



Methods and Data Comparability Board

Incl. Sensor and NEMI workgroups

MegaData workshop

- Sensors Physics – theory, system design and operations
- Protocols for operation and maintenance of sensors
- Data Models and Data Sharing Networks: Continuous and Discrete Data
- USGSwsSR: An R package to develop surrogate regressions for real-time water quality prediction
- Sediment Acoustic Index Development and Real-Time Dissemination



Recent Activities - NEMI

- Protocol Library
- Linkages to Water Quality Portal and BioData
 - Crosswalk method codes in NEMI and the WQP
 - Determine granularity of method info for BioData

Protocol Library

- USGS Committee for Data Integration
- Small suite of methods and protocols have been entered

NEMI linkages

- Methods linked to water-quality results in the Water Quality Portal
- Methods repository and linkage to BioData, a USGS database for biological data



Increasing Awareness, Understanding, and Availability of Statistical Methods for Water Quality Monitoring and Assessment

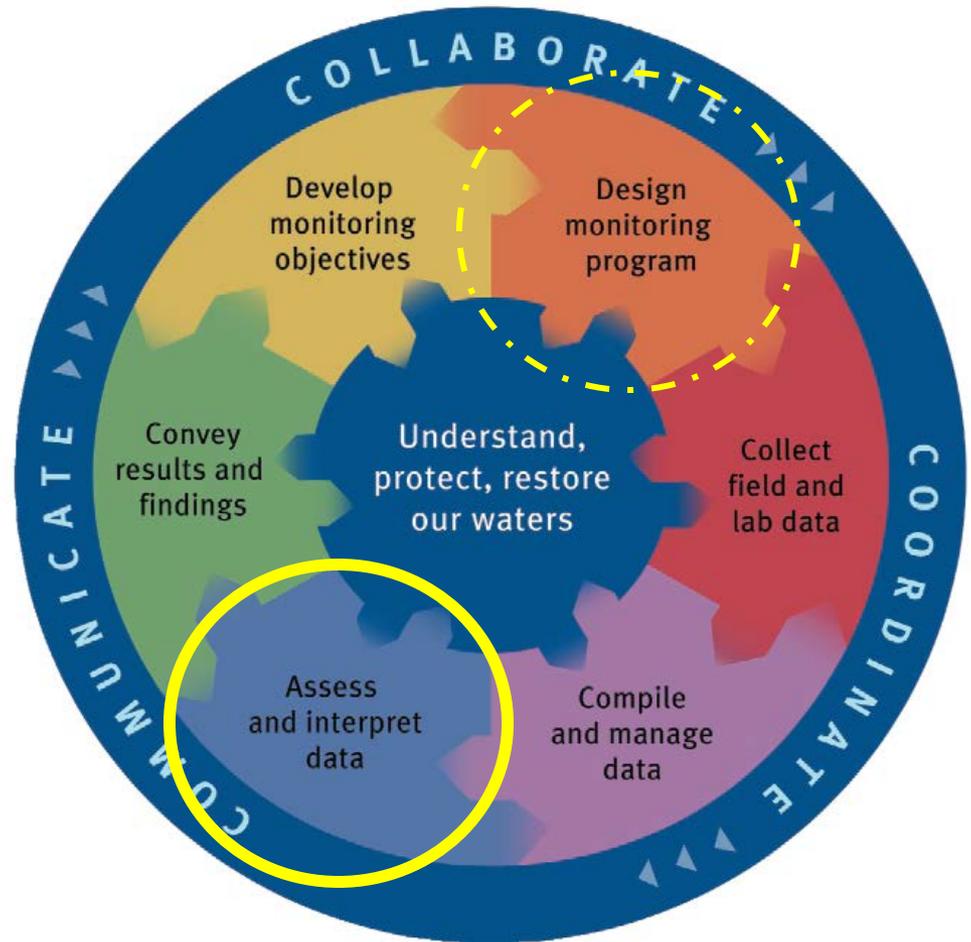
Douglas McLaughlin, National Council for
Air & Stream Improvement

Leslie McGeorge, NJDEP

Daniel Sullivan, USGS

Need Identified by National Water Quality Monitoring Council

- Develop toolbox to support assessment & interpretation of data
- Link to various monitoring designs



