9 SHORT COURSE: Field Protocols for Collecting Continuous Thermal and Hydrologic Data, Part 1 (R)
10:00 – 10:30	Break								
F Sessions 10:30 – 12:00	F1 Continuous Monitoring in Florida's St. Johns River Basin	F2 Harmful Algae Bloom Prediction and Forecasting	F3 Seeing the Forest Through the Trees with BMPs	F4 Cool Applications of R for Scientific Workflows, Part 2	F5 Diverse Approaches to Assess Sensitive Coastal Environments	F6 National Groundwater Monitoring Network	F7 Metals, Mining and More: Monitoring Watersheds to Restore	F8 WORKSHOP: Volunteer Monitoring 101: Getting Started (R)	F9 SHORT COURSE: Field Protocols for Collecting Continuous Thermal and Hydrologic Data, Part 2 (R)
12:00 – 1:00	Lunch								

1:00 – 2:00	Poster Viewing								
1:30 – 5:00	Crystal Springs Preserve and Zephyrhills Bottling Plant Tour (\$,R)								
1:30 – 5:00	LAKEWATCH Water Quality Sampling Tour (\$,R)								
G Sessions 2:00 – 3:30	G1	G2	G3	G4	G5	G6	G7	G8	G9
	Keeping an Eye on E. coli	Integrating Watershed Assessments to Promote Protection and Restoration Synergy	Adventures in the Water Quality Portal	Organic Contamination : Occurrence and Risk	Effects of Climate Change and Extreme Weather Patterns	Doing More with Less: Models for Community Collaboration	Tools for Visualizing Water Quality	SHORT COURSE: Advancing Sensor Technology for Priority Water Parameters (R)	WORKSHOP: The Science and Management of Water Quality on Coral Reefs, Part 1 (R)
3:30 – 4:00	Break								
H Sessions 4:00 – 5:30	H1	H2	H3	H4	H5	H6	H7	H8	H9
	Remote and Autonomous Sensors for Detecting Harmful Algae Blooms	Monitoring Management Actions in Agriculturally-influenced Watersheds	Modeling from Source to Sea	Working Across Agency Boundaries	Assessing Groundwater Quality Trends	Around the Globe: Citizen Science and Community Education	A fish, a mussel, and a mayfly walk into a sand bar...	WORKSHOP: How to Access and Acquire USGS Water Data and Information (R)	WORKSHOP: The Science and Management of Water Quality on Coral Reefs, Part 2 (R)
Optional evening group meetings TBD									

THURSDAY, MAY 5

7:00 – 8:30	Fluid 5K Run (\$, R)								
7:00 – 8:30	Breakfast								
I Sessions 8:30 – 10:00	I1	I2	I3	I4	I5	I6	I7	I8	I9
	Tools to Manage, Display, and Share Continuous Monitoring Data	Using Technology to Address Challenges in the Field	Nutrient Trends in the Rivers of the United States, Part 1	Understanding Multi-Stressor Response in Streams at the Regional Scale	Water Quality Management Using WQX and ATTAINS	Wetlands are Water Too: Moving into Underassessed Waters	National Scale Assessments of Groundwater Quality	WORKSHOP: Effective Science Communication, Part 1 (R)	SHORT COURSE: Water Quality Monitoring using NASA Remote Sensing Observations, Part 1 (R)
10:00 – 10:30	Break								

	J1	J2	J3	J4	J5	J6	J7	J8	J9
J Sessions 10:30 – 12:00	Making Sense of Continuous Monitoring Datasets	Understanding Variability in Pathogenic Microbial Communities	Nutrient Trends in the Rivers of the United States, Part 2	Open Water Data Initiative	Regional Coastal Monitoring Programs	Combining Technology and Collaboration for Strategic Condition Assessment	Approaches for Determining Biological Condition	WORKSHOP: Effective Science Communication, Part 2 (R)	SHORT COURSE: Water Quality Monitoring using NASA Remote Sensing Observations, Part 2 (R)
12:00 – 2:00	Plenary/Awards Luncheon								
K Sessions 2:00 – 3:30	K1 Continuous Monitoring from Yellowstone to the Gulf of Mexico	K2 Effectiveness of Nutrient Reduction Strategies	K3 Found in Space: National Geospatial Applications	K4 West Coast Connections: From Fresh Water to the Sea	K5 Revealing Impairments with Innovative Statistical Methods	K6 Criteria and Threshold Development	K7 Moving Forward in Volunteer Monitoring by Learning from the Past	K8 PANEL: Regional Monitoring Collaborations: The Success of Southwest Florida's Regional Ambient Monitoring Program	K9 WORKSHOP: Procedures and R Scripts for QCing, Formatting and Deriving Summary Outputs for Continuous Temperature and Hydrologic Data (For Beginner R Users) (R)
3:30 – 4:00	Break								

Plenary Agendas



Opening Plenary Session, Tuesday, May 2, 2016

- 10:30** **Welcome to the 10th National Monitoring Conference**
Gary Rowe, USGS and Susan Holdsworth, USEPA
- 10:35** **Welcome to Tampa and Hillsborough County**
Janet Dougherty, Hillsborough County Environmental Protection Commission
- 10:45** **The National Water Quality Monitoring Council – 20 Years of Success**
Gary Rowe, USGS
- 11:05** **Monitoring is Fundamental**
Dr. Ellen Gilinsky, Senior Policy Advisor, Office of Water, USEPA
- 11:20** **Assessing Our Waters, Old Ways and New**
Dr. Deborah Swackhamer, Professor Emeritus, University of Minnesota
- 12:00** **Charge to Conference Participants**
Susan Holdsworth, USEPA and Barb Horn, CO Parks and Wildlife
- 12:15** **Adjourn**

Awards/Plenary Luncheon, Thursday, May 5, 2016

- 12:00** **Lunch**
- 12:40** **Presentation of the Fluid 5K Race Awards, the Elizabeth Jester Fellows Award, the Vision Award, and the Barry A. Long Award**
Kris Stepenuck, University of Vermont; Gary Rowe, USGS; Susan Holdsworth, USEPA; and Dan Sullivan, USGS
- 1:00** **Collaboration and Long-Term Monitoring: Keys to Estuarine Recovery in Tampa Bay, Florida**
Holly S. Greening, Executive Director, Tampa Bay Estuary Program
- 1:45** **Reflections and Wrap Up**
Gary Rowe, USGS and Susan Holdsworth, USEPA

Opening Plenary Speaker



Deborah L. Swackhamer, PhD

Professor, University of Minnesota

Dr. Deborah L. Swackhamer is Professor Emeritus of Science, Technology, and Public Policy in the Humphrey School of Public Affairs, and Professor of Environmental Health Sciences in the School of Public Health. She also directed the Water Resources Center from 2002 until 2014. She received a BA in Chemistry from Grinnell College, Iowa and an MS and PhD from the University of Wisconsin-Madison in Water Chemistry and Limnology & Oceanography, respectively. After two years post-doctoral research in Chemistry and Public & Environmental Affairs at Indiana University, she joined the Minnesota faculty in 1987. She became Professor Emeritus in 2015.



In 2012 Dr. Swackhamer completed a 4-year term as Chair of the Science Advisory Board of the US Environmental Protection Agency, and served as a member of the Science Advisory Board of the International Joint Commission of the US and Canada from 2000–2013. She has just begun a 3-year term as Chair of the US EPA Board of Scientific Counselors. Having served on several recent National Academies of Science National Research Council committees, she has just been named to a 3-year term on the National Academy of Sciences Board of Environmental Science and Toxicology. She served as a Governor appointee on the Minnesota Clean Water Council from 2007–2015. She was President of the National Institutes of Water Resources in 2011–2012.

Dr. Swackhamer received the 2007 Harvey G. Rogers Award from the Minnesota Public Health Association. In 2009 she received the prestigious Founders Award from the Society of Environmental Toxicology and Chemistry for lifetime achievement in environmental sciences. She was the 2010 recipient of the University of Minnesota's Ada Comstock Award. She is a lifetime Fellow in the Royal Society of Chemistry in the UK. In November, 2014 she was named an Inaugural Fellow of the international Society of Environmental Toxicology and Chemistry.

Plenary Luncheon Speaker



Holly S. Greening

Executive Director, Tampa Bay Estuary Program

Holly Greening earned a MS from Florida State University following extensive estuarine food web studies. Her professional career has focused on managing watershed and estuarine projects. As Executive Director of the Tampa Bay Estuary Program, Holly is responsible for maintaining the strong partnerships forged through TBEP, continuing the bay's science-based restoration and recovery strategies. Holly has served on the Estuarine Research Federation Governing Board, the National Academy of Sciences Ocean Studies Board, four National Research Council Committees, as Co-Chair of the 2011 Coastal and Estuarine Research Federation Conference, as Chair of the Association of National Estuary Programs, and as Associate Editor for the scientific journal *Estuaries and Coasts*. She is currently serving on the Florida Oceans and Coastal Council and the National Workgroup for Blue Carbon.



Field Trips



Field trip participants will meet in the main entrance foyer of the Duke Energy Convention Center (5th Street and Elm Street).

Chassahowitzka Springs System Tour

Monday, May 2 | 10:00 am – 5:00 pm

Chassahowitzka Springs is made up of a dozen springs that form the headwaters for the Chassahowitzka River, which is a short river that flows about 6 miles from the headsprings to the confluence with the Gulf of Mexico at Chassahowitzka Bay in Citrus County, Florida. The Chassahowitzka springshed, which contributes groundwater to the Chassahowitzka Springs, is approximately 190 square miles of upland forests, urbanization, agricultural activities and wetland forests. This springshed covers portions of Citrus and Hernando counties. The Chassahowitzka River is designated an Outstanding Florida Water and the lower half of the river is part of the more than 31,000-acre Chassahowitzka National Wildlife Refuge. While the river's shoreline is mostly natural, the headsprings area contains a small marina with a public boat ramp and many dead-end canals upstream with residential development. The tour guide, Patricia Metz, is a USGS geologist with 35 years of experience in hydrogeology, water quality, wetlands, and watershed issues in west-central Florida. She will lead participants in a paddling tour of the spring system.

Homosassa Springs State Park

Monday, May 2 | 10:00 am – 5:00 pm

Visitors to Homosassa Springs State Park can see West Indian manatees every day of the year from the park's underwater observatory in the main spring. The park showcases native Florida wildlife, including manatees, black bears, bobcats, white-tailed deer, American alligators, American crocodiles, and river otters. Manatee programs are offered three times daily. At the Wildlife Encounter programs, snakes and other native animals are featured. Recreational opportunities include picnicking, nature study, and bird-watching. Transportation from the visitor center on US 19 to the West Entrance is available by tram or boat. The park has two concessionaire-operated gift shops and a concessionaire-operated café with a selection of beverages and snacks. Plan 3-1/2 to 4 hours to tour the park. Check the Ranger Programs for a list of interactive events throughout the park each day. Included in your admission is a boat tour that transports visitors along Pepper Creek from the Visitor center to the West Entrance to the Wildlife Park. Rangers give an introduction to the park and the Florida Park Service. Native wildlife is identified along the way. The pontoon boats are accessible with a ramp for wheelchairs. There is an elevator from the Visitor Center level to the Boat Dock for wheelchairs and strollers.

Mote Marine Laboratory Tour

Monday, May 2 | 1:00 pm – 5:30 pm

Originally focused on sharks, research at Mote Marine Laboratory has expanded to include studies of human cancer using marine models, the effects of man-made and natural toxins on humans and on the environment, the health of wild fisheries, developing sustainable and successful fish restocking techniques and food production technologies and the development of ocean technology to help us better understand the health of the environment. The tour will include a behind-the-scenes guided tour of unique facilities and presentations by one or more research staff focused on ocean acidification, chemical and physical ecology, and/or marine/coastal environmental health.

Florida Fish and Wildlife Research Institute and USGS Coastal and Marine Geology Science Center Tour

Monday, May 2 | 1:30 pm – 5:00 pm

The Fish and Wildlife Research Institute's (FWRI) work includes assessment and restoration of ecosystems and studies of freshwater and marine fisheries, aquatic and terrestrial wildlife, imperiled species, and red tides. The FWRI develops the information science required to analyze and disseminate research products and engages in outreach activities to complement all programs. Freshwater projects include studies of water quality and contaminants, long-term monitoring, and minimum flows and levels. The tour involves visiting the labs and having selected staff talk about their work.

The tour also includes a visit to the nearby USGS Coastal and Marine Geology Science Center in St. Petersburg. Scientists and technical staff within the USGS Coastal and Marine Geology Program study coastal and ocean resources from shorelines and estuaries to the continental shelf and deep sea, providing expertise, tools, products, and data that address and inform a broad array of resource challenges.

LAKEWATCH Water Quality Sampling Tour

Wednesday, May 4 | 1:30 pm – 5:00 pm

The Florida LAKEWATCH program is a volunteer lake management program with monthly monitoring activities. Through this program, citizens can ensure that the lakes that they care about are monitored on a regular basis. This tour highlights one effort that involves a Hillsborough County employee who works in conjunction with LAKEWATCH. She collects the samples, LAKEWATCH processes and analyses the samples, and she receives the water quality data which can be used in the management of local parks/preserves. The tour will include two field sites (Lake Frances, in the Lake Frances Preserve; Lake Flynn, in the Violet Curry Nature Preserve, which has 15 years of data). Opportunities are available for feedback from participants about how the monitoring might be improved.

