Proposed Sessions

S1: Comparability: Challenges and Successes Integrating Biological Data
Addressing key challenges and sharing practical experience for dealing with comparability of biological data across a variety of water body types and taxonomic groups.

**Session Chair:** Dr. Elizabeth Smith, Kansas Department of Health and Environment, Elizabeth.Smith@ks.gov

**Session Co-Chair(s):** Danielle Grunzke, US EPA HQ Watershed Restoration and Assessment Protection Division, grunzke.danielle@epa.gov; 202-566-2876; Dr. Yong Cao, Stream Ecologist, Illinois Natural History Survey, yongcao@illinois.edu; 217-244-6847

**Associated Conference Themes**
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
3) Monitoring Water Across a Changing Hydrologic Cycle

**Keywords:** biological comparability, sampling methods, data management

S2: DNA-based aquatic ecosystem monitoring: past, present, and future
This session is designed to bring together scientists, aquatic resource managers, policymakers, and other stakeholders to evaluate progress in developing DNA-based methods and indicators for aquatic ecosystem monitoring and biological condition assessment, and to explore possibilities for wider implementation and utilization of these tools in monitoring programs.

**Session Chair:** John Darling, United States Environmental Protection Agency Office of Research and Development, darling.john@epa.gov

**Session Co-Chair(s):** Mark Bagley, United States Environmental Protection Agency Office of Research and Development, bagley.mark@epa.gov; Richard Mitchell, United States Environmental Protection Agency Office of Water, mitchell.richard@epa.gov

**Associated Conference Themes**
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

**Keywords:** DNA, RNA, monitoring, biological condition, biological community, indicator taxa
**S3: Identifying and Protecting our High Quality Waters**
Are we losing our highest quality waters? Some recent assessments suggest so. We invite presentations on approaches for identifying/monitoring high-quality waters and using CWA/other tools to protect them.

**Session Chair:** Sarah Lehmann, US EPA, lehmann.sarah@epa.gov  
**Session Co-Chair(s):** TBD  

**Associated Conference Themes**  
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries  
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices  
3) Monitoring Water Across a Changing Hydrologic Cycle  

**Keywords:** high quality, reference, best of what is left, anti-degradation, vulnerability, biodiversity

**S4: Improvements to and Applications of Coastal Monitoring Data and Approaches**
We welcome presentations highlighting new aquatic condition indicators, analytical techniques, and work leveraging and integrating EPA coastal data and approaches to improve our understanding of estuaries and Great Lakes.

**Session Chair:** Marguerite Pelletier & Linda Harwell, EPA ORD, pelletier.peg@epa.gov & harwell.linda@epa.gov  
**Session Co-Chair(s):** Mari Nord, EPA Region 5, nord.mari@epa.gov; Hugh Sullivan, EPA OW, sullivan.hugh@epa.gov  

**Associated Conference Themes**  
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries  
4) Tools to Mine, Share, and Visualize Water Quality Data  
7) Effective Monitoring Collaborations and Partnerships  

**Keywords:** estuaries, Great Lakes, NCCA, indicators, analytical techniques, leveraged data, partnerships

**S5: Our aquatic ecosystems: how can we better assess and manage them in an integrated way**
Coastal waters, lakes, streams and wetlands are interconnected components of our ecosystems. We invite presentations that integrate assessments of multiple waterbody types/media addressing approaches, findings and resource management implications.

**Session Chair:** Sarah Lehmann, US EPA, lehmann.sarah@epa.gov  
**Session Co-Chair(s):** Gregg Serenbetz, USEPA, serenbetz.gregg@epa.gov  

**Associated Conference Themes**  
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries  
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships  
3) Monitoring Water Across a Changing Hydrologic Cycle  

**Keywords:** Integrated assessments, cross-resource, ecological integrity, holistic, multimedia, water quality, ecosystem health
**S6: What is in a number? The complexities behind quantifying phytoplankton**
This session will invite submissions to review methods of comparing in situ phytoplankton fluorescence measurements to laboratory measurements of phytoplankton biomass and species composition.