National Water Quality Monitoring Council

Response to Assessment Need

- Water Quality Statistics and Assessments (WQS&A) workgroup
 - Council formed WQS&A in 2009
 - Participants represent state (NJ, IA, UT) and federal government organizations (USGS, EPA, NPS, USDA), interstate (ORSANCO), NCAS, Battelle, Brown & Caldwell, & others
 - Conference calls in September and December 2009, April 2010
 - White paper: (<http://acwi.gov/monitoring/index.html>)

WQSA Workgroup Objectives

- Collect & organize information on available statistical techniques & software
- Collect & organize information & guidelines on assessment methods
- Modify the National Environmental Methods Index (NEMI) database to list relevant info on statistical & assessment procedures to allow users to make informed decisions
- Future Option:
 - “Expert system” – step by step decision tree to guide water quality practitioners through detailed data analyses

- NEMI: Searchable database - chemical, microbiological, biological, toxicity, and physical methods. <http://www.nemi.gov>

Browse Methods in NEMI - Windows Internet Explorer

https://www.nemi.gov/apex/?p=237:12:515794285643714

File Edit View Favorites Tools Help

SightSpeed Search Ask

Browse Methods in NEMI

USDA HWQ1 Cumulative Uncertainty in Discharge and Water Quality Data USDA-ARS

Acute Toxicity Methods

Method Number	Method Descriptive Name	Method Source
E-1192-97	Acute Toxicity Tests for Water with Fishes, Macroinvertebrates, and Amphibians	ASTM
E1367-99	Sediment Toxicity Test Using Marine and Estuarine Amphipods	ASTM
ORNL-01	Toxins in Water by Chlorophyll Fluorescence	ORNL
Test Method 100.1	10-d Survival and Growth Test for Sediments using Hyallela azteca	EPA
Test Method 2000.0	Acute Toxicity Test for Waters Using Fathead Minnow	EPA
Test Method 2002.0	Acute Toxicity Tests with Effluents and Receiving Waters using Ceriodaphnia dubia	EPA
Test Method 2004.0	Acute Toxicity Tests with Effluents and Receiving Waters using Sheepshead minnow	EPA
Test Method 2006.0	Acute Toxicity Tests with Effluents and Receiving Waters using the Silverside	EPA
Test Method 2019.0	Acute Toxicity Tests for Waters Using Rainbow Trout and Brook Trout	EPA
Test Method 2021.0	Acute Toxicity Tests with Effluents and Receiving Waters using Daphnia	EPA

Chronic Toxicity Methods

Method Number	Method Descriptive Name	Method Source
1367-99	Sediment Toxicity Test Using Leptocheirus plumulosus	ASTM
Test Method 100.3	Bioaccumulation Test for Sediments Using Lumbriculus variegatus	EPA
Test Method 100.5	Life Cycle Test for Measuring the Effects of Sediment-associated Contaminants on Midge (Chironomus tentans)	EPA
Test Method 1000.0	Larval Survival and Growth Test using Fathead Minnow	EPA
Test Method 1002.0	Survival and Reproduction Test using Daphnids	EPA
Test Method 1003.0	Green Algae, Selenastrum capricornutum, Growth Test.	EPA
Test Method 1004.0	Larval Survival and Growth Test using Sheepshead Minnow	EPA
Test Method 1006.0	Larval Survival and Growth Test for Waters Using Inland Silverside	EPA

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www.nemi.gov

Internet 100%

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Some Considerations

- Audience:
 - Target a wide range of users, primarily water quality practitioners
- Query results should be more than just a list of statistical and assessment methods
 - Provide several types of queries to tailor responses to specific needs
 - Provide information on key attributes, such as level of statistical expertise required, type of monitoring design for which statistical methods are applicable
- National Environmental Methods Index (NEMI) provides a useful model (<http://www.nemi.gov>)

Next Steps

- Key statistical & assessment questions
 - Summary statistics
 - Temporal trends
 - Threshold exceedances
 - Correlations
 - Others?
- Develop a recommendation for NWQMC/ACWI
- Expansion of NEMI to include toolbox of statistical & assessment methods
- Additional members? Contact Doug McLaughlin (douglas.mclaughlin@wmich.edu)