Tampa Bay Water Desalination Plant Tour

Friday, May 6 | 9:00 am – 12:30 pm

The Tampa Bay Seawater Desalination Plant is a unique drought-proof, alternative water supply that provides up to 25 million gallons per day of drinking water to the region. Seawater coming into the plant goes through a rigorous pretreatment process after which freshwater is separated from the seawater using reverse osmosis. The end product is high-quality drinking water that supplies up to 10 percent of the region's needs. The desalination plant is located next to Tampa Electric's (TECO) Big Bend Power Station, which already withdraws and discharges up to 1.4 billion gallons a day of seawater from Tampa Bay, using it as cooling water for the power plant. The Tampa Bay Seawater Desalination plant "catches" up to 44 million gallons per day (mgd) of that warm seawater, separates it into drinking water and concentrated seawater and dilutes the twice-as-salty seawater before returning it to the bay.

Duette Preserve Tour

Friday, May 6 | 9:00 am – 2:00 pm

Duette Preserve is a 21,000-acre preserve located in eastern Manatee County with diverse habitats ranging from isolated freshwater marshes to scrubby flatwoods. It supports numerous rare plant and animal species, including the Florida scrub-jay, Eastern indigo snake and fox squirrel. The preserve lies in the headwaters of the Manatee River, upstream from Lake Manatee, the drinking water source for 350,000 people. This field trip will focus on the ongoing hydrologic restoration activities within the preserve. Recent work has targeted filling agricultural ditches to re-establish wetland hydrology in drained marshes and sloughs, with more than 73,000 linear feet of ditches having been filled. In an effort to better understand, quantify, and document the tangible benefits of hydrologic restoration projects in east Manatee County, the County began an environmental monitoring program in 2013 utilizing remote sensing imagery coupled with target wetland field data collection. Hyperspectral imagery is being collected to map and evaluate soil moisture, wetland hydration and functional vegetative condition across the entire preserve. The hydrologic restoration and environmental monitoring programs are being accomplished while continuous wildlife preserve land management activities such as roller chopping, timber harvest and prescribed fire are underway, posing a challenge in interpreting remote sensing data which the County is addressing. Participants will visit wetlands in various stages of restoration, from unrestored to mature systems. We will also stop by a restored ephemeral stream. Please wear walking shoes and bring sunscreen and water. Transportation within the preserve will be by the County Duette wagon.

Wall Springs Springshed and Estuarine and Sea Grass Exploration

Friday, May 6 | 9:00 am – 3:00 pm

The Water Quality Monitoring Program at the Southwest Florida Water Management District (SWFWMD) is organizing this 6-hour trip to northern Pinellas County to look at two springs. Wall Springs Park will be toured in the morning where the effects of land use and population on groundwater quality at the spring will be discussed. After lunch at the park, an afternoon kayak trip facilitated by a local outfitter will allow participants to paddle out to nearby Crystal Beach Spring just off the coast of Palm Harbor, which is also a good opportunity to see the local estuary and seagrasses in the Gulf of Mexico. This trip will be guided by SWFWMD Chief Professional Geologist, Dave Dewitt, who has guided similar conference field trips.

Extended Sessions



Extended sessions include workshops, panel discussions and short courses and are offered in addition to a full slate of concurrent sessions at any given time.

Session AI/BI: Workshop: Discover, Retrieve, and Analyze Water Data in R: The dataRetrieval, EGRET (Exploration and Graphics for RivEr Trends) and EGRETci R Packages

Monday, May 2 | 1:30 pm – 5:00 pm | Room TBD

Exploring water quality and streamflow data available is critical for understanding the world around us. Discovering relevant data, organizing, and analyzing the data can be a challenge. The USGS has developed the dataRetrieval, EGRET, and EGRETci R packages to facilitate obtaining and interpreting surface-water quality data. This short course, presented by the authors of these tools, will describe how these tools can be used. The tools are closely linked R packages (open source and platform independent). dataRetrieval provides both user-friendly and highly powerful functions to discover and retrieve water data. EGRET includes functions to download water quality data, streamflow data, and metadata from USGS NWIS and EPA STORET. It structures the data in standard formats for analysis. EGRET is designed to view and analyze these water quality data. It uses the Weighted Regressions on Time, Discharge, and Season (WRTDS) method to evaluate trends in concentration and pollutant flux. It is focused on producing graphical outputs that can help enhance the understanding of the nature and possible drivers of the observed trends. EGRETci provides the tools to evaluate and depict the uncertainty of the trend results that are produced by EGRET.

Presenters: Bob Hirsch, USGS; Laura DeCicco, USGS

Session C9: Workshop: Relative Bed Stability – Using R to Calculate Quantitative Physical Habitat Metrics

Tuesday, May 3 | 8:30 am – 10:00 am | Room TBD

Participants should bring their own laptop computer to the session and will be provided instructions to download software prior to session.

Recent National River and Stream Assessment (NRSA) surveys identify excessive sedimentation as one of the most common stressors to aquatic life. The relative bed stability (RBS) methodology (Kaufmann 1999, 2006) has made possible the quantification and analysis of sedimentation; however, application of the methodology by states has been limited by software availability and interpretative statistics. Open-source statistical analysis software, like R, allows unrestricted access to existing tools and facilitates the distribution of new analytical tools. RBS data collected for Virginia's statewide Freshwater Probabilistic Monitoring program has been used to develop code that calculates RBS metrics in R. This tool allows users to manipulate geomorphological data retrieved from a locally hosted Microsoft Access database to calculate a variety of physical habitat metrics, including RBS, for individual streams and across Virginia ecoregions. Workshop participants will receive training on calculator functionality, database structure, and results interpretation to enable novel applications of the calculator. Additionally, data utilization as it pertains to TMDLs and stressor identification will be discussed.

Presenters: Emma Jones, Virginia Department of Environmental Quality; Lawrence D. Willis, Regional Monitoring Coordinator, Virginia Department of Environmental Quality; Jason R. Hill, Freshwater Probabilistic Monitoring Coordinator, Virginia Department of Environmental Quality

Session D8: Panel: Reducing Barriers in Publishing Data to the Water Quality Portal: Enabling Data Sharing for States, Tribes, Citizen Scientists, Volunteers, and Other Local Groups

Tuesday, May 3 | 3:30 pm – 5:00 pm | Room TBD

The NWQMC has made significant strides in making data easily discoverable via the Water Quality Portal (WQP); however, the complexity of publishing data to the 'Portal' via the Water Quality Exchange (WQX) can still be a significant barrier for:

- 1) State and Tribal programs with a variety of monitoring programs, each with its own set of information requirements; and
- 2) Volunteers, citizen scientists and other non-State entities looking for repeatable, documentable, and streamlined ways to publish data.

State programs monitor for compliance, water quality assessment and impairment reporting, TMDL development and implementation, and nonpoint source projects, to list a few examples. These programs may have different information requirements and although WQX is meant to be the common model for sharing water monitoring data, it isn't always clear for program staff how their data fit within the WQX publishing model. This results in States creating their own systems, sometimes for each program or type of data, and then don't share that data through the Portal. At the same time, data being collected by efforts external to State programs, often labeled as non-traditional or innovative efforts, are going unused for Clean Water Act purposes, in part because it may be lacking the necessary documentation to publish via WQX, or the data collectors find the data sharing process too burdensome, and therefore the data may not be published nor discoverable in the Portal.

This facilitated discussion will explore the challenges with publishing data to the Portal via WQX, as well as explore examples where it has worked well. The discussion will also include an evaluation of the minimum set of data elements that are necessary to allow others to use the data and why these data elements are important. In addition to these data elements, there are also 'best practices' that can be followed in the documentation of the data which allows the full reuse of the data. The goal of this discussion is to identify some concrete recommendations on how the community can work together to balance between making data publishing simpler (a two-click process), while also providing basic metadata for the data to be usable by others. Recommendations from this discussion will feed into 'best practices' documents that U.S. EPA is developing for submitting data to WQX, as well as guide future development efforts for WQX. To help us have a complete discussion, we encourage representatives from Clean Water Act agencies, States and Tribes and all non-State data generating groups such as volunteer and citizen science, stakeholder and academia efforts to attend this discussion.

Presenters: Dwane Young, US EPA Office of Water, Assessment Watershed Protection Division; Barb Horn, Colorado Parks & Wildlife, Water Resource Specialist; Danielle Donkersloot, Volunteer Monitoring Representative, National Water Quality Monitoring Council; Cathy Alexander, Manager, Division of Surface Water, Ohio EPA; Joel Creswell, Ph.D., AAAS Fellow at U.S. EPA, Office of Research and Development; Katie Stofer, Ph.D., Research Assistant Professor, STEM Education & Outreach, University of Florida

Session D9: Short Course: Are Soil Health Management Systems a Solution to Agricultural Water Quality Issues? – The School Branch Project

Tuesday, May 3 | 3:30 pm – 5:00 pm | Room TBD

This short course will provide the attendees with a comprehensive knowledge of "soil health management systems" and how they are a key component of a system for agricultural solutions to meet production and water quality goals. The attendees will also learn how a diverse and committed partnership came together to answer critical questions facing US agriculture at the edge of field and watershed scales.

Presenters: Shannon Zezula, USDA – NRCS; Bob Barr, Indiana University Purdue University Indianapolis

Session E8: Panel: How to Assess and Mitigate HABs and Hypoxia Challenges

Wednesday, May 4 | 8:30 am – 10:00 am | Room TBD

Since the 2014 reauthorization of the Harmful Algal Bloom and Hypoxia Research and Control Act (HABHRCA), the Interagency Working Group on HABHRCA (IWG-HABHRCA) has been working to address the requirements of the legislation. A significant part of the 2014 amended act includes engaging with stakeholders and soliciting feedback on challenges to guide future Federal efforts. We will hold a roundtable discussion comprised of HABHRCA lead agencies/representatives, along with representatives from relevant agencies like nonprofit groups, researchers, and water managers, to discuss current progress related to harmful algal blooms (HABs) and hypoxia. We will provide a brief update on the activities of the Interagency Working Group on HABHRCA, although the discussion will focus on ideas related to the challenges of addressing HABs and hypoxia within municipalities, states, and regions. Ultimately, we seek to gain feedback from the many state, federal, local, academic, and private organizations that are affected by these events, on ideas for future work and on the implementation of the IWG's recommendations.

Presenters: Mary Erickson, Director, National Centers for Coastal Ocean Science, NOS/NOAA; and co-chair of the IWG-HABHRCA; Dr. Ellen Gilinsky, Senior Advisor, Office of Water, EPA; and co-chair of the IWG-HABHRCA; Donna Myers, Chief, Office of Water Quality, USGS; Caitlin Gould, Coordinator IWG-HABHRCA, NOAA; Mary Skopec, Iowa Department of Natural Resources

Session E9/F9: Short Course: Field Protocols for Collecting Continuous Thermal and Hydrologic Data

Wednesday, May 4 | 8:30 am – 12:00 pm | Room TBD

This workshop will cover the field protocols that are being used to collect continuous thermal and hydrologic data at Regional Monitoring Network sites. It is intended to help monitoring programs that have limited experience with continuous sensors build capacity and collect high quality continuous thermal and hydrologic data, using temperature sensors and pressure transducers.

Presenters: Jen Stamp, TetraTech; Michelle Craddock, Massachusetts Division of Ecological Restoration, Department of Fish and Game; Britta Bierwagen, EPA Office of Research and Development National Center for Environmental Assessment

Session G8: Short Course: Advancing Sensor Technology for Priority Water Parameters

Wednesday, May 4 | 2:00 pm – 3:30 pm | Room TBD

Advancing water sensor technologies is a priority for EPA, other Federal agencies, states and non-governmental organizations. The purpose of this short course is to discuss requirements for priority sensor needs and work collaboratively to accelerate their development, adoption and use. The topics for these sessions have been determined over the past several months based on discussions of an EPA water sensor steering committee and in consultation with other agencies and users. At the short course we will present desired performance parameters and usability requirements for the next generation of aquatic sensors for total nitrogen, total phosphorous, E. coli/enterococci, arsenic, and cyanobacteria/toxins based on a rigorous user needs input process. Prior to the short course, there will be extensive outreach to users, developers and stakeholders to understand and articulate measurement requirements, cost and enabling technologies prior to the workshop. Time at the short course would be spent validating the requirements, refining them as needed, and discussing issues such: 1) Market considerations; 2) Data management considerations; 3) What's feasible and what are the next steps in supporting innovations for the next generation sensors? The short course will engage experts from both the developer and user communities in a dialogue about opportunities for development and adoption of the next generation of sensors for in situ aquatic measurement, and the short course will result in a recommended set of ideal specifications for transformative aquatic sensors in light of user needs, vetting of implementation issues, and discussion of next steps.

Presenters: Denice Shaw, Senior Innovation Advisor, EPA; Alan Lindquist, Associate Division Director, EPA; Mario Tamburri, Executive Director, Alliance for Coastal Technology; Beth Stauffer, Assistant Professor, University of Louisiana, Lafayette; Joel Creswell, AAAS Fellow, EPA

Session G9/H9: Workshop: The Science and Management of Water Quality on Coral Reefs

Wednesday, May 4 | 2:00 pm – 5:30 pm | Room TBD

US Coral Reef Task Force member agencies work together to reduced land-based sources of pollution to coral reefs. Effective methods of monitoring impacts of water quality on corals is a key need. Linking current research on water quality constituents for resource managers can help inform the Task Force member agencies as they support policies and funding for further coral conservation.

