

# Introduction to Surface Water Quality Modeling

**October 19 – 20, 2020**

*Hosted by Association of Clean Water Administrators (ACWA)  
in partnership with USEPA Water Modeling Workgroup*

This event is designed as an introductory course for those new to modeling or interested in a refresher. A variety of topics will be discussed including modeling principles, model selection, data needs, how to get data, types of models, model setup, and calibration. Presentations will be provided by State and EPA staff.

Sessions will take place through GoToWebinar and registration is required. This event is limited to US EPA, States, and Tribal participants.

# Agenda

**Monday, October 19, 2020**

Time	Topic	Speaker
2:00	Water Quality Modeling Principles	Chris Knightes, ORD-Narragansett
2:45	Q & A Discussion	
3:00	Types of Models	Erik Makus, Region 8
3:30	Q & A Discussion	
3:45	Break	
4:00	Model Selection Overview	Ben Cope, Region 10
4:30	Data Overview -- Sources-Tools	Catherine York, Region 4
5:00	Adjourn	

**Water Quality Modeling Principles:** This presentation will focus on the general principles that are inherent in all water quality models. It will present how the concept of mass balance can be used to make back of the envelope calculations to check on conclusions made others that applying a model. The talk will also focus on the utility of using models to aid in decisions for managing water quality.

**Types of Models:** This presentation will discuss the various modeling approaches that can be used to aid in the decision process to manage water quality. It will discuss the differences between statistical and mechanistic modeling approaches and provide an overview of the strengths and weaknesses of each approach.

**Model Selection Overview:** This presentation will discuss the primary decisions points that will aid in the selection of the appropriate water quality modeling approach. It will discuss when you should use a steady state or time variable modeling approach. It will discuss how modeling approaches can support management practices such as: TMDLs/Water Quality Standards and Waste Load Allocations.

**Data Overview:** This talk will discuss how and where you go about gathering data needed to apply water quality models. It will not discuss data needs of individual models or modeling approaches, it will focus on sources of data and provide a brief discussion on tools for organizing, analyzing and viewing data.

## Tuesday, October 20, 2020

Time	Topic	Speaker
2:00	Overview of Watershed Models	Narayan Rajbhandari, NCDNR
2:30	Q&A _ Discussion	
2:45	Overview of Water Quality Models	Tim Wool, Region 4
3:15	Q&A _ Discussion	
3:30	Overview of Hydraulic/Hydrodynamic Models	Ansel Bubel, FDEP
4:00	Q&A _ Discussion	
4:15	Calibration/Visualization	John Davis, Region 4
5:00	Wrap Up - What to do Next	Jasper Hobbs, ACWA

**Overview of Watershed Models:** This presentation will provide an overview of several publicly available watershed models. Provide a brief overview of the data requirements, strengths and weaknesses of each model.

**Overview of Water Quality Models:** This presentation will provide an overview of several publicly available receiving water quality models. Provide a brief overview of the data requirements, strengths and weaknesses of each model.

**Overview of Hydraulic/Hydrodynamic Models:** This presentation will provide an overview of several publicly available hydraulic and hydrodynamic models. Provide a brief overview of the data requirements, strengths and weaknesses of each model.

**Calibration/Visualization:** This presentation will discuss the calibration process and tools that can be used to aid in model calibration. The second part of the presentation will present several methods that could be used to visualize model results that is meaningful to stakeholders and decision makers.