**Session Chair:** Elizabeth Stumpner, USGS, estumpner@usgs.gov  
**Session Co-Chair(s):** Tamara Kraus, USGS, tkraus@usgs.gov

**Associated Conference Themes**
10) HABs and Other Nutrient Relationships  
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries  
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

**Keywords:** HABs, cyanobacteria, diatoms, algae, phytoplankton, chlorophyll-a, fluorescence, taxonomy, phycocyanin

**S7: Assessing Streamflow Hydro-alteration and its Effects on Habitat and BioinTEGRITY.**
Regional evaluation of the extent and intensity of stream hydro-alteration and its causes, focusing on wadeable streams, including presentations on changes in physical habitat and biota.

**Session Chair:** Philip R. Kaufmann, U.S. EPA Office of Research and Development, kaufmann.phil@epa.gov  
**Session Co-Chair(s):** Steve Paulsen, U.S. EPA Office of Research and Development, paulsen.steve@epa.gov

**Associated Conference Themes**
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries  
3) Monitoring Water Across a Changing Hydrologic Cycle

**Keywords:** hydro-alteration, stream flows, peak flows, low flows, impoundments, physical habitat, biointegrity

**S8: Climatic drivers of long-term trends in regional ambient water quality**
Incorporation of climate and atmospheric data in regional trend assessments of water quality for a better understanding of the drivers of long-term water quality change.

**Session Chair:** Britta Bierwagen, bierwagen.britta@epa.gov  
**Session Co-Chair(s):** Jay Silvanima;

**Associated Conference Themes**
3) Monitoring Water Across a Changing Hydrologic Cycle  
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices  
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

**Keywords:** Regional Water Quality, Regional Trend Analyses, Weathering Processes, Climate Change
S9: Lake hydrologic alteration: monitoring and assessing patterns and evaluating causes and effects on lake ecological integrity

Water levels are integral to lake integrity but are impacted by water use and changing climate. We invite presentations on lake hydrology monitoring and hydro-alteration effects on lake ecological condition.

Session Chair: C. Emi Fergus, Oak Ridge Institute of Science and Education, fergus.emiko@epa.gov
Session Co-Chair(s): Katie Hein, Wisconsin Department of Natural Resources, catherine.hein@wisconsin.gov; Phillip Kaufmann, Pacific Ecological Systems Division, US EPA, kaufmann.phil@epa.gov

Associated Conference Themes
3) Monitoring Water Across a Changing Hydrologic Cycle
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries

Keywords: lake hydro-alteration, water levels, water level management, evaporation, lake physical habitat, dams

S10: Monitoring Coastal Acidification in Estuaries

This session will discuss multiparameter monitoring used to characterize baseline carbonate chemistry in coastal waters and distinguish the local drivers of coastal acidification which can threaten marine organisms.

Session Chair: Nicholas Rosenau, US Environmental Protection Agency (EPA), Office of Wetlands, Oceans and Watersheds, rosenau.nicholas@epa.gov
Session Co-Chair(s): Holly Galavotti, US EPA, Office of Wetlands, Oceans and Watersheds, galavotti.holly@epa.gov; Matt Liebman, US EPA Region 1, liebman.matt@epa.gov

Associated Conference Themes
3) Monitoring Water Across a Changing Hydrologic Cycle
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
2) Emerging and Persistent Contaminants of Concern to Aquatic Life and Human Health

Keywords: autonomous monitoring, continuous monitoring, coastal acidification, estuary, water quality data, nutrients, HAB, National Estuary Program

S11: Synergies between Climate and Natural Hazard Mitigation and Nonpoint Source Pollution

NPS pollution is intensified by natural hazards within watersheds. This session focuses on sustainable techniques of natural hazard mitigation in changing climates to benefit NPS monitoring and assessment.

Session Chair: Madeline Castro, US EPA, Castro.Madeline@epa.gov
Session Co-Chair(s): Peter Monahan, US EPA, Monahan.Peter@epa.gov; Erika Larsen, US EPA, Larsen.Erika@epa.gov

Associated Conference Themes
3) Monitoring Water Across a Changing Hydrologic Cycle
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries

Keywords: Climate change, Water Quality, Hazard Mitigation, sustainable practices, natural disasters
**S12: Innovative and expanding collaborations between agencies and universities**
Highlighting new or on-going agency and academic partnerships using agency data for novel explorations around big data, machine learning, and enhanced data visualization techniques.