Presenters: Dana Okano, NOAA Coral Reef Conservation Program; Rob Ferguson, National LBSP Coordinator, NOAA Coral Reef Conservation Program; Lisa Vandiver, Habitat Restoration Specialist, NOAA Restoration Center

Session H8: Workshop: How to Access and Acquire USGS Water Data and Information

Wednesday, May 4 | 4:00 pm – 5:30 pm | Room TBD

A 90-minute session will include USGS panel presentations to briefly describe availability and access to USGS data and information products over the Web. The remaining hour of the session will be for instructors to assist attendees with accessing USGS data on water levels and flows, water quality, and data for fish, invertebrates, and algae; as well as USGS electronic reports and other USGS e-library resources and e-collections from USGS public Web sites.

Presenters: Stan Skrobialowski, USGS; James Kreft, USGS; Melanie Clark, USGS; Scott Grotheer, USGS; Donna Myers, USGS

Session I8/J8: Workshop: Effective Science Communication

Thursday, May 5 | 8:30 am – 12:00 pm | Room TBD

This half-day course provides participants with a science communication toolbox for effectively communicating their research. At the end of the course, participants will have been introduced to the principles of effective science communication, taught PowerPoint tips for better presentations, and gained experience in hands-on activities that will make you a better communicator. Audience participation is expected!

Presenters: Danielle Donkersloot, Volunteer Monitoring Representative, National Water Quality Monitoring Council; Caroline Donovan, University of Maryland Center for Environmental Science

Session I9/J9: Short Course: Water Quality Monitoring Using NASA Remote Sensing Observations

Thursday, May 5 | 8:30 am – 12:00 pm | Room TBD

Participants should bring their own laptop computer to the session.

NASA Applied Remote Sensing Training (ARSET) program announces a training course on using remote sensing observations for water quality monitoring in coastal oceans, estuaries, and inland lakes. The goal of this training is to i) provide an overview presentation of relevant satellite data and their access via web-tools, and ii) conduct computer-based, hands-on case studies of the data applications to facilitate water quality monitoring and management activities.

Presenters: Amita Mehta, NASA-UMBC-JCET; Cedric Fichot, NASA-JPL

Session K8: Panel: Advocating and Achieving Regional Monitoring Collaborations: The Success of the Southwest Florida's Regional Ambient Monitoring Program

Thursday, May 5 | 2:00 pm – 3:30 pm | Room TBD

The panel will focus on the continuing evolution of the Southwest Florida Regional Ambient Monitoring Program for over 20 years as a voluntary program. The panel will provide insight and opportunity to discuss concerns while advocating the importance of regional collaboration for water quality management, monitoring, research, and regulation.

Presenters: Natasha Dickrell, SWF-RAMP Co-chair, Pinellas County; Robert Brown, Manatee County Environmental Protection Division; Dr. David J. Karlen, Environmental Protection Commission of Hillsborough County, Florida; Keith Kibbey, Lee County Division of Natural Resources, Florida

Session K9: Workshop: Procedures and R Scripts for QCing, Formatting and Deriving Summary Outputs for Continuous Temperature and Hydrologic Data (for Beginning R Users)

Thursday, May 5 | 2:00 pm – 3:30 pm | Room TBD

This is a hands-on, interactive workshop for beginner R users. It is intended for people who collect and manage continuous data, or have an interest in doing so. Topics will include: basics of using R; preparing and QCing continuous temperature and hydrologic data; and using R scripts to derive summary statistic and graphical outputs. *Participants should bring their own laptop. The laptops will need to have R and RStudio software installed in advance (we will provide guidance on how to download the software). Example data will be provided but participants are encouraged to bring their own data as well.*

More and more monitoring programs are collecting continuous data. The continuous sensors provide robust data sets that capture natural temporal patterns and episodic events, which may be missed by limited numbers of discrete measurements. The continuous data also pose challenges. For example, the volume and density of data that are collected can be overwhelming, especially for programs that lack data management systems that can accommodate the continuous data. This workshop is intended to help monitoring programs that have limited experience with continuous data to build capacity and better manage their continuous data.

Presenters: Erik Leppo, TetraTech; Jen Stamp, TetraTech

Session L8: Panel: Useful, Timely, Florida-Specific Monitoring Products ... From a Council of Your Peers

Thursday, May 5 | 4:00 pm – 5:30 pm | Room TBD

The Florida Water Resources Monitoring Council (Council) is a project- and product-driven collaboration of water resource monitoring entities from around the state. It comprises representatives from 21 different local, state, and federal agencies, NGOs, volunteer and remote-sensing groups. The Council informs, plans, and coordinates Florida water resources monitoring efforts at the state, local, and federal levels. Council authority for statewide coordination and cooperation are described in Chapter 373.026(3), Florida Statutes.

The Council and its workgroups focus on developing useful, timely, Florida-specific products to assist water resource managers, policymakers, and the public. These include: the development of Groundwater Level and Groundwater Quality Indices, which target aquifer vulnerability to saltwater encroachment; the Catalog of Florida Monitoring Programs (Water-CAT), an interactive, searchable website that provides information on the who, what, when, where, and why of water resource monitoring in Florida (www.water-cat.org); and the Adverse Events Long-Term Monitoring Response Plan and interactive map, which is the result of lessons learned from the Florida's response to the Deepwater Horizon oil spill.

Recently the Council revised its mission statement to include staying abreast of new technologies, as well as emerging water resource issues. The Council holds themed meetings to explore these topics. Its 2015 themed meetings explored strategies of successful restoration efforts, and the issues surrounding Continuous Monitoring Devices: their advantages/disadvantages, lack of standard operating procedures, appropriate deployment, maintenance/operations, and data storage. As a result, the Council's newest workgroup is collaborating to address these concerns in a standardized, statewide effort.

Presenters: Kate Muldoon, Florida Department of Environmental Protection; Rick Copeland, Florida Department of Environmental Protection; Shawn Landry, University of South Florida Water Institute

Session L9: Workshop: Procedures and R Scripts for QCing, Formatting and Deriving Summary Outputs for Continuous Temperature and Hydrologic Data (for Advanced R Users)

Thursday, May 5 | 4:00 pm – 5:30 pm | Room TBD

This is a hands-on, interactive workshop for people who have prior experience with R software (and are able to run and modify basic scripts). It is intended for people who collect and manage continuous data, or have an interest in doing so. Topics will include: preparing and QCing continuous temperature and hydrologic data; and using R scripts to derive summary statistic and graphical outputs. *Participants should bring their own laptop. The laptops will need to have R and RStudio software installed in advance (we will provide guidance on how to download the software). Example data will be provided but participants are encouraged to bring their own data as well.*

More and more monitoring programs are collecting continuous data. The continuous sensors provide robust data sets that capture natural temporal patterns and episodic events, which may be missed by limited numbers of discrete measurements. The continuous data also pose challenges. For example, the volume and density of data that are collected can be overwhelming, especially for programs that lack data management systems that can accommodate the continuous data. This workshop is intended to help monitoring programs that have limited experience with continuous data to build capacity and better manage their continuous data.

Presenters: Erik Leppo, TetraTech; Jen Stamp, TetraTech

Session M1: Panel: From the Office to the Field: Perspectives on a Global Citizen Science Project

Friday, May 6 | 8:30 am – 10:00 am | Room TBD

This panel session will present viewpoints on water-quality monitoring from professionals who are working with citizen scientists worldwide. We will discuss best methodologies and data sharing platforms utilized as well as the engagement opportunities and challenges of these programs. Leading practitioners will discuss the growing role of such projects in supporting long-term environmental management and important scientific research.

Panel members will share their views from the following perspectives:

- Program manager of an international NGO;
- Scientists and ecologist using citizen science to reinforce research;
- Director of an NGO and ecological restoration expert;
- Stewardship coordinator and volunteer monitor practitioner;
- Corporate sustainability professional;
- Educator.

Presenters: Diana Eddowes / Rita Galdos, Earthwatch Institute; Dr. Scott Shupe, University of Fraser Valley, British Columbia, Canada; Dr. Ian Thornhill, Earthwatch Institute; Jannice Velazquez, Universidad Nacional Autonoma of Mexico; Nate Drag, Alliance for the Great Lakes, Buffalo, New York

Session M2: Workshop: The Water-CAT: A Useful, Timely, Florida-Specific Resource Management Tool

Friday, May 6 | 8:30 am – 10:00 am | Room TBD

This workshop will provide a brief background on the Catalog of Florida Monitoring Programs (Water-CAT), as well as a demonstration of its functionality, and an opportunity to respond to questions about its design and the cooperation necessary to develop and maintain it. The Water-CAT is an interactive, searchable website that provides information on the “who, what, when, where and why” of monitoring in Florida, was developed to inform citizens, water resource managers, policymakers, and researchers about current and historical water resource monitoring efforts. The Water-CAT was released in May 2014 and currently contains information on 70 water resource monitoring organizations and 104,000 stations. It contains metadata on ground water, surface water (both fresh and coastal), sediments, and biological monitoring. The Water-CAT has both tabular and spatial search options that allow easy identification of monitoring efforts, file export, and a new search-saving feature. It facilitates increased coordination, gap analysis and location of existing stations for adverse event response or research. The Water-CAT is a collaborative effort of the Florida Department of Environmental Protection, the Council’s Catalog workgroup, and the University of South Florida’s Water Institute. Refinement and population of the Water-CAT is an ongoing process. To check out the Water-CAT, go to www.water-cat.org.

Presenters: Kate Muldoon, Florida Department of Environmental Protection; Amanda Gillum, University of South Florida

Concurrent Session Presentations



Monday, May 2

Session A I: Workshop: Discover, Retrieve, and Analyze Water Data in R: The dataRetrieval, EGRET (Exploration and Graphics for RivEr Trends) and EGRETci R packages, Part 1

1:30 pm – 3:00 pm | Room TBD

(See page xx for session details.)

Session B I: Workshop: Discover, Retrieve, and Analyze Water Data in R: The dataRetrieval, EGRET (Exploration and Graphics for RivEr Trends) and EGRETci R packages, Part 2

3:30 pm – 5:00 pm | Room TBD

(See page xx for session details.)

Tuesday, May 3

Session C I: Continuous Monitoring: Past, Present, and Future

8:30 am – 10:00 am | Room TBD

Moderator: Dan Sullivan, USGS

8:35 How 20th Century Technology Innovations Shaped the Development and Delivery of Real-Time Water-Quality Data

Donna Myers, USGS

9:00 Facilitating Innovations in Environmental Monitoring Technologies

Mario Tamburri, University of Maryland Center for Environmental Science, Alliance for Coastal Technologies

9:25 A Vision on Water Sensor Data Interoperability

Dwane Young, USEPA

Session C2: Advances in Harmful Algae Bloom Monitoring and Assessment Programs

8:30 am – 10:00 am | Room TBD

Moderator: Aaron Borisenko, Oregon Dept. of Environmental Quality

8:35 Understanding Cyanobacterial Ecological Strategies

Barry Rosen, USGS

8:55 Changes in Bacterial Communities and Microbial Functional Capabilities in Relation to Cyanobacterial Harmful Algal Bloom Formation and Toxin Production

Carrie Givens, USGS

9:15 HAB Impacts: A U.S. Army Corps of Engineers Perspective

Tony Clyde, USACE

9:35 Microcystin and Harmful Algae Bloom Monitoring in Kansas City Urban Lakes

Laura Webb, USEPA

Session C3: Nutrient Reduction Effectiveness in Florida

8:30 am – 10:00 am | Room TBD

Moderator: Shelly Krueger, University of Florida

- 8:35 Twenty Years of Success: The Everglades Agricultural Area Nonpoint Source Program – Contributing to the Restoration of America's Everglades Ecosystem
Ximena Pernet, South Florida Water Management District
- 8:55 Improvements to the C-139 Basin Phosphorus Source Control Program Through the Enhancement of Water Quality Monitoring Data and Farm-Scale Best Management Practice (BMP) Implementation
Jodie Hansing, South Florida Water Management District
- 9:15 Successful Water Quality Management in the Lake Okeechobee Watershed
Jeffrey Iudicello, South Florida Water Management District
- 9:35 Evaluating Drawdown Effects on Nutrient Removal Efficiencies in a Treatment Wetland: Lake Apopka Marsh Flow-Way, Florida, USA
Margaret Guyette, St. Johns River Water Management District

Session C4: Integration of Remote Sensing into Water Quality Monitoring and Applications, Part I

8:30 am – 10:00 am | Room TBD

Moderator: Jerad Bales, USGS

- 8:35 Radar Remote Sensing for Identifying and Characterizing Oil Spills in Coastal and Open Waters
Cathleen Jones, NASA Jet Propulsion Laboratory
- 8:55 NASA Applied Sciences Program: Water Resources – The Role of Remote Sensing Applied Research in Improving Water-Related Information Products and Supporting Water Resources Management
Christine Lee, NASA Jet Propulsion Laboratory
- 9:15 Using Satellite Observations of Watersheds to Enhance Source Water Quality Monitoring
William (Josh) Weiss, Hazen and Sawyer
- 9:35 Advances in the Development of a Statewide Aquatic Remote Sensing Program for Wisconsin
Steven Greb, Wisconsin Dept. of Natural Resources

