### 2018 American Water Resources Association Spring Specialty Conference: GIS and Water Resources X

### Topical Session Proposal

**Title**: Open Science and the Monitoring of Aquatic Ecosystems

#### Description

Open science represents both a philosophy and a set of tools that can be leveraged for more effective scientific analysis. At the core of the open science movement is the concept that research should be reproducible and transparent, in addition to having long-term provenance through effective modes of data preservation and sharing. While most view the advantages of open science as providing free software applications, open science includes a much broader set of tools that can be adopted to improve scientific research. Open science is critically important for fields of research that both collect and utilize monitoring data from aquatic ecosystems. Techniques from open science can help technicians, researchers, and managers address key challenges of these data, including large volumes and types of information from multiple sources. This session will provide a broad overview of general practices in open science and demonstrate specific applications to aquatic monitoring programs. This session will also focus on key challenges in the adoption of open science techniques and dispel common criticisms that prevent widespread use of these tools. Presenters will describe several applications to monitoring aquatic systems that include community standards for data management, techniques for data analysis, and modes of collaboration. Our presenters represent federal, state, consulting, and academic interests to provide a comprehensive perspective on the use of open science across institutions. The views expressed in this abstract are those of the authors and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

#### Organizers

Marcus Beck (SCCWRP). Dr. Beck is an ecologist with the Southern California Coastal Water Research Project. He has experience in the development of open source programming tools that facilitate the analysis of water quality data from integrated monitoring networks. [marcusb@sccwrp.org](mailto:marcusb@sccwrp.org)

Michael McManus (USEPA). Dr. McManus is an ecologist at the United States Environmental Protection Agency in the Office of Research and Development at the National Center for Environmental Assessment. He has experience in the development and application of open science tools for spatial analysis of watersheds. [mcmanus.michael@epa.gov](mailto:mcmanus.michael@epa.gov)

#### Potential Presenters

Marcus Beck (Southern California Coastal Water Research Project)

Dave Blodgett (Center for Integrated Data Analytics, USGS)

Erick Burres (California State Water Resources Control Board)

Stephanie Hampton (Washington State University)

Jeff Hollister (National Health and Environmental Effects Research Laboratory, USEPA)

Mike McManus (National Center for Ecological Assessment, USEPA)

Tom Philippi (National Park Service)

Anne Thessen (The Data Detektiv)

Ann Vega (Office of Research and Development, USEPA)