**Session Chair:** Luanne Steffy, Susquehanna River Basin Commission 4423 N. Front St. Harrisburg, PA 17110, lsteffy@srbc.net
**Session Co-Chair(s):** Christine Proctor, Harrisburg University of Science and Technology 326 Market St, Harrisburg, PA 17101 717-901-5100 ext. 1635 cproctor@harrisburgu.edu;

**Associated Conference Themes**
4) Tools to Mine, Share, and Visualize Water Quality Data  
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships  
10) HABs and Other Nutrient Relationships

**Keywords:** agency partnerships, universities, machine learning, large datasets, data visualization

**S13: Local, State, and Regional Uses of Community Collected Data**
There are nearly 2000 aquatic citizen science/volunteer monitoring programs across the nation, these sessions will explore local, state, and regional examples of how community collected data have been used.

**Session Chair:** Julie Vastine, Dickinson College's Alliance for Aquatic Resource Monitoring, vastine@dickinson.edu
**Session Co-Chair(s):**

**Associated Conference Themes**
4) Tools to Mine, Share, and Visualize Water Quality Data  
7) Effective Monitoring Collaborations and Partnerships

**Keywords:** Data use, citizen science; volunteer monitoring; data credibility

**S14: Making all data matter: incorporating citizen science into decision making for improved water quality**
Resource managers and community-based monitoring groups will discuss mutual needs around data quality and data sharing, along with available tools and best practices for converting local data into local action.

**Session Chair:** Pam DiBona, Massachusetts Bays National Estuary Partnership, pamela.dibona@mass.gov
**Session Co-Chair(s):** Matt Liebman, U.S. EPA Region 1, liebman.matt@epa.gov;

**Associated Conference Themes**
4) Tools to Mine, Share, and Visualize Water Quality Data  
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships  
7) Effective Monitoring Collaborations and Partnerships

**Keywords:** Citizen science, monitoring, data management, QAPP, resource management
S15: Progress on Water Data Sharing: The Internet of Water and Related Approaches
This session will address progress on water data sharing across all domains and all water data providers motivated by Internet of Water principles, changes in technology, and other drivers.

Session Chair: Peter Colohan, Internet of Water,
Session Co-Chair(s): Dwane Young, U.S. EPA; Emily Read, USGS

Associated Conference Themes
4) Tools to Mine, Share, and Visualize Water Quality Data
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications

Keywords: Data, Findable Accessible Interoperable Reusable (FAIR) data, Internet of Water, Open Data, Technology, Data Standards, GIS, Sensors, modeling, public access

S16: The Monitoring and Assessment Data Life Cycle
This session describes how data can move through the data life cycle, from monitoring and assessment to tracking and reporting.

Session Chair: Laura Shumway, US EPA, Shumway.Laura@epa.gov
Session Co-Chair(s): Wendy Reid, US EPA, Reid.Wendy@epa.gov;

Associated Conference Themes
4) Tools to Mine, Share, and Visualize Water Quality Data
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

Keywords: Monitoring, Assessment, Reporting, Data, Tools, Tracking, Process, Water Quality Portal, How’s My Waterway

S17: Using Big Data to Answer National- and Regional-Scale Water Quality Questions
National and regional scale water-quality studies require collecting and processing large amounts of data. This session focuses on the tools, techniques, and insights gained from these large-scale efforts.

Session Chair: Victor Roland, USGS - Lower Mississippi-Gulf Water Science Center, vroland@usgs.gov
Session Co-Chair(s): Jennifer Murphy, Lower Mississippi-Gulf Water Science Center, vroland@usgs.gov;

Associated Conference Themes
4) Tools to Mine, Share, and Visualize Water Quality Data
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
7) Effective Monitoring Collaborations and Partnerships

Keywords: water quality, monitoring, modeling, big data, national, regional
S19: Historical changes in water quality: Scale and methodological insights and experiences across the US

Accurate characterization of changes in water quality is imperative for tracking progress toward management goals. This session focuses on trend studies completed across a range of scales using established and innovative techniques.