Session C5: Ecological Endpoints and Modeling in Great Lakes Monitoring

8:30 am – 10:00 am | Room TBD

Moderator: Glenn Skuta, Minnesota Pollution Control Agency

- 8:35 Improvement in Estimated Nutrient and Sediment Loading to the Great Lakes Using Continuous Surrogate Regression Techniques
Dale Robertson, USGS
- 8:55 Relating Variation in Ecosystem Properties to Cyanobacterial Abundance Using a Common Consumer Approach
Mary Anne Evans, USGS
- 9:15 Impacts of Lake Erie Harmful Algal Blooms on the Abundance and Growth of Larval Fishes and Their Prey Resources
Tomena K. Scholze, Michigan State University
- 9:35 From Monitoring to Modeling: Assessing Best Management Practices at Subbasin and Field Scales Using the SWAT and APEX Models
Amy Russell, USGS

Session C6: Recovery and Use of Historic Water Quality Data

8:30 am – 10:00 am | Room TBD

Moderator: Robert Baskin, USGS

- 8:35 Sustainable Scientific Data Access and Management at the Library of Congress
Fenella France, Library of Congress
- 8:55 USGS Laboratory Data Rescue Project: Rescuing the Irreplaceable
Robert Baskin, USGS
- 9:15 Metadata Recovery as an Important Step in Trusting and Using Water Quality Data
Ariel Reed, USGS
- 9:35 Historical Water-Quality Data from the Harlem River, New York
Shawn Fisher, USGS

Session C7: Monitoring Reefs and Other Sensitive Coastal Areas

8:30 am – 10:00 am | Room TBD

Moderator: Steve Wolfe, Florida Institute of Oceanography

- 8:35 Water Quality Monitoring of Texas Offshore Artificial Reefs
Michael Lee, USGS
- 8:55 Effects of Nutrient Input on Phytoplankton Productivity and Community Structure in the Grand Bay Estuary in Mississippi
Gary Baine, University of West Florida
- 9:15 A Coastal Water Quality and Benthic Habitat Assessment Program in Miami-Dade and Broward Counties, Florida
S. Jack Stamates, NOAA Atlantic Oceanographic and Meteorological Laboratory
- 9:35 Monitoring the Response of Water Quality and Nekton in the Tidal Portion of the Brazos River, Texas to Varying Freshwater Inflow
George Guillen, Environmental Institute of Houston, University of Houston, Clear Lake

Session C8: Integrated Regional Collaborations

8:30 am – 10:00 am | Room TBD

Moderator: Mike Higgins, USFWS

- 8:35 Great Lakes Coastal Wetland Monitoring: Moving from Assessment to Action
T. Kevin O'Donnell, USEPA
- 8:55 Designing a Coastal Restoration Monitoring Program for Citizen Scientists
Danielle Donkersloot, Volunteer Monitoring Representative, National Water Quality Monitoring Council
- 9:15 Development of an Integrated Watershed-Wide Monitoring Program for the San Gabriel River (California)
Karin Wisenbaker, Aquatic Bioassay & Consulting Laboratories
- 9:35 Integrating Citizen and Non-Traditional Monitoring Data into the Chesapeake Bay Program Network
Julie Vastine, Alliance for Aquatic Resource Monitoring

Session C9: Workshop: Relative Bed Stability – Using 'R' to Calculate Quantitative Physical Habitat Metrics

8:30 am – 10:00 am | Room TBD

See page XX for session description.

Session D1: Continuous Monitoring, Continually Improved

3:30 pm – 5:00 pm | Room TBD

Moderator: Erik Host-Steen, Hach Company

- 3:35 Performance Evaluation of Five Turbidity Sensors in Three Primary Standards
Teri Snazelle, USGS
- 3:55 Continuous Water-Quality Monitor Installation Example: An Air Purge System to Reduce Sediment Fouling and Improve Data Quality
Alexandra Etheridge and Marshall Williams, USGS
- 4:15 Continuous UV Nitrate Monitoring in Central Florida: Challenges and Opportunities
Brett Johnston, USGS
- 4:35 National Guidelines for Developing and Documenting Surrogate Regression Models to Compute Continuous Water-Quality Concentrations
Teresa Rasmussen, USGS

Session D2: Monitoring in the Mississippi River Basin: Efforts of the Hypoxia Task Force and Its Partners

3:30 pm – 5:00 pm | Room TBD

Moderator: Kyra Reumann-Moore, USEPA ORISE

- 3:35 Mississippi River Basin Monitoring Collaborative: Establishing a Network to Evaluate Progress Towards Reducing Nutrients in Streams and Rivers
Mike Woodside, USGS
- 3:55 Small-Scale Watershed Monitoring
Matt Helmers, Iowa State University
- 4:15 High Frequency Nitrate Monitoring in the Mississippi River Basin
Brian Pellerin, USGS

- 4:35 Monitoring Impacts of the USDA-Natural Resources Conservation Service Mississippi River Basin Healthy Watersheds Initiative (MRBI)
Martin Lowenfish, USDA Natural Resources Conservation Service

Session D3: Contaminants of Emerging Concern

3:30 pm – 5:00 pm | Room TBD

Moderator: Anne Rogers, Texas Parks and Wildlife Department

- 3:35 Effect of Wastewater-Treatment-Facility Closure on Shallow-Groundwater Pharmaceutical Contamination
Paul Bradley, USGS
- 3:55 The Geographically Expansive Watershed and Environmental Monitoring by Citizen Scientists: A Perfect Storm?
Alan Kolok, University of Nebraska at Omaha
- 4:15 Investigations of Sucralose and Select Pharmaceuticals and Pesticides as Tracers for Contaminants of Concern in Florida's Ambient Freshwaters
Jay Silvanima, Florida Dept. of Environmental Protection
- 4:35 Microplastic Pollution in the Gallatin Watershed: Utilizing Volunteers to Study an Emerging Pollutant Across a Diverse Landscape
Jenna Walenga, Adventurers and Scientists for Conservation

Session D4: Integration of Remote Sensing into Water Quality Monitoring and Applications, Part 2

3:30 pm – 5:00 pm | Room TBD

Moderator: Christine Lee, NASA Jet Propulsion Laboratory

- 3:35 NASA Health and Air Quality Applications: The Intersection with Water Quality
John Haynes, NASA
- 3:55 Cyanophyte and Algal Composition of the 2015 CyanoHAB Bloom in Sandusky Bay, Lake Erie
Joseph Ortiz, Kent State University
- 4:15 Monitoring of Lake Water Quality and Blooms Using Digital Imagery
Mi-Hyun Park, University of Massachusetts, Amherst
- 4:35 Facilitating Water Quality Monitoring in the San Francisco Bay-Delta Estuary with Remote Sensing: New Advances and Challenges
Cedric Fichot, Jet Propulsion Laboratory, California Institute of Technology

Session D5: Using WRTDS to Determine Long and Short Term Trends

3:30 pm – 5:00 pm | Room TBD

Moderator: Mary Skopec, Iowa Dept. of Natural Resources

- 3:35 A Method for Estimating the Uncertainty of Water Quality Trends Using Weighted Regressions on Time, Discharge, and Season (WRTDS)
Robert Hirsch, USGS
- 3:55 Sensitivity of Trend Estimates to Sampling Frequency and Collection of High-Flow Samples
Henry Johnson, USGS
- 4:15 Sediment Trends in Rivers Across the United States, 1972 to 2012
Jennifer Murphy, USGS
- 4:35 Load and Trend Analysis with Heterogeneous Water-Quality Records: Is Ignorance Really Bliss?
Guoxiang Yang, Cherokee Nation Technology Solutions (contractor to USGS)

Session D6: National Scale Monitoring Perspectives

3:30 pm – 5:00 pm | Room TBD

Moderator: Amina Pollard, USEPA

- 3:35 Technical Approaches for Answering the Question: "What is the Condition of the Nation's Waters?"
Steve Paulsen, USEPA
- 3:55 Lakes and Reservoirs: Guidelines for Study Design and Sampling – A New Chapter in the U.S. Geological Survey *National Field Manual for the Collection of Water-Quality Data*
W. Reed Green, USGS
- 4:15 Stream and River Condition Across the BLM's National System of Public Lands
Scott Miller, BLM/USU National Aquatic Monitoring Center
- 4:35 National Coastal Condition Assessment – What is the Condition of our Nation's Coastal Waters?
Hugh Sullivan, USEPA

Session D7: Monitoring Groundwater Quality in Areas of Energy Development

3:30 pm – 5:00 pm | Room TBD

Moderator: Bret Bruce, USGS

- 3:35 Design of Regional Monitoring of the Potential Effects of Oil and Gas Development on Groundwater Resources in California
Matthew Landon, USGS
- 3:55 High Methane Concentrations in Los Angeles Groundwater
Justin T. Kulongoski, USGS
- 4:15 A Texas Study of Dissolved Methane in Fresh-Water Aquifers
Jean-Philippe Nicot, The University of Texas at Austin
- 4:35 Groundwater Quality in the Fayetteville and Haynesville Shale Gas Production Areas, Arkansas, Louisiana, and Texas
Peter McMahon, USGS

Session D8: Panel: Reducing Barriers in Publishing Data to the Water Quality Portal: Enabling Data Sharing for States, Tribes, Citizen Scientists, Volunteers, and Other Local Groups

3:30 pm – 5:00 pm | Room TBD

See page XX for session description.

Session D9: Short Course: Are Soil Health Management Systems a Solution to Agricultural Water Quality Issues? – The School Branch Project

3:30 pm – 5:00 pm | Room TBD

See page XX for session description.

Wednesday, May 4

Session E1: Great Lakes Restoration Monitoring

8:30 am – 10:00 am | Room TBD

Moderator: Joe Duris, USGS

- 8:35 Water Data to Answer Urgent Water Policy Questions: Harmful Algal Blooms, Agriculture, and Lake Erie
Elin Betanzo, Northeast-Midwest Institute
- 8:55 Evaluation of Storm Drain BMP Effectiveness on Water Quality and Environmental Health in East Bay, Traverse City, MI
Angela Brennan and Carrie Givens, USGS
- 9:15 Monitoring Methods Used to Improve Agricultural Best Management Practices Evaluations at the Edge-of-Field Scale
Matthew Komiskey, USGS and Lisa Duriancik, USDA Natural Resources Conservation Service
- 9:35 Great Lakes Offshore Water Quality Monitoring: Status, Trends, and Current Uses of Nutrient Data
T. Kevin O'Donnell, USEPA

Session E2: Assessing Water Quality with Remote Sensing

8:30 am – 10:00 am | Room TBD

Moderator: Jim Dorsch, Denver Metro Wastewater Reclamation District

- 8:35 Applied Remote Sensing for Mapping and Monitoring of the Great Lakes
Michael Battaglia, Michigan Technological University
- 8:55 Modeling a Superbloom in a Subtropical Estuary Using Landsat Imagery
Rex Ellis, St. Johns River Water Management District
- 9:15 Development of Water Quality Products Derived from NOAA Operational Satellite Sensor (VIIRS) Data
William J. Hernandez, University of Puerto Rico, Mayaguez
- 9:35 Virtual Buoy System (VBS) to Monitor Coastal and Estuarine Water Quality from Satellite Measurements
Paul Carlson, Florida Fish and Wildlife Research Institute

Session E3: Ecosystem Indicators of Coastal and Freshwater Health

8:30 am – 10:00 am | Room TBD

Moderator: Brandon Jarvis, USEPA

- 8:35 The Role of Biological Indicators in Florida's Numeric Nutrient Criteria
Daniel Hammond, Cardno
- 8:55 Developing a Coastal Health Index for Texas Waters: Moving Towards Meaningful Ecosystem Based Management
Jenny Oakley, Texas A&M University, Environmental Institute of Houston
- 9:15 Predictions of Salt Marsh Loss with Sea-Level Rise and Implications for Water Quality
Sarah Crosby, Harbor Watch
- 9:35 Phytoplankton Reference Communities and Phytoplankton Index of Biotic Integrity for Barnegat Bay-Little Egg Harbor Estuary, New Jersey
Ling Ren, Academy of Natural Sciences of Drexel University

Session E4: Cool Applications of R for Scientific Workflows, Part I

8:30 am – 10:00 am | Room TBD

Moderator: Emily Read, USGS

- 8:35 Advanced Techniques for Automated State-Wide Surface Water Quality Assessment for 305(b) Reporting
Jack Pflaumer, New Jersey Dept. of Environmental Protection
- 8:55 Enhancing Data Interpretation in the Delaware River Basin with R
Robert Limbeck, Delaware River Basin Commission
- 9:15 An R-based Web Application to Search, Analyze and Display Water Quality Data in Oregon State, USA
Peter Bryant, Oregon Dept. of Environmental Quality
- 9:35 Using R to Conduct Hydrostatistical Analysis at the Virginia Department of Environmental Quality
Lindsay Carr, USGS

Session E5: Emerging and Legacy Contaminants

8:30 am – 10:00 am | Room TBD

Moderator: Alan Ellsworth, National Park Service

- 8:35 Environmental Chemical Mixtures: A Field Approach to Assessing Exposure and Effects
Paul Bradley, USGS
- 8:55 How Evaluations of Low Concentrations of Organic Chemical Contaminants are Important in Managing Lake Ecosystems
Michael Rosen, USGS
- 9:15 Assessment of Stream Quality in the Piedmont and Appalachian Mountain area of the Southeastern United States
Celeste Journey, USGS
- 9:35 Toxic Contaminants (Emerging and Legacy) in Oregon's (USA) Aquatic Environments: A Statewide Assessment
Lori Pillsbury, Oregon Dept. of Environmental Quality

Session E6: Regional Scale Monitoring Perspectives

8:30 am – 10:00 am | Room TBD

Moderator: Sarah Lehmann, USEPA

- 8:35 The National Coastal Condition Assessment for Western Lake Michigan and Southern Lake Superior
Steven Greb, Wisconsin Dept. of Natural Resources
- 8:55 Arctic Coastal and Freshwater Surveys 2010–2015: Challenges and Successes
Amber Bethe, Alaska Dept. of Environmental Conservation
- 9:15 The Gulf of Mexico Coastal Ocean Observing System Regional Association: Our Build Out Plan and the Process Used in its Development
Barbara Kirkpatrick, Gulf of Mexico Coastal Ocean Observing System Regional Association
- 9:35 Development of the Gulf of Mexico Habitat and Water Quality and Quantity Monitoring and Assessment Program for the RESTORE Council
Steven D. Giordano, NOAA

Session E7: Managing and Sharing Volunteer Data

8:30 am – 10:00 am | Room TBD

Moderator: Chelsea Hopkins, Georgia Dept. of Natural Resources

- 8:35 Creating an Effective Volunteer Monitoring Database – Changing Data Management Techniques and Lessons Learned
Holden Sparacino, Alliance for Aquatic Resource Monitoring
- 8:55 Missouri Stream Team VWQM Interactive Map
April Perry, Missouri Dept. of Conservation
- 9:15 Rapid Provisional Reporting in Long-Term Monitoring Programs for Detection of Illicit Discharges by NPDES SMS4 Communities
Susan Libes, Coastal Carolina University
- 9:35 The External Data Framework – Facilitating Greater Data Sharing with a New, Systematic and Streamlined Approach to Solicit and Review Secondary Data for Potential Use in Clean Water Act Programs
Jody Arthur, Indiana Dept. of Environmental Management

Session E8: Panel: How to Assess and Mitigate HABs and Hypoxia Challenges

8:30 am – 10:00 am | Room TBD

See page XX for session description.

