

**SPARROW Surface-Water Quality Workshop**  
**Agenda**  
**October 29-31, 2002**  
**Reston, Virginia**

**Day 1 – Overview of SPARROW Applications and Modeling Interests**

Introductory remarks (workshop objectives)

Keynote Speech:

R. Hirsch-USGS Assoc Director for Water; T. Miller-USGS, Office of Water Quality)

Overview of SPARROW modeling (USGS NAWQA SPARROW group)

- What is SPARROW? Comparison with other modeling approaches
- How is the model constructed and evaluated?
- How may it be used?

Applications of the national model (NAWQA SPARROW group)

- Sources and transport of nutrients, suspended sediment, and fecal bacteria; flow estimation
- Natural background nutrient conditions

Regional SPARROW research and management applications:

- Chesapeake Bay: managing nutrient sources;  
S. Preston, J. Brakebill, (USEPA Chesapeake Bay Program Office, USGS)
- New England: nutrients, mercury, TMDLs;  
K. Robinson, R. Moore, C. Johnston USGS; USEPA)
- New Zealand: nutrients and pastoral agriculture;  
A. Elliott, G. McBride, (National Inst. Water and Atmospheric Res.); R. Alexander (USGS)
- North Carolina: coastal nitrogen sources and transport, TMDLs;  
G. McMahon (USGS); S. Qian (Duke U.)
- Delaware River Basin: nutrient sources and transport;  
J. Fischer, M. Chepiga, S. Colarullo, (USGS, Trenton, NJ)

Data and modeling resource needs:

- Water-quality monitoring data—status and future of monitoring networks and load estimation;  
R. Hooper (USGS, Office of Water Quality)
- Source and watershed characterization data needs;  
G. McIssac (U. Ill.), R. Howarth (Cornell U.)

Expanding research and management applications of SPARROW:

- National and regional water-quality assessments
  - TMDLs and statistical models;  
K. Reckhow (Duke U.)
  - Nutrient effects of agricultural activities;  
M. Ribaud, R. Johansson (USDA-ERS)
  - Atmospheric contaminants and water quality;  
T. Saltman (USEPA, Clean Air Markets Division)
- Nutrient monitoring, modeling, and research in the Mississippi Basin;  
H. Buxton (USGS Toxics Program)
- Pesticides and drinking water;  
C. Crawford (USGS NAWQA)

- Stream biology; C. Couch (USGS NAWQA)
- [Effect of brine production on stream salinity](#); J. Otten (USGS)

#### Model enhancements and research

(NAWQA SPARROW group)

- Expanding Web access to SPARROW modeling information
- Overview of on-going and future work

### **Day 2-3 - Developing and Applying SPARROW Models**

#### 1-2. Overview of model building concepts (Smith)

- Statistical and deterministic models
- Expanding interest in parameter estimation

#### 3. Overview of SPARROW modeling framework (Alexander)

#### 4. Stream monitoring data (Preston, Schwarz)

- Station attributes required for modeling
- Selection of network monitoring sites
- Load estimation techniques

#### 5. Stream network infrastructure and GIS techniques

- [The SPARROW stream network—what is it and how is it used?](#) (Brakebill)
- Approaches to different stream network development
  - [National applications using ERF1](#) (Nolan)
  - [Chesapeake Bay applications using ERF1 and DEM](#) (Brakebill)
  - [New England applications using NHD](#) (Moore, Johnston)
  - [Comparison of GIS approaches, data sources and management](#) (Brakebill)

#### 6. Model calibration (Alexander, Schwarz)

- The SPARROW model equation
- Specification of the model: sources, land-to-water and aquatic transport
- [Nonlinear estimation of parameters](#) (supplementary information)
- Parameter interpretation
- Evaluating the model error
- Model selection criteria
- SPARROW calibration software
- [Regional modeling projects: Available approaches and resource requirements](#) (National and Regional SPARROW Teams)

#### 7. Model applications—panel discussions and participant questions

(National and Regional SPARROW Teams)

- Predictions of flux, yield, concentration, source shares
- Estimating contaminant delivery to downstream locations
- Simulations for management applications
- Network design
- Model uncertainties in predictions