**Session Chair:** Gretchen Oelsner, U.S. Geological Survey, NM Water Science Center, 6700 Edith Blvd NE, Suite B, Albuquerque, NM 87113, goelsner@usgs.gov

**Session Co-Chair(s):** Jennifer Murphy, U.S. Geological Survey, Lower Mississippi-Gulf Water Science Center, 640 Grassmere Park, Suite 100, Nashville, TN 37211, jmurphy@usgs.gov; Karen Ryberg, U.S. Geological Survey, Dakota Water Science Center, 821 E Interstate Ave, Bismarck, ND 58503, kryberg@usgs.gov

**Associated Conference Themes**
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
11) Groundwater monitoring, characterization, and trends
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices

**Keywords:** water quality, national, regional, trends, surface water, groundwater, statistical methods

S20: Monitoring and modeling water quality in the Delaware River Basin

This session is focused on water quality in the Delaware River Basin and describes new and ongoing monitoring efforts, current studies, and future work.

**Session Chair:** Megan Shoda, USGS, meshoda@usgs.gov

**Session Co-Chair(s):** Jennifer Murphy, USGS, jmurphy@usgs.gov; Jennifer Egan, Environmental Finance Center, jegan@umd.edu

**Associated Conference Themes**
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
9) Assessing and measuring the effectiveness of TMDLS and Watershed-based Management
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

**Keywords:** Delaware River Basin, water quality, monitoring, modeling
S21: Monitoring for Hazard Planning and Response
Session focusing on water quality monitoring or tools related to hazard planning and response including spills, HABS, wildfires, and floods. Special interest include early warning systems, drinking water protection, and interagency coordination.

Session Chair: Dan Sullivan, U.S. Geological Survey Upper Midwest Water Science Center, djsulliv@usgs.gov
Session Co-Chair(s): Faith Fitzpatrick, U.S. Geological Survey Upper Midwest Water Science Center, fafitzpa@usgs.gov;

Associated Conference Themes
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
7) Effective Monitoring Collaborations and Partnerships
10) HABs and Other Nutrient Relationships

Keywords: hazards, spills, response, wildfires, floods, HABs

S22: Continuous Conundrum – Using Continuous Data in Water Quality Assessments
Strategies for using continuous monitoring data from sensors in water quality assessments of streams, rivers, lakes, reservoirs, wetlands and estuaries.

Session Chair: Dr. Jim Hagy, US EPA ORD, Atlantic Ecology Division, Hagy.Jim@epa.gov
Session Co-Chair(s): Chuck Dvorsky, Texas Commission on Environmental Quality, charles.dvorsky@tceq.texas.gov; 512-567-7149; Leah Ettema, US EPA Region 4 Laboratory Services and Applied Sciences Division; Ettema.Leah@epa.gov; 304-234-0245

Associated Conference Themes
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications
4) Tools to Mine, Share, and Visualize Water Quality Data
3) Monitoring Water Across a Changing Hydrologic Cycle

Keywords: continuous monitoring, continuous data, quality assurance, assessment

S23: Continuous Monitoring of Fluorescence-Based Water-Quality Parameters: Recent Examples from a Variety of Aquatic Systems
Challenges and successes of continuous monitoring using fluorescent dissolved organic matter (fDOM) and algal fluorescence-based probes and their contribution to overall monitoring objectives.

Session Chair: Dr. Stephen Opsahl, US Geological Survey, sopsahl@usgs.gov
Session Co-Chair(s): Amanda Booth, US Geological Survey, acbooth@usgs.gov;

Associated Conference Themes
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications
3) Monitoring Water Across a Changing Hydrologic Cycle
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries

Keywords: High-frequency monitoring, fluorescence, dissolved organic matter, fDOM, pigments, chlorophyll, phycocyanin
S24: Low Cost, DIY, or Open Source water quality sensors updates
Review the Low Cost, DIY, or Open Source Water quality Sensors in development, in deployment, or recently completed projects

Session Chair: Matt Bolt, EPA, bolt.matthew@epa.gov
Session Co-Chair(s): Alan Lindquist, lindquist.alan@epa.gov (513)569-7192; Tom Faber, faber.tom@epa.gov (617)918-8672

Associated Conference Themes
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs, Wetlands, and Estuaries
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

Keywords: low-cost, DIY, open-source, water quality, sensor

S25: Next-generation water-quality network operation and methods development: tools and best practices
Operation of a water-quality sensor network requires numerous considerations from instrument validation, to best practices for data and quality management, to data synthesis, visualization, and communication with stakeholders. This session will invite talks to cover each of these subject areas in further detail.