Session E9: Short Course: Field Protocols for Collecting Continuous Thermal and Hydrologic Data, Part I

8:30 am – 10:00 am | Room TBD

See page XX for session description.

Session F1: Continuous Monitoring in Florida's St. Johns River Basin

10:30 am – 12:00 pm | Room TBD

Moderator: Steve Wolfe, Florida Institute of Oceanography

- 10:35 Implementation of Continuous Monitors at the SJRWMD
David Hornsby, St. Johns River Water Management District
- 10:55 Quality Assurance Procedures for Continuous Water Quality Monitoring
Lauren Peacock, St. Johns River Water Management District

- 11:15 Process Rates Parameterization in a Blackwater River Estuary – The St. Johns River, FL

John Hendrickson, St. Johns River Water Management District

- 11:35 Lessons, Conclusions, and Plans for Future Use of Continuous Monitors at St. Johns River Water Management District

Christine Mundy, St. Johns River Water Management District

Session F2: Harmful Algae Bloom Prediction and Forecasting

10:30 am – 12:00 pm | Room TBD

Moderator: Guy Foster, USGS

- 10:35 Using Advanced Detection Methods to Further Understand the Drivers of Growth and Toxicity of Cyanobacterial Harmful Algal Blooms in Western Lake Erie
Timothy Davis, NOAA
- 10:55 The Feasibility of Developing Models for Predicting Microcystin Concentrations in Freshwater Recreational Lakes
Donna Francy, USGS
- 11:15 Cyanobacteria and Associated Toxins and Taste-and-Odor Compounds in the Kansas River, Kansas
Jennifer Graham, USGS
- 11:35 Computational Approaches to Predict Indices of Cyanobacteria Toxicity
Betty Kreakie, USEPA

Session F3: Seeing the Forest Through the Trees with BMPs

10:30 am – 12:00 pm | Room TBD

Moderator: Michael Crump, USDA Forest Service

- 10:35 History and Development of the U.S. Forest Service's National BMP Program; Integration of the Agency's National BMPs with State and Local BMPs
Michael Crump, USDA Forest Service
- 10:55 Development of BMP Monitoring Protocols
Pam Edwards, USDA Forest Service
- 11:15 Data Management and Rating Evaluation Outcomes: Scoring/Rating System for BMP Implementation, Effectiveness and Overall Results
Joan Carlson, USDA Forest Service

11:35 BMP Program: Implementation, Results and Adaptive Management
Michael Eberle, USDA Forest Service

11:35 Comparison of Isotope-Based Biomass Pathways with Groundfish Community Structure in the Eastern Gulf of Mexico
Sheri Huelster, University of South Florida, Cardno

Session F4: Cool Applications of R for Scientific Workflows, Part 2

10:30 am – 12:00 pm | Room TBD

Moderator: Emily Read, USGS

10:35 Reproducible Streamflow Data Analysis on the Server or Desktop Using Open Source R Packages
Taylor (Joe) Mills, USGS

10:55 A Novel Use of R to Couple Hierarchical Bayesian Methods with a Spatially Explicit Hydrological Model Across Regional and Continental Scales
Richard Alexander, USGS

11:15 Statistical Methods in Water Resources: New Edition, New Methods, Now Using R
Karen Ryberg, USGS

11:35 USGS-R: A Community to Support and Expand R Scientific Computing Capacity
Emily Read, USGS

Session F5: Diverse Approaches to Assess Sensitive Coastal Environments

10:30 am – 12:00 pm | Room TBD

Moderator: David Chestnut, South Carolina Dept. of Health and Environmental Control

10:35 Understanding Long-Term Changes by Linking Monthly Chlorophyll Measurements to High-Frequency Water Quality Data
Kimberly Cressman, Grand Bay National Estuarine Research Reserve

10:55 Nitrogen Availability in Seagrass Beds Dominated by *Thalassia testudinum* and *Halodule wrightii* and Its Effect on the Seagrass Health and Proliferation
Rachel Capps, University of West Florida

11:15 Southwest Florida Tidal Creeks: Linking Contributing Source Water Concentrations, Creek Specific Attributes and Estuarine Biological Responses to Develop a Nutrient Management Strategy Related to Protecting Tidal Creek Biological Integrity
Mike Wessel, Janicki Environmental

Session F6: National Groundwater Monitoring Network

10:30 am – 12:00 pm | Room TBD

Moderator: Bill Cunningham, USGS

10:35 The National Ground-Water Monitoring Network – A Ten-Year Odyssey
Rick Copeland, Florida Dept. of Environmental Protection

10:55 Status of the National Ground-Water Monitoring Network
Daryll Pope, USGS

11:15 Building Effective Map-Based Portals for Dissemination and Communication of Water Resource Data: NGWMN Case Study
Jessica Lucido, USGS

11:35 An Overview of the USGS National Water Quality Assessment of Groundwater: Perspectives on Integration with the National Groundwater Monitoring Network and Other Monitoring Efforts
Kenneth Belitz, USGS

Session F7: Metals, Mining and More: Monitoring Watersheds to Restore

10:30 am – 12:00 pm | Room TBD

Moderator: Nancy Schuldt, Fond du Lac Band of Lake Superior Chippewa

10:35 Trace-Element and Suspended-Sediment Loads in the Big River, Southeastern Missouri
Miya Barr, USGS

10:55 Occurrence and Transport of Selected Trace Metals in the Coeur d’Alene and Spokane River Basins, Idaho and Washington
Candice Hopkins, USGS

11:15 St. Louis River Water Column Mercury Monitoring and Sediment Mobility Assessment
Peter Ilieve, RTI International

11:35 Measuring Success: Biological Recovery in Impaired Streams
Michelle Shively, Rural Action

Session F8: Workshop: Volunteer Monitoring 101: Getting Started

10:30 am – 12:00 pm | Room TBD

See page XX for session description.

Session F9: Short Course: Field Protocols for Collecting Continuous Thermal and Hydrologic Data, Part 2

10:30 am – 12:00 pm | Room TBD

See page XX for session description.

Session G1: Keeping an Eye on E. coli

2:00 pm – 3:30 pm | Room TBD

Moderator: Martha Clark Mettler, Indiana Dept. of Environmental Management

- 2:05 The Surfrider Foundation's Blue Water Task Force: Bringing Together Coastal Communities to Protect Clean Water
Mara Dias, Surfrider Foundation
- 2:25 Synoptic Longitudinal Sampling Along a Bacteria Impaired Reach of the Little Blue River, Independence, Missouri
Eric Christensen, USGS
- 2:45 Microbial Source Tracking at a Freshwater Swimming Beach at Lake of the Ozarks State Park, Missouri
Jordan Wilson, USGS
- 3:05 Instream Bacteria Concentrations and the Influence of Bird Colonies at Bridges
David Pendergrass, Texas Institute for Applied Environmental Research

Session G2: Integrating Watershed Assessments to Promote Protection and Restoration Synergy

2:00 pm – 3:30 pm | Room TBD

Moderator: Douglas Norton, USEPA

- 2:05 Revised Landscape Development Intensity (LDI) Index: Accounting for a Non-Linear Human Disturbance Gradient
Kelly Reiss, University of Florida, Gainesville

- 2:25 Tennessee's Healthy Watersheds Assessment: Landscape-Based Approach to Prioritize Watershed Protection and Inform Management Decisions

Kimberly Matthews, RTI International

- 2:45 Use of the RPS Tool to Develop State Watershed Restoration and Protection Priorities for the CT TMDL Program

Chris Sullivan, Connecticut Dept. of Energy and Environmental Protection

- 3:05 The Watershed Index Online: A Tool for Comparative Watershed Assessment

Elizabeth Smith, USEPA

Session G3: Adventures in the Water Quality Portal

2:00 pm – 3:30 pm | Room TBD

Moderator: Jon Marshack, California Water Quality Monitoring Council

- 2:05 Overview and Progress on the NWQMC Water Quality Portal
James Krefth, USGS
- 2:25 Leveraging the Water Quality Portal to Characterize Historic Conditions under Tight Time Frames: A Lessons-Learned Report
Dwane Young, USEPA
- 2:45 Water Quality Portal (WQP) STORET Data Discovery Tool
Amy Wesley-Snider, RTI International
- 3:05 The National Network of Reference Watersheds Web Resource
Gary Rowe, USGS

Session G4: Organic Contamination: Occurrence and Risk

2:00 pm – 3:30 pm | Room TBD

Moderator: Lori Pillsbury, Oregon Dept. of Environmental Quality

- 2:05 Where are Concentrations of Hydrocarbons and Inorganic Constituents Found in Lake Powell? Recent Findings and Future Assessment and Monitoring
Robert Hart, USGS
- 2:25 Occurrence and Characterization of Pesticide Mixtures in Midwest Streams and Rivers, and Implications for Sampling Strategies
Julia Norman, USGS

2:45 Predicting Pesticide Toxicity Indices for Midwest Streams
Megan Shoda, USGS

3:05 Polychlorinated Biphenyls (PCBs) in Fish Tissue in U.S. Fresh Waters
John Wathen, USEPA

Session G5: Effects of Climate Change and Extreme Weather Patterns

2:00 pm – 3:30 pm | Room TBD

Moderator: Amina Pollard, USEPA

2:05 From Drought to Flood: Benefits and Challenges to Aquatic Life in Texas
Anne Rogers, Texas Parks and Wildlife Department

2:25 Critical Aspects of the Coastal Drought Index: Length of Salinity Data Record and Ecological Response Data
Paul Conrads, USGS

2:45 Occurrence and Dispersal of Invasive Zebra Mussels Through Municipal Water Transfer Pipelines and Lake/Stream Potable Source Waters Under Different Reservoir Levels and Downstream Flow Conditions
Christopher Churchill, USGS

3:05 What Happens to Near-Shore Habitat When Lake and Reservoir Water Levels Decline?
Philip Kaufmann, USEPA

Session G6: Doing More with Less: Models for Community Collaboration

2:00 pm – 3:30 pm | Room TBD

Moderator: Danielle Donkersloot, Volunteer Monitoring Representative, National Water Quality Monitoring Council

2:05 Is the Whole Greater than the Sum of its Parts?: Assessing Costs and Benefits of a Volunteer Monitoring Program
Kristine Stepenuck, University of Vermont, Burlington

2:25 Engaging the Water Action Volunteers (WAV) Stream Monitors to Monitor Total Phosphorus in Wisconsin Streams
Lindsey Albright, Dakota County Soil and Water Conservation District

2:45 Aquatic Citizen Science: A Sound Investment
Julie Vastine, Alliance for Aquatic Resource Monitoring

3:05 Using Volunteers in Groundwater Monitoring and other Spring Protection Activities in Florida
Rick Copeland, Aquifer Watch, Inc.

Session G7: Tools for Visualizing Water Quality

2:00 pm – 3:30 pm | Room TBD

Moderator: John Jastram, USGS

2:05 The Water Connection / South Platte Urban Waters Partnership's Water Quality Visualization Tool: A Tool to Increase Accessibility of Water Quality Data in the Denver Metro Area
Jon Novick, City and County of Denver and Ben Tyler, Leonard Rice Engineers

2:25 Utilizing Maps for Complex Multivariate Data Visualization for Stakeholders to Address Nonpoint Source Pollution in Athens-Clarke County
Anna Truszczynski, Athens-Clarke County, GA

2:45 Revealing the Invisible: How Visualization can Translate Water Quality Data into Accessible Stories that Inspire Solutions
Matthew Seibert, Landscape Metrics, LLC

3:05 Great Lakes to Gulf Virtual Observatory: A National Great Rivers Research and Education Center Initiative to Advance the Understanding of Large River Ecology and Decision Making Through an Interactive Geospatial Web Application that Integrates and Visualizes Relevant Data from a Wide Variety of Sources
Ted Kratschmer, National Great Rivers Research and Education Center

Session G8: Short Course: Advancing Sensor Technology for Priority Water Parameters

2:00 pm – 3:30 pm | Room TBD

See page XX for session description.

Session G9: Workshop: The Science and Management of Water Quality on Coral Reefs, Part I

2:00 pm – 3:30 pm | Room TBD

See page XX for session description.

Session H1: Remote and Autonomous Sensors for Detecting Harmful Algal Blooms

4:00 pm – 5:30 pm | Room TBD

Moderator: Greg Youngstrom, ORSANCO

- 4:05 Remotely Sensed Cyanobacterial Harmful Algal Blooms (cyanoHABs) in the United States: CyAN (Cyanobacteria Assessment Network)
Keith Loftin, USGS
- 4:25 A Multi-Tiered Approach to Monitoring Cyanobacteria and Documenting Algal Bloom Occurrences in New England
Hilary Snook, USEPA
- 4:45 Spatial Assessment of Harmful Algal Blooms in Kansas Reservoirs
Guy Foster, USGS
- 5:05 Use of Satellite Data to Monitor and Evaluate Cyanobacteria Blooms in Lake Erie and Other Lakes
Richard Stumpf, NOAA National Centers for Coastal Ocean Science

Session H2: Monitoring Management Actions in Agriculturally-Influenced Watersheds

4:00 pm – 5:30 pm | Room TBD

Moderator: John Hendrickson, St. Johns River Water Management District

- 4:05 Water Quality Monitoring to Assess a Regional Plan Approach to Effectively Treat Agricultural Stormwater Runoff
Pam Livingston-Way, St. Johns River Water Management District
- 4:25 Monitoring Water Quality for Performance Evaluation of a Treatment Wetland
Margaret Guyette, St. Johns River Water Management District
- 4:45 Monitoring Fish-Tissue Contaminant Loads as an Indicator of Agricultural Remediation Success
Lori McCloud, St. Johns River Water Management District
- 5:05 Monitoring the Efficacy of Chemical Amendments for Nutrient Control in Wetland Restorations
Vickie Hoge, St. Johns River Water Management District

Session H3: Modeling from Source to Sea

4:00 pm – 5:30 pm | Room TBD

Moderator: Peter Bryant, Oregon Dept. of Environmental Quality

- 4:05 Benefits of Open Federal Data to State Programs
Jack Pflaumer, New Jersey Dept. of Environmental Protection
- 4:25 Operational Model for Comprehensive Inland and Coastal Monitoring
Christopher Fuller, Clarkson University
- 4:45 Spatial Statistical Network Models (SSNM) for Data on Stream Networks: Background, Theory, and Applications
Dan Isaak, USFS
- 5:05 Rocky Mountains to Tropical Rainforests: Using Monitoring Results and Computer Simulations to Understand Fundamental Watershed Processes
Richard Webb, USGS

Session H4: Working across Agency Boundaries

4:00 pm – 5:30 pm | Room TBD

Moderator: Candice Hopkins, USGS

- 4:05 Integrating Water Resource Monitoring and Reporting – Measuring Water Resources Together in Oregon
Sheila Marcoe, Oregon Dept. of Agriculture
- 4:25 Oklahoma Kill Response Management Team (OKRMT): A Collaborative Response to Managing Water Quality in Oklahoma
Ferrella March, Oklahoma Dept. of Environmental Quality
- 4:45 Water Quality, Water Level, and Meteorological Monitoring at the USF COMPS Clam Bayou Station: A Successful Collaborative Effort as Demonstrated by the Continuous Monitoring Record During the 2015 St. Petersburg Sewage Overflow Event
Jeff Scudder, University of South Florida
- 5:05 A Case Study in Implementing Standardized Restoration Monitoring in Mobile Bay Subwatersheds
Renee Collini, Mobile Bay National Estuary Program

Session H5: Assessing Groundwater Quality Trends

4:00 pm – 5:30 pm | Room TBD

Moderator: Bruce Lindsey, USGS

- 4:05 High Frequency Groundwater-Quality Monitoring and Insights into the Variability of Nitrate in Surficial Aquifers near Agricultural Land Use in Delaware
Brandon Fleming, USGS
- 4:25 Fine-Scale Temporal Trends in Water-Level and Water-Quality in Two Monitoring Wells in the Central Sands Region of Wisconsin
Krista Hood, USGS
- 4:45 Timescales of Groundwater Quality Change in Karst Groundwater: Edwards Aquifer, Central Texas
MaryLynn Musgrove, USGS
- 5:05 Triennial Changes in Groundwater Quality in Aquifers used for Public Supply in California: Are Such Changes Indicators of Temporal Trends?
Robert Kent, USGS

Session H6: Around the Globe: Citizen Science and Community Education

4:00 pm – 5:30 pm | Room TBD

Moderator: Holden Sparacino, Alliance for Aquatic Resource Monitoring

- 4:05 Baywatchers – Citizen’s Water Quality Monitoring Program
Tony Williams, Buzzards Bay Coalition
- 4:25 Assessing the Awareness and Difficulties of Water Quality Monitoring in Rural Areas: The Case of Non-PRASA Communities in Puerto Rico
Nerida De Jesus-Villanueva, University of Puerto Rico, Mayaguez
- 4:45 Establishing a Volunteer Water Quality Monitoring Program in the Dominican Republic
Julie Wood, Charles River Watershed Association
- 5:05 Leveraging the Local to Go Global: Citizen Scientists Exploring the Drivers of Eutrophication
Rita Galdos and Ian Thornhill, Earthwatch Institute

Session H7: A fish, a mussel, and a mayfly walk into a sand bar...

4:00 pm – 5:30 pm | Room TBD

Moderator: Barb Horn, Colorado Parks and Wildlife

- 4:05 Great Lakes Mussel Watch: Embracing Innovative Approaches to Meet Changing Environmental Priorities
Ed Johnson, NOAA
- 4:25 YOU SHALL NOT PASS: Use of Continuous Carbon Dioxide and Water-Quality Monitoring in Development of Barriers to Asian Carp Movement
Clinton Bailey, USGS
- 4:45 Using Biological Data to Measure and Communicate Restoration Success in a Dam Removal Project in Redby, MN
Kayla Bowe, Red Lake Band of Chippewa Indians
- 5:05 Fish Assemblage Indicators for the National Rivers and Streams Assessment: Performance of Model-Based vs. Traditionally Constructed Multimetric Indices
David Peck, USEPA

Session H8: Workshop: How to Access and Acquire USGS Water Data and Information

4:00 pm – 5:30 pm | Room TBD

See page XX for session description.

Session H9: Workshop: The Science and Management of Water Quality on Coral Reefs, Part 2

4:00 pm – 5:30 pm | Room TBD

See page XX for session description.

Thursday, May 5

Session II: Tools to Manage, Display, and Share Continuous Monitoring Data

8:30 am – 10:00 am | Room TBD

Moderator: Callie Oblinger, USGS

- 8:35 Streaming Sensor Data: Tools for Acquisition, Management, and Visualization
Amber Jones, Utah State University
- 8:55 Managing, Displaying, and Sharing Continuous Monitoring Data via 52° North Sensor Observation Service (SOS)
Jeffrey White, Tetra Tech, Inc.
- 9:15 Automated Baseflow/Stormflow Separation and Load Calculation for Continuous Flow Data and Water Quality Samples in Urban Storm Sewers
Joe Sellner, Capitol Region Watershed District
- 9:35 Methods and Examples to Quantify Uncertainty Associated with USGS Time-Series Water-Quality Data
Stewart Rounds, USGS

Session I2: Using Technology to Address Challenges in the Field

8:30 am – 10:00 am | Room TBD

Moderator: Michele Wheeler, Wisconsin Dept. of Natural Resources

- 8:35 What Happens When You Aren't at Your Sampling Site: The Use of Cameras to Document Environmental Impacts on Deployed Monitoring Equipment, and Implications for Nutrient Budgets
Peter Rawlik, South Florida Water Management District
- 8:55 Barnacles, Barges, and Brines... Oh My: Overcoming the Challenges of Monitoring Water Quality on the Arroyo Colorado in South Texas
Michael Canova, USGS
- 9:15 Water Quality Monitoring, Inspection and Enforcement at Your Fingertips: Using Custom GIS Software, Tablets, and GPS Technologies to Meet Water Quality Monitoring, Inspection, Reporting, and Enforcement Goals
Joshua Rodriguez and Jacob Zangrilli, District of Columbia Dept. of Energy and Environment
- 9:35 Camo, Hose Clamps, and Pixels: Arizona's Approach for Low-Cost Intermittent Stream Monitoring
Meghan Smart, Arizona Dept. of Environmental Quality

Session I3: Nutrient Trends in the Rivers of the United States, Part I

8:30 am – 10:00 am | Room TBD

Moderator: Lori Sprague, USGS

- 8:35 Trends in Water-Quality in New Jersey Streams During Water Years 1971–2011
Robert Hirsch, USGS
- 8:55 Crop Rotation and Raccoon River Nitrate
Anthony Seeman, Iowa Soybean Association
- 9:15 Water-Quality Trends in the Lower Grand River Basin, Missouri in Response to Integrated Conservation Practices
Heather Krempa, USGS
- 9:35 Decade-Scale Changes in the Riverine Flux of Carbon, Nitrogen, and Phosphorus to Coastal Waters of the Conterminous United States
Edward Stets, USGS

Session I4: Understanding Multi-Stressor Response in Streams at the Regional Scale

8:30 am – 10:00 am | Room TBD

Moderators: Richard Mitchell, USEPA and Peter Van Metre, USGS

- 8:35 Evaluation of Three Different Methods for Developing Reference Condition Criteria for Wadeable Streams in Wisconsin
Michael Miller, Wisconsin Dept. of Natural Resources
- 8:55 Occurrence and Potential Invertebrate Toxicity of Pesticide Mixtures in Water and Sediment in Midwestern U.S. Streams
Lisa Nowell, USGS
- 9:15 Combining Probabilistic and Targeted Sampling Designs of the USEPA and USGS: The Midwest Stream-Quality Assessment
Peter Van Metre, USGS
- 9:35 Understanding Agricultural Land Use Disturbance in Streams Through a Series of Models: Landscape to Water Quality to Invertebrates
Ian Waite, USGS

Session 15: Water Quality Management Using WQX and ATTAINS

8:30 am – 10:00 am | Room TBD

Moderator: Karla Urbanowicz, Oregon Dept. of Environmental Quality

- 8:35 Role of WQX in Water Monitoring Data Activities
Susan Holdsworth, USEPA
- 8:55 Creating a Comprehensive Data Management Network: Reshaping Without Reinventing
Monty Porter, Oklahoma Water Resources Board
- 9:15 A New Era for EPA Clean Water Act Tracking and Reporting with the Assessment TMDL Tracking and Implementation System (ATTAINS) Redesign
Megan Tulloch, RTI International
- 9:35 Missouri Department of Natural Resources' Implementation of WQX Within their Data Management and Assessment System
Robert Voss, Missouri Dept. of Natural Resources

Session 16: Wetlands are Water Too: Moving into Underassessed Waters

8:30 am – 10:00 am | Room TBD

Moderator: David Neils, New Hampshire Dept. of Environmental Services

- 8:35 Increasing Percentage of Assessed Waters in the United States
Lea Rubin, Izaak Walton League of America, Inc.
- 8:55 Results from the Southeast Wetland Monitoring and Assessment Intensification Study with North Carolina, South Carolina, Alabama, and Georgia to Assess Forested Wetland Condition
Kristie Gianopoulos, North Carolina Dept. of Environmental Quality
- 9:15 Results of the 2011 National Wetland Condition Assessment in California
Cara Clark, Moss Landing Marine Laboratories
- 9:35 Results from the National Wetland Condition Assessment 2011 and Future Directions
Gregg Serenbetz, USEPA

Session 17: National Scale Assessments of Groundwater Quality

8:30 am – 10:00 am | Room TBD

Moderator: Gary Rowe, USGS

- 8:35 Hormones and Pharmaceuticals in Groundwater of the United States
Patricia Toccalino, USGS
- 8:55 Evaluating and Communicating Decadal-Scale Changes in the Nation's Groundwater Quality
Bruce Lindsey, USGS
- 9:15 A National Assessment of Fecal Indicators in Groundwater
Leslie DeSimone, USGS
- 9:35 Metrics for Assessing the Quality of Groundwater Used for Public Supply, CA, USA: Equivalent-Population and Area
Kenneth Belitz, USGS

Session 18: Workshop: Effective Science Communication, Part I

8:30 am – 10:00 am | Room TBD

See page XX for session description.

Session 19: Short Course: Water Quality Monitoring Using NASA Remote Sensing Observations, Part I

8:30 am – 10:00 am | Room TBD

See page XX for session description.