Session Chair: Alexandra Etheridge, USGS, aetherid@usgs.gov
Session Co-Chair(s): Brian Bergamaschi, USGS, bbergama@usgs.gov;

Associated Conference Themes
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications
4) Tools to Mine, Share, and Visualize Water Quality Data
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

Keywords: Network, sensors, water-quality, high-frequency, data visualization, science communication, nutrients, HABs, remote sensing

S26: Building Credibility in Community-based Monitoring Programs
This session will explore best practices for building data credibility into collaborative monitoring projects that engage volunteers.

Session Chair: Julie Vastine, Dickinson College's Alliance for Aquatic Resource Monitoring, vastine@dickinson.edu
Session Co-Chair(s):

Associated Conference Themes
4) Tools to Mine, Share, and Visualize Water Quality Data
7) Effective Monitoring Collaborations and Partnerships

Keywords: citizen science; volunteer monitoring; data credibility
S27: Coordinated Monitoring Partnerships in the New York-New Jersey Harbor Estuary
This session will include presentations that highlight coordinated, multi-partner collaborations focused on monitoring water quality in the urban estuary in and around New York-New Jersey Harbor.

Session Chair: Evelyn Powers, Interstate Environmental Commission, epowers@iec-nynjct.org
Session Co-Chair(s): Shawn Fisher, U.S. Geological Survey New York Water Science Center, scfisher@usgs.gov;

Associated Conference Themes
7) Effective Monitoring Collaborations and Partnerships
2) Emerging and Persistent Contaminants of Concern to Aquatic Life and Human Health
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices

Keywords: Pathogens, Volunteer Monitoring, Urban Waters Federal Partnership, Urban Estuary, Embayments, Recreational Water Quality

S28: Growing Grass Roots Volunteer Water Quality Monitoring Programs
Volunteer water quality monitoring programs thrive with partnerships within all levels of their programs. Connecting partnering agencies with citizen scientists improves water quality by combining resources and by educating communities

Session Chair: Sierra Hylton, SC Dpt of Health and Environmental Control, hyltonsf@dhec.sc.gov
Session Co-Chair(s):

Associated Conference Themes
7) Effective Monitoring Collaborations and Partnerships
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
3) Monitoring Water Across a Changing Hydrologic Cycle

Keywords: Volunteer Water Quality Monitoring, Citizen Science Partnerships, Tools, Outreach, Hands-on, Curriculum, Public Database, Chemical-Biological-Physical Monitoring.

S29: National Water Quality Initiative: Successes, Monitoring, Partnerships, and Beyond
The National Water Quality Initiative (NWQI) reduces nonpoint source pollution in small priority watersheds. Partners will share water quality success stories, monitoring strategies, partnership building techniques, and lessons learned.

Session Chair: Meg Wiitala, US EPA Office of Water, wiitala.megan@epa.gov
Session Co-Chair(s): TBD

Associated Conference Themes
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
7) Effective Monitoring Collaborations and Partnerships
10) HABs and Other Nutrient Relationships

Keywords: nutrients, partnerships, NWQI, agriculture, BMPs, priority watersheds, water quality improvements
**S30: Regional Monitoring Programs in an Era of Shifting Baselines**
Climate change will have significant impacts on aquatic ecosystems and fate and transport of contaminants. This session will summarize efforts to incorporate shifting baselines into water and/or sediment quality monitoring.

**Session Chair:** Karen McLaughlin, Southern California Coastal Water Research Project, karenm@sccwrp.org  
**Session Co-Chair(s):** Melissa Foley, San Francisco Estuary Institute, melissaf@sfei.org; Ken Schiff, Southern California Coastal Water Research Project, kens@sccwrp.org

**Associated Conference Themes**
7) Effective Monitoring Collaborations and Partnerships  
3) Monitoring Water Across a Changing Hydrologic Cycle  
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries

**Keywords:** climate change, shifting baselines, regional monitoring, monitoring partnerships

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**S31: Assessing and evaluating practices and approaches to address agricultural NPS pollution**
Exploration to the varied approaches to monitoring and evaluating suites of agricultural conservation practices.