Session 11: Making Sense of Continuous Monitoring Datasets

10:30 am – 12:00 pm | Room TBD

Moderator: Brian Pellerin, USGS

- 10:35 Illinois' Continuous Near-Real-Time Nutrient Concentration and Loading Network
Paul Terrio, USGS
- 10:55 Data, Data, Everywhere: What Has Continuous Water Quality Monitoring in the Suwannee River Water Management District Taught Us About Our Springs?
Darlene Saindon, Suwannee River Water Management District

11:15 Review of King County's Lake Buoy Monitoring System
Curtis DeGasperi, King County Water and Land Resources Division, Washington

11:35 New Insights into Nitrate Dynamics in a Karst Groundwater System Gained from High-Frequency Optical Sensor Measurements
Stephen Opsahl, USGS

Session J2: Understanding Variability in Pathogenic Microbial Communities

10:30 am – 12:00 pm | Room TBD

Moderator: Leslie McGeorge, New Jersey Dept. of Environmental Protection

10:35 Spatial and Temporal Analysis of Indicator Bacteria Concentrations in a Connecticut River
Nicole Cantatore, Harbor Watch

10:55 Monitoring for Pathogens in the Upper Illinois River Watershed, Northwest Arkansas
Erin Scott, Arkansas Water Resources Center, University of Arkansas, Fayetteville

11:15 Virus Synoptic of Major Watersheds of the Continental United States Using Metagenomic Methods
David Dunigan, University of Nebraska, Lincoln

11:35 Using Molecular Techniques to Assess the Microbial Community Associated with *Cladophora*, Sediment, Invertebrates and Mussel Micro-Habitat Samples Collected from Sleeping Bear Dunes National Lakeshore: Does the Microbiome of These Sample Types Facilitate Avian Botulism Outbreaks?
Natasha Isaacs, USGS

Session J3: Nutrient Trends in the Rivers of the United States, Part 2

10:30 am – 12:00 pm | Room TBD

Moderator: Edward Stets, USGS

10:35 Nutrient Trends in the Nation's Rivers and Streams Since 1972
Lori Sprague, USGS

10:55 River Nutrient Trends from Minnesota's Watershed Pollutant Load Monitoring Network
Lee Ganske, Minnesota Pollution Control Agency

11:15 Assessing the Causes of Changes in Nutrient Loading from Major Tributaries of Chesapeake Bay
Karen Ryberg, USGS

11:35 Establishing Nutrient Trends in Iowa's Rivers in Support of Iowa's Nutrient Reduction Strategy
Mary Skopec, Iowa Dept. of Natural Resources

Session J4: Open Water Data Initiative

10:30 am – 12:00 pm | Room TBD

Moderator: Dwane Young, USEPA

10:35 Overview of the Open Water Data Initiative
Alan Rea, USGS

10:55 NHDPlus – The OWDI's Geospatial Hydrologic Framework
Tommy Dewald, USEPA

11:15 Interoperable Sensor Networks
Brandon Bergenroth, RTI International

11:35 The OWDI and Communicating Water Data Fitness and Quality: Accommodating New Data Providers While Maintaining High Data Standards
Sara Larsen, Western States Water Council

Session J5: Regional Coastal Monitoring Programs

10:30 am – 12:00 pm | Room TBD

Moderator: Ken Schiff, Southern California Coastal Water Research Project

10:35 Southern California Bight Regional Marine Monitoring
Ken Schiff, Southern California Coastal Water Research Project

10:55 The Regional Monitoring Program for Water Quality in San Francisco Bay, California, USA: Science in Support of Managing Water Quality
Philip Trowbridge, San Francisco Estuary Institute

11:15 The Chesapeake Bay Program Partnership's Long-Term Water Quality Monitoring Program: Supporting Assessment, Synthesis, Science and Communications
Peter Tango, USGS at Chesapeake Bay Program Office

11:35 Tampa Bay Estuary: Monitoring Long-Term Recovery Through Regional Partnerships
Edward Sherwood, Tampa Bay Estuary Program

Session J6: Combining Technology and Collaboration for Strategic Condition Assessment

10:30 am – 12:00 pm | Room TBD

Moderator: Nancy Schuldt, Fond du Lac Band of Lake Superior Chippewa

- 10:35 New Advances in EPA Watershed Assessment Tools, Data and Programs
Douglas Norton, USEPA
- 10:55 Lake Observer: Harnessing the Power of Collaboration, Citizen Science and Mobile App Technology to Advance Understanding of Lake Ecosystems
Kathleen C. Weathers, Cary Institute of Ecosystem Studies
- 11:15 Supporting STEM and Citizen Water Quality Monitoring Through Self Developed and Produced Technology
Erickson Burres, California State Water Resources Control Board, Clean Water Team
- 11:35 Advocating and Achieving Regional Data Comparability: Southwest Florida's Regional Ambient Monitoring Program
Natasha Dickrell, Pinellas County, FL

Session J7: Approaches for Determining Biological Condition

10:30 am – 12:00 pm | Room TBD

Moderator: Monty Porter, Oklahoma Water Resources Board

- 10:35 Influence of Antecedent Streamflow Conditions on Detecting Trends in Biological Communities
Robert Zuellig, USGS
- 10:55 Determining the Impacts of Temporal Variability on Field and Chemical Water Quality Parameters within a Probabilistic Monitoring Sampling Frame
Jason Hill, Virginia Dept. of Environmental Quality
- 11:15 Persistence of Environmental Reference Conditions: A Case Study in the Central United States
Samuel McCord, Missouri Dept. of Natural Resources
- 11:35 Applications of Regional Monitoring Network (RMN) Data, Both Now and in the Future
Jen Stamp, Tetra Tech, Inc.

Session J8: Workshop: Effective Science Communication, Part 2

10:30 am – 12:00 pm | Room TBD

See page XX for session description.

Session J9: Short Course: Water Quality Monitoring Using NASA Remote Sensing Observations, Part 2

10:30 am – 12:00 pm | Room TBD

See page XX for session description.

Session K1: Continuous Monitoring from Yellowstone to the Gulf of Mexico

2:00 pm – 3:30 pm | Room TBD

Moderator: Pat Rasmussen, USGS

- 2:05 Geothermal Solute Flux Monitoring using Electrical Conductivity in Major Rivers of Yellowstone National Park
Blaine McCleskey, USGS
- 2:25 Evaluation of Antifouling Techniques for Water-Quality Sensors in Coastal Waters
Karen Stull, USGS
- 2:45 Lateral Carbon Flux in Sweetwater Strand, Big Cypress National Preserve, Southern Florida
Amanda Booth, USGS
- 3:05 High Frequency Monitoring of Diel-Cycling and Episodic Hypoxia in Northern Gulf of Mexico Estuaries
Brandon Jarvis, USEPA

Session K2: Effectiveness of Nutrient Reduction Strategies

2:00 pm – 3:30 pm | Room TBD

Moderator: David Neils, New Hampshire Dept. of Environmental Services

- 2:05 TMDL Nutrient Targets for Nearshore Waters of Lake Pend Oreille Idaho – An Evaluation Using Long-Term Trophic and Periphyton Productivity Monitoring Data
Kristin Larson, Idaho Dept. of Environmental Quality
- 2:25 Edge-of-Field Monitoring Program to Evaluate Agricultural Conservation Practice Performance in the Lake Champlain Basin
David Braun, Stone Environmental

2:45 Water-Quality Monitoring in an Agricultural Watershed – Building a Framework to Assess the Effectiveness of Conservation Practices

Kenneth Hyer, USGS

3:05 Measuring Water Quality Improvement Due to BMP Implementation in Four Oklahoma Watersheds

Jeanette Lamb, Oklahoma Conservation Commission

Session K3: Found in Space: National Geospatial Applications

2:00 pm – 3:30 pm | Room TBD

Moderator: Tommy Dewald, USEPA

2:05 New GIS Platform and Tools for Improved Source Water Monitoring and Assessment

Robert McConnell, Tampa Bay Water

2:25 Discovering Geospatial Patterns Using NHDPlus and the Water Quality Portal

Laura Shumway, USEPA

2:45 The National Stream Internet: BIG DATA = Big Possibilities

Dan Isaak, USFS

3:05 Geospatial Products of the USGS National Geospatial Program for Lake and Watershed Management

Alan Rea, USGS

Session K4: West Coast Connections: From Fresh Water to the Sea

2:00 pm – 3:30 pm | Room TBD

Moderator: Gretchen Hayslip, USEPA

2:05 Monitoring Human Impacts on the Nutrient Dynamics in Vancouver's Streams Using Citizen Scientist Data

Scott Shupe, University of the Fraser Valley, Abbotsford, British Columbia

2:25 What's in a Bivalve? A Comparison of Contaminants in Shellfish on the Oregon Coast

Lori Pillsbury, Oregon Dept. of Environmental Quality

2:45 The San Diego Bay Regional Harbor Monitoring Program

Chris Stransky, Amec Foster Wheeler, Inc.

3:05 Potential Impacts upon the Rocky Intertidal Community of the La Jolla ASBS from Short-Duration Exposures to Storm Water Runoff

Dan McCoy, Weston Solutions

Session K5: Revealing Impairments with Innovative Statistical Methods

2:00 pm – 3:30 pm | Room TBD

Moderator: Susan Holdsworth, USEPA

2:05 Advanced Techniques for Automated State-Wide Surface Water Quality Assessment using “R”

Jack Pflaumer, New Jersey Dept. of Environmental Protection

2:25 Using Bayesian Methods to Help Identify Impaired Waters

Gary Hess, Retired

2:45 Use of Multivariate Analysis in a State Water Quality Monitoring Program for Linking Stressors to Biological Impairments

Bob Miltner, Ohio EPA

3:05 A Triage Approach Using Statistical Inference to Prioritize Actions in Response to Water Quality Impairment Listings

Mike Wessel, Janicki Environmental

Session K6: Criteria and Threshold Development

2:00 pm – 3:30 pm | Room TBD

Moderator: Monty Porter, Oklahoma Water Resources Board

2:05 A Diatom-Based Biological Condition Gradient (BCG) Approach for Assessing Impairment and Developing Nutrient Criteria for Streams

Donald Charles, Patrick Center for Environmental Research, Academy of Natural Sciences of Drexel University

2:25 Approaches in Monitoring and Assessment for Statewide Adoption of the Biotic Ligand Model to Derive Aquatic Life Criteria for Copper in Oregon

James McConaghie, Oregon Dept. of Environmental Quality

2:45 The Application of Continuous Monitoring to Chlorophyll *a* Criteria Derivation, Evaluation, and Implementation

Tish Robertson, Virginia Dept. of Environmental Quality

3:05 N-STEPS into Stream Nutrient Thresholds – Analysis of Numerous Biological and Diel Dissolved Oxygen Response Variables for Threshold Development

Robert Cook, USEPA

Session K7: Moving Forward in Volunteer Monitoring by Learning from the Past

2:00 pm – 3:30 pm | Room TBD

Moderator: Elizabeth Herron, University of Rhode Island Cooperative Extension

- 2:05 The Value of Volunteer Collaborations
Diane Switzer, USEPA
- 2:25 Lessons Learned from Building and Supporting Volunteer Engagement in a Regional Monitoring Effort
Holden Sparacino, Alliance for Aquatic Resource Monitoring
- 2:45 The Past, Present, and Future of the Secchi Dip-In
Lauren Salvato, North American Lake Management Society
- 3:05 Lessons Learned From Macrophyte Monitoring Program in Indiana
Sarah Powers, Indiana University

Session K8: Panel: Regional Monitoring Collaborations: The Success of Southwest Florida's Regional Ambient Monitoring Program

2:00 pm – 3:30 pm | Room TBD

See page XX for session description.

Session K9: Workshop: Procedures and R Scripts for QCing, Formatting and Deriving Summary Outputs for Continuous Temperature and Hydrologic Data (For Beginner R Users)

2:00 pm – 3:30 pm | Room TBD

See page XX for session description.

Session L1: Collaborative Approaches to Biological Monitoring

4:00 pm – 5:30 pm | Room TBD

Moderator: Larry Willis, Virginia Dept. of Environmental Quality

- 4:05 Determination of Changes in Water Quality, Streambed Sediment, and Benthic Macroinvertebrates as a Result of Stormwater Runoff from Selected Bridges in South Carolina
Celeste Journey, USGS

- 4:25 Stream Macroinvertebrate Monitoring: A Side by Side Comparison of Field Methods, Lab Protocols, and Assessment Outcomes from Two Different Bioassessment Programs
Elizabeth Smith, Kansas Dept. of Health and Environment
- 4:45 An Assessment of Macroinvertebrate Assemblages, From 2011–2014, in the Marcellus Shale Region of the Susquehanna River Basin
Luanne Steffy, Susquehanna River Basin Commission
- 5:05 A Comparison of Volunteer and Agency Water Quality Assessments Using Macroinvertebrate Assemblages
Matthew Young, The National Great Rivers Research and Education Center

Session L2: Effectiveness of Wastewater Management Strategies

4:00 pm – 5:30 pm | Room TBD

Moderator: Richard Mitchell, USEPA

- 4:05 Missouri River Water-Quality Monitoring in Relation to Combined Sewer Overflow Systems near Omaha, Nebraska, 2012–2015
Kayla Anderson, USGS
- 4:25 Benthic Invertebrate Response to Restoration Activities in Paradise Creek, Moscow, Idaho from 1994–2014
Gary Lester, EcoAnalysts, Inc.
- 4:45 Biological Responses to Changes in Wastewater Operations in Streams of the Indianapolis Metropolitan Area, Indiana, 1981–2012
Megan Shoda, USGS
- 5:05 Water-Quality Monitoring in an Urban Watershed – The Influence of Septic Systems on Nitrate Concentrations and Spatial Patterns
James Webber, USGS

Session L3: Assessing Water Quality Conditions in Damaged and Contaminated Areas

4:00 pm – 5:30 pm | Room TBD

Moderator: Mike Eberle, USDA Forest Service

- 4:05 Preventing Water Quality Risks: An Analysis and Prediction Model Using Adaptive Neuro-Fuzzy Inference System (ANFIS) and GIS
Yafra Khan, UNIMAS, Sarawak, Malaysia
- 4:25 Trees: Novel *In situ* Groundwater and Soil-Vapor Monitors
Jordan Wilson, USGS

4:45 Monitoring Water Resources of the Gulf Mountain Wildlife Management Area in Northcentral Arkansas to Evaluate Possible Effects of Natural Gas Development

Bradley Austin, University of Arkansas, Fayetteville

5:05 Novel Methods for Sampling and Monitoring at Contaminated Sites: An Overview of Recent Developments at the National Crude Oil Spill and Natural Attenuation Research Site near Bemidji, Minnesota

Jared Trost, USGS

Session L4: No Data without Metadata

4:00 pm – 5:30 pm | Room TBD

Moderator: Dean Tucker, National Park Service

4:05 Challenges in Combining Water-Quality Data from Multiple Agencies

Gretchen Oelsner, USGS

4:25 Adventures in Data Mining and Statistics: How Third Parties are Using Your Data and What They Would Like You To Know

Kristan Robbins, Cardno

4:45 Metadata and Diagnostics: Information for Real-Time Quality Assurance of Field Sensors

Brian Pellerin, USGS

5:05 datEAUbase: A Powerful Large Capacity Database for Raw and Validated Water Quality Data with Emphasis on Their Metadata

Queralt Plana Puig, Université Laval, Québec

Session L5: Long-Term Trends in Coastal Water Quality

4:00 pm – 5:30 pm | Room TBD

Moderator: Hugh Sullivan, USEPA

4:05 Monitoring and Assessing Water Quality and Hypoxia in the Western Long Island Sound, an Estuary of National Significance

Robin Jazxhi, Interstate Environmental Commission

4:25 A Multi-Decadal Analysis of Water Quality in a Long Island Sound Embayment

Joshua Cooper, Harbor Watch

4:45 A Proposed Water Quality Index for Tampa Bay and Evaluation of 40 Year Water Quality Trends: 1974–2015

David Karlen, Environmental Protection Commission of Hillsborough County, Florida

5:05 Integrated Analysis Tools for the NERRS System-Wide Monitoring Program Data

Marcus Beck, USEPA ORISE

Session L6 Southern Volunteer Monitoring Initiatives

4:00 pm – 5:30 pm | Room TBD

Moderator: Seira Baker, Georgia Dept. of Natural Resources

4:05 Volunteer Monitoring Case Studies in Georgia: A Review of Methods and Approaches to Engage Citizen Scientists

Harold Harbert, Georgia Dept. of Natural Resources

4:25 Florida Keys Water Watch and Georgia Adopt-A-Stream Volunteer Water Quality Monitoring Programs: A Successful Multi-State Outreach Partnership

Shelly Krueger, University of Florida

4:45 Tributaries of Teamwork – The Georgia Adopt-A-Stream Program Flows into South Carolina

Cathy Reas Foster, Clemson University Extension Service and Erika Hollis, Upstate Forever

5:05 Making a Difference Using Volunteer Collected Data and Partnerships Between Federal, State, County, and City Agencies: Crow Creek Community and Pennington Creek

Candice Miller, Oklahoma Conservation Commission

Session L7: Assessing Radioactivity in Drinking Water Aquifers

4:00 pm – 5:30 pm | Room TBD

Moderator: Christopher Greene, Minnesota Department of Health

4:05 Elevated Radioactivity in Groundwater in Charles County, Maryland

David Bolton, Maryland Geological Survey

4:25 Polonium-210 and Drinking Water: Occurrence in Minnesota and Health Risk Implications

Christopher Greene, Minnesota Department of Health

4:45 Occurrence of Radium Isotopes in the Cambrian-Ordovician Aquifer System

Paul Stackelberg, USGS

5:05 Naturally Occurring Radionuclides in Water from Bedrock Aquifers, Northern New Jersey

Zoltan Szabo, USGS

Sessin L8: Panel: Useful, Timely, Florida-Specific Monitoring Products... From a Council of your Peers

4:00 pm – 5:30 pm | Room TBD

See page XX for session description.

Session L9: Workshop: Procedures and R Scripts for QCing, Formatting and Deriving Summary Outputs for Continuous Temperature and Hydrologic Data (For Advanced R Users)

4:00 pm – 5:30 pm | Room TBD

See page XX for session description.

Friday, May 6

Session M1: Panel: From the Office to the Field: Perspectives on a Global Citizen Science Project

8:30 – 10:00 am | Room TBD

See page XX for session description.

Session M2: Workshop: The Water-CAT: A Useful, Timely, Florida-Specific Resource Management Tool

8:30 – 10:00 am | Room TBD

See page XX for session description.

Poster Presentations



Posters will be showcased during the 1:00–2:00 pm Poster Viewing time on Wednesday, May 4. Check the index card by each poster to see when the presenter will be available throughout the week to answer questions.

Monitoring Designs for the 21st Century

01 The NEON Aquatic Network: Standardizing Deployment of Aquatic Instrument Systems Across Continental Ecosystems

Charles Bohall, National Ecological Observatory Network (NEON)

02 Selecting Reference Sites for Assessments in Heavily-Disturbed Regions

Daren Carlisle, USGS

03 Monitoring Strategies to Support Nutrient Water Quality Modeling

Amanda Howell, USEPA

04 USGS Urban Water-Resources Monitoring Programs in Virginia

John Jastram, USGS

05 Regional Coastal Wetlands Monitoring Workgroup: Multi-State Collaboration of Data and Assessment Methodologies

Kimberly Matthews, RTI International

06 Monitoring Water Temperature and Specific Conductance as Indicators of Source Waters: Warm Mineral Springs, Florida, 2014–2015

Patricia Metz, USGS

07 Illinois Nutrient Monitoring Network – Continuous Phosphate and Turbidity Monitoring to Determine Continuous Total Phosphorus Loads

Colin Peake, USGS

08 Optical Techniques for the Determination of Fluorescence in Environmental Waters: Guidelines for Instrument Selection, Operation, Deployment, Maintenance, Quality Assurance, and Data Reporting

Brian Pellerin, USGS

09 The Role of ICPRB in the Development of Algae Monitoring Methodologies Within the Potomac River Basin

Gordon Selckmann, Interstate Commission on the Potomac River Basin (ICPRB)

10 Deployment of Continuous Water Quality Monitoring Systems

Dan Sullivan, USGS

11 Is My Well Water Safe to Drink? Characterizing Arizona's Groundwater Quality

Douglas Towne, Arizona Dept. of Environmental Quality

12 Nutrient Fate and Transport in Indian Creek, Johnson County, Kansas

Thomas Williams, USGS

13 Real-Time Water Quality Forecasts

Julie Wood, Charles River Watershed Association

Connecting Coasts, Estuaries, and Freshwater Ecosystems

14 Protecting Water Quality While Constructing a Flood Protection Project along the Napa River in California

J.J. Baum, USACE

15 USGS Water-Quality Monitoring Network for the St. Marks Watershed in Florida

Ron Knapp, USGS

16 Assessing the Nutrient Loads Reaching the Coastal Ocean Through Tidal Inlets in Southeast Florida

S. Jack Stamates, NOAA Atlantic Oceanographic and Meteorological Laboratory

Building Monitoring Collaborations

17 Charlotte Harbor Aquatic Preserves' CHEVWQMN Volunteer Water Quality Monitoring Program Overview

Melynda Brown, Florida Dept. of Environmental Protection

18 The U.S. Geological Survey Urban Landscapes Capability Team of the Northeast Region

Shawn Fisher, USGS

19 CA Urban Streams Alliance – The Stream Team

Timmarie Hamill, California Urban Streams Alliance, The Stream Team

- 20 Using Partnerships to Build a Water-Quality Monitoring Program at Lake Mattamuskeet National Wildlife Refuge
Michelle Moorman, USFWS
- 21 Building Collaboration and Continuous Monitoring Data Exchange Through a State Water Monitoring Council
Leslie McGeorge, New Jersey Dept. of Environmental Protection
- Innovations in Monitoring and Assessment**
- 22 Assessment of Water Quality Condition Within Barnegat Bay Using the Data Being Collected Between 2008 and 2013
Leslie McGeorge, New Jersey Dept. of Environmental Protection
- 23 Geothermal and Brine Sources of Natural Contaminants in Public-Supply Wells in the Rio Grande Aquifer System
Laura Bexfield, USGS
- 24 Continuous Groundwater Quality Monitoring at Three Drinking-Water Wells in New Hampshire
James Degnan, USGS
- 25 A New Approach to In Situ Measurements of CO₂ in Shallow Surface Waters
Karl Haase, USGS
- 26 Utilization of an Autonomous Underwater Vehicle to Support Taste-and-Odor Assessments in a Drinking-Water Supply Reservoir in South Carolina, 2013–2015
Matthew Petkewich, USGS
- 27 Assessing Variability in Groundwater Quality in the San Joaquin Valley, CA with Continuous Monitoring
John Franco Saraceno, USGS
- 28 Laboratory Evaluation of Online Sensors for Monitoring Microorganisms in Water
Samendra Sherchan, Tulane University
- 29 Status of Florida's Fresh Waters: Probabilistic Monitoring Results, Application of Numeric Nutrient and Dissolved Oxygen Criteria
Jay Silvanima, FL Dept. of Environmental Protection
- 30 Sources of Water and Hydrogen Sulfide at White Springs, Florida, 2012–2013
John Stamm, USGS
- 31 A Comparison of Natural Substrate vs. Artificial Substrate Sampling Devices for Periphyton and Biofilm Assessment
Alex Valigosky, EnviroScience, Inc.
- 32 Deploying and Field Testing ProbeGuard Anti-Fouling Device
Kurt Weidich, USGS
- 33 A Healthy Watershed Assessment for California's Central Coast
Karen Worcester, California Central Coast Water Board
- Identifying and Assessing Emerging Risks**
- 34 Water Data to Answer Urgent Water Policy Questions: Shale Gas Development in the Susquehanna River Basin
Elin Betanzo, Northeast-Midwest Institute
- 35 A Pilot Study: Cemeteries and the Potential Impact to Groundwater Quality and Human Health (Aurelius Township, Michigan)
Angela Brennan, USGS
- 36 Sediment Pore Water Ammonium and Phosphate Concentrations in Choctawhatchee Bay as Determined by the Diffusive Equilibration in Thin Films (DET) Technique
Roger Burke, USEPA
- 37 Continuous Nitrate Monitoring in Florida: Approaches to Ensure Data Quality
Clint Coates, USGS
- 38 Using Molecular Techniques to Assess the Microbial Community Associated with Cladophora, Sediment, Invertebrates and Mussel Micro-Habitat Samples Collected from Sleeping Bear Dunes National Lakeshore: Does the Microbiome of These Sample Types Facilitate Avian Botulism Outbreaks?
Natasha Isaacs, USGS
- 39 The NorWeST Temperature Database, Model, and Climate Scenarios for Western Streams and Rivers
Dan Isaak, US Forest Service
- 40 Microcystins Occurrence in Wadeable Streams in the Southeastern United States
Celeste Journey, USGS
- 41 Steep Decline in the Mussel Community of an Outstanding State Resource Water (Marsh Creek, Kentucky) and the Potential Contributing Factors
Katie McKone, Kentucky Division of Water
- 42 Frequencies of Detection and Spatial Distribution of Sucralose and Select Pharmaceuticals and Pesticides in Florida's Ambient Freshwaters
Andy Woeber, Florida Dept. of Environmental Protection
- Measuring Effectiveness of Water Management Actions**
- 43 Performance Evaluation of Biofiltration Parking Lot Retrofit
Elisabeth Cianciola, Charles River Watershed Association

44	How West Virginia Government Agencies Use Volunteer Data <i>Timothy Craddock, West Virginia Dept. of Environmental Protection</i>	56	Expanding the Chesapeake Information Management System: Chesapeake Environmental Data Repository and an Improved DataHub <i>Michael Mallonee, Interstate Commission on the Potomac River Basin (contractor to Chesapeake Bay Program Office)</i>
45	Biological Treatment for Removal of the Odorants Geosmin and MIB in Surface Water Prior to Conventional Treatment <i>Katie Gilmore, Manatee County Water Treatment Plant, Florida</i>	57	Comprehensive QA/QC for Water Analyses <i>Blaine McCleskey, USGS</i>
46	Assessing Water Quality Status and Trends for New York City's Source Water <i>Jim Mayfield, New York City Dept. of Environmental Protection</i>	58	Developing a Stormwater Management Program with Continuous Water Quality Monitoring and Building Community Relationships <i>Andrew Stroud, City of Columbia, South Carolina</i>
47	Long-Term Assessment of Aquatic Communities and Environmental Characteristics at Selected Lake Michigan Tributaries <i>Barbara Scudder Eikenberry, USGS</i>	Assessing Trends in Water Resources	
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69 NCCA 2010 and 2015 in Florida: Comparison of
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“Normal?”

*Laura Yarbro, Florida Fish and Wildlife Conservation
Commission*

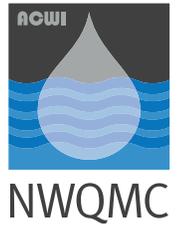
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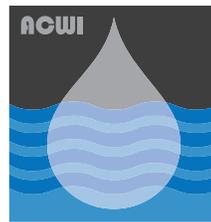
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