**Session Chair:** Cyd Curtis, US EPA, curtis.cynthia@epa.gov

**Session Co-Chair(s):**

**Associated Conference Themes**
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices  
7) Effective Monitoring Collaborations and Partnerships  
3) Monitoring Water Across a Changing Hydrologic Cycle

**Keywords:** agriculture, edge of field, paired watershed, NWQI, Conservation drainage, healthy soils

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**S32: Assessing and evaluating practices and approaches to address resource extraction and Acid Mine Drainage**
State agencies and local groups addressing acid mine drainage are in a long-term investment. Their experience can inform future best management practices and even capacity building needs in other watersheds.

**Session Chair:** Cyd Curtis, US EPA, curtis.cynthia@epa.gov

**Session Co-Chair(s):**

**Associated Conference Themes**
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices  
7) Effective Monitoring Collaborations and Partnerships  
9) Assessing and measuring the effectiveness of TMDLS and Watershed-based Management

**Keywords:** acid mine drainage, tailing pile, heavy metals, mercury, acid, metals, aquatic life, capacity building
**S33: Assessing and evaluating practices and approaches to address urban NPS pollution**

This session includes BMPs addressing both water quality and quantity, long term effectiveness of practices in a changing climate, defining critical areas in an urban setting, and continuous monitoring.

**Session Chair:** Cyd Curtis, US EPA, curtis.cynthia@epa.gov

**Session Co-Chair(s):**

**Associated Conference Themes**

- 8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
- 9) Assessing and measuring the effectiveness of TMDLS and Watershed-based Management
- 3) Monitoring Water Across a Changing Hydrologic Cycle

**Keywords:** Storm water, nonpoint source, best management practices, urban runoff

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**S34: Critical Source Areas in Implementation Strategies: A Key Step to Achieving Results**

Critical Source Area (CSA) identification in NPS pollution-dominated watersheds is a necessary step to achieving efficient and effective water quality results.

**Session Chair:** Meg Wiitala, US EPA Office of Water, wiitala.megan@epa.gov

**Session Co-Chair(s):** TBD

**Associated Conference Themes**

- 8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
- 9) Assessing and measuring the effectiveness of TMDLS and Watershed-based Management
- 7) Effective Monitoring Collaborations and Partnerships

**Keywords:** Critical Source Areas, NPS, BMPs, implementation, Watershed assessment, nine element plan, water quality

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**S35: Integrative Lake and Watershed Management**

From watershed plans to innovative treatment techniques and monitoring. This session will highlight various methods of management, planning, and implementation of new technology in lake and water quality monitoring.

**Session Chair:** Chris Mikolajczyk, NALMS and Princeton Hydro, cmiko@princetonhydro.com

**Session Co-Chair(s):** Jack Szczepanski, Princeton Hydro, jszczepanski@princetonhydro.com; Fred Lubnow, NALMS and Princeton Hydro, flubnow@princetonhydro.com

**Associated Conference Themes**

- 8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
- 1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries
- 9) Assessing and measuring the effectiveness of TMDLS and Watershed-based Management

**Keywords:** monitoring, management, watersheds, water quality, treatment assessment
S36: Advances in Harmful Algae Bloom Monitoring, Prediction, and Forecasting
This session will include studies that demonstrate field, lab, and remotely sensed methods to detect, monitor, and predict harmful algae blooms (HABs) and cyanobacterial blooms

Session Chair: Christopher Churchill, U.S. Geological Survey, cchurchi@usgs.gov
Session Co-Chair(s):

Associated Conference Themes
10) HABs and Other Nutrient Relationships
6) New Technologies for Remote Sensing and Satellite Applications, Continuous and Discrete Monitoring, and Other Applications
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

Keywords: Harmful algae blooms, HABs, cyanobacteria, satellite remote sensing, water quality

S37: Harmful Algal Blooms
This Session will focus on identifying incidents of HABs, addressing the condition with novel and innovative techniques, community responses to HAB occurrences, and implementing preventative measures.

Session Chair: Fred Lubnow, Princeton Hydro and NALMS, flubnow@princetonhydro.com
Session Co-Chair(s): Jack Szczepanski, Princeton Hydro, jszczepanski@princetonhydro.com; Chris Mikolajczyk, Princeton Hydro and NALMS, cmiko@princetonhydro.com

Associated Conference Themes
10) HABs and Other Nutrient Relationships
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
2) Emerging and Persistent Contaminants of Concern to Aquatic Life and Human Health

Keywords: HABs

S38: Harmful Algal Blooms: Nonpoint Source Issues
Nonpoint source pollution is a major contributor to Harmful Algal Blooms, which can have serious and even fatal consequences. Much work must be done to address the link between them.

Session Chair: Paul Thomas, USEPA, thomas.paul@epa.gov
Session Co-Chair(s):

Associated Conference Themes
10) HABs and Other Nutrient Relationships
8) Assessing Nonpoint Source Impacts on Water Quality and Measuring Effectiveness of Best Management Practices
2) Emerging and Persistent Contaminants of Concern to Aquatic Life and Human Health

Keywords: HABs, algae, algal blooms, human health , NPS
**S39: Innovative nutrient criteria and thresholds**
Presentations on recent nutrient monitoring and data analyses that are advancing our understanding of nutrient dynamics and biological responses in aquatic ecosystems and setting the foundation for innovative nutrient water quality criteria and thresholds.

*Session Chair:* Lareina Guenzel, EPA/OW/OWOW, guenzel.lareina@epa.gov
*Session Co-Chair(s):* Monty Porter, Oklahoma Water Resources Board; TBD

**Associated Conference Themes**
10) HABs and Other Nutrient Relationships
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries

**Keywords:** Stressor-response, nitrogen, phosphorous, zooplankton, chlorophyll a, chl a, dissolved oxygen

**S40: Moving from nutrient criteria derivation to implementation**
Presentations on monitoring strategies and data analyses focused on implementation of nutrient criteria and thresholds. State, tribal and local agencies are invited to present field studies and data analyses designed to address water body prioritization, sampling index period, duration, frequency and/or data representativeness to facilitate the implementation of nutrient water quality criteria and thresholds.

*Session Chair:* Lareina Guenzel, EPA/OW/OWOW, guenzel.lareina@epa.gov
*Session Co-Chair(s):* Mario Sengco, OW/OST; TBD

**Associated Conference Themes**
10) HABs and Other Nutrient Relationships
1) Monitoring Biological Integrity and Ecological Health in Rivers and Streams, Lakes and Reservoirs and Estuaries
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships

**Keywords:** Stressor-response, nitrogen, phosphorous, water quality criteria, index period, duration, frequency, zooplankton

**S41: Machine learning to characterize groundwater quality form catchment to continental scales**
This session will describe the use of machine learning methods to characterize groundwater quality conditions in unmonitored locations. The development of new and novel datasets designed to support machine learning activities will also be described. Examples will be provided that range from the catchment to continental scale.

*Session Chair:* Paul Stackelberg, USGS, pestack@usgs.gov
*Session Co-Chair(s):* Mason Stahl, Union College, stahlm@union.edu;

**Associated Conference Themes**
11) Groundwater monitoring, characterization, and trends
3) Monitoring Water Across a Changing Hydrologic Cycle
4) Tools to Mine, Share, and Visualize Water Quality Data

**Keywords:** groundwater quality; machine learning
S42: Regional and national monitoring of status and trends in groundwater quality
Presentations from state, regional, and national monitoring programs on monitoring methods and results.

Session Chair: Bruce Lindsey, U.S. Geological Survey, blindsey@usgs.gov
Session Co-Chair(s):

Associated Conference Themes
11) Groundwater monitoring, characterization, and trends
5) Tools to Acquire, Analyze and Model Water Quality Data and Relationships
7) Effective Monitoring Collaborations and Partnerships

Keywords: Trends, Monitoring, Groundwater

S43: Fate and Effects of PFAS and Novel AFFF Compounds in the Aquatic Environment
Explores the response aquatic systems, both freshwater and marine, to PFAS and novel fluorine free-AFFF.

Session Chair: Edward Wirth, NOAA/NOS/NCCOS, ed.wirth@noaa.gov
Session Co-Chair(s): John Kucklick, NIST, john.kucklick@nist.gov and David Moore, US ACE/ERDC, david.w.moore@usace.army.mil

Associated Conference Themes
2) Emerging and Persistent Contaminants of Concern to Aquatic Life and Human Health

Keywords: PFAS, AFFF, Emerging Contaminants