

Class Announcement

To US Geological Survey Employees

From US Geological Survey
Office of Employee Development (OED)
National Training Center (NTC)

Subject Training Opportunity

Course Title SPARROW Surface-Water Quality Modeling

Course Number QW2438

Class Dates October 24-27, 2006

This class will begin on Tuesday, October 24th at 8:00 am and adjourn on Friday, October 27th at 12:00 noon

Registration Deadline Date **September 22, 2006**

Class Location US Geological Survey
OED-NTC
Denver, CO

Course Coordinator Richard Alexander
ralex@usgs.gov
(703) 648-6869

OED
Point-of-Contact
(POC)

Gloria Armstrong
gjarmstr@usgs.gov
(303) 445-4676

Course Description

The 4-day course will provide instruction in the use of SPARROW (SPATIally Referenced Regressions On Watershed attributes), a hybrid statistical/mechanistic technique for modeling the occurrence and transport of contaminants in surface waters. SPARROW models are statistically calibrated using nonlinear estimation methods with stream water-quality monitoring data and geographic information on watershed characteristics. The mechanistic components of the model include explicit surface water flow paths, non-conservative transport processes, and mass-balance constraints. The separation of land and water components in the model provides estimates of the rates of pollutant delivery to streams from point and diffuse sources and the rates of transport and loss in streams and reservoirs. Model predictions are reported for individual stream reaches and watersheds, and include estimates of mass flux, yield, concentration, the source contributions to water, and the uncertainties associated with these predictions. SPARROW has been applied to nutrients, pesticides, suspended sediment, and fecal bacteria, and is applicable to other measures of water quality, stream biology, and streamflow.

The class provides a theoretical and practical introduction to SPARROW modeling techniques, including “hands-on” opportunities to use the new SAS-based SPARROW software. No prior knowledge of SAS is required to attend the training; instruction will be provided for executing basic models in SAS. Although a detailed understanding of nonlinear estimation methods is not necessary, a general understanding of basic statistical concepts such as hypothesis testing, confidence intervals, and regression analysis is assumed. For additional information on SPARROW, including extensive documentation of the method and a user guide for the software, see <http://water.usgs.gov/nawqa/sparrow>.

Who Should Attend

Researchers and water-resource managers interested in using the output from existing calibrated SPARROW models or developing new models are encouraged to attend. Datasets will be provided for all exercises and problem sets; attendees are not expected to bring datasets to the class. As a general guide for determining the suitability of SPARROW and the class for your modeling needs, the best model estimation results are achieved for model areas with watershed data covering a range of environmental conditions. Typical data requirements include stream concentrations and pollutant sources that vary over more than one order of magnitude. Water-quality records should be at least 2 years long from a network of more than 20 monitoring sites. Please contact the workshop organizers if you have questions about the suitability of the model for your application.

Class participation is limited to 30 students.

Non-USGS personnel may attend on a space available basis. Non-USGS attendees include Other Federal Agencies (OFAs), all Department of Interior (DOI) Agencies, State and Local Agencies, American/Alaska Tribal Governments, and cooperators.

OFA's, DOI Agencies, State and Local Agencies, and Tribal Governments **must** obtain approval to participate in the class from the local USGS Water Science Center (WSC) Office. Please request the local WSC Office to forward that approval to OED-NTC, Attn: Gloria Armstrong (gjarmstr@usgs.gov) to be attached to the class application form.

A cooperator is defined as one who has a **current** Memorandum of Agreement (MOA) or a **current** Memorandum of Understanding (MOU) or is **currently** working on a Joint Funding Agreement (JFA) with a USGS office. Cooperators **must** apply with the USGS office they have the agreement with **and** the local WSC Office **before** registering with OED. Approval for cooperator attendance **requires** 1) e-mail verification to OED from the partnering USGS Office and 2) attendance approval from the local WSC Office.

OFAs and cooperators can access a course application at the following URL: <http://training.usgs.gov/ntc/nonUSGSreg.html>. Please complete the application and return by fax to OED-NTC at (303) 445-4665. You can contact the POC, Gloria Armstrong at gjarmstr@usgs.gov or (303) 445-4676 with class registration questions.

PLEASE DO NOT MAKE ANY TRAVEL ARRANGEMENTS OR COME TO THE CLASS LOCATION UNTIL YOU HAVE RECEIVED WRITTEN CONFIRMATION OF ACCEPTANCE INTO THE CLASS!

Prerequisites

There are no prerequisites for this training.

Tuition	USGS	\$400
	Non USGS	\$650

Cancellation Charge	\$325
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For any student cancellations less than 20 calendar days prior to the course start date a replacement **must** be provided to avoid a cancellation fee (NTC Policy-1.005, Rev. 2, December 2, 1996). A student who cancels out of a class must notify their supervisor immediately to find a replacement. Contact the OED to find out if a wait list for the class exists (Leigh Healy, lhealy@usgs.gov, (703) 648-6425 or Gloria Armstrong, gjarmstr@usgs.gov, or (303) 445-4676). The cancellation fee covers costs incurred by the OED including instructor/coordinator expenses, text books and materials, etc. If pre-

course materials have been distributed in advance of the 20 calendar days, the employee's office will be invoiced for the cost of the materials regardless of the cancellation date. Cancellation fees will be waived for documented medical/family emergencies.

Class Registration

USGS Employees please register for this course offering using the on-line Training Management System (TMS) at the following URL: <https://gsvaresa08.er.usgs.gov/webforms/pertrain.nsf>. Once you have logged onto TMS, using your Lotus User ID and Internet password, you will find the class under the "USGS Sponsored Courses" list by location. If you have TMS questions please contact Leigh Healy, lhealy@usgs.gov for assistance.

When documenting your training in TMS via SF182 please choose this class from the USGS-sponsored course list. Following these instructions will ensure that the POC for the course will see your complete registration information. Also, when completing the SF182 in TMS for training at the NTC in Denver, CO, please choose the Payment Type of "Standard Voucher".

Additional Registration Information

New: DOI LEARN -- A Department-wide Learning Management System

The USGS is now transitioning from the Training Management System (TMS) to a new Department of Interior (DOI) wide Learning Management System (LMS). All USGS Federal employees should immediately log onto DOI LEARN and create a User ID and password. <https://doilearn.doi.gov>. This is an essential step to access upcoming mandatory DOI training. Go to the OED website at <http://training.usgs.gov>. The USGS is currently using the first release of DOI LEARN only for DOI mandatory courses and BLM and F&WS courses.

Continue to document all training using TMS until notified – except of course, any training requested via DOI LEARN.

Questions? E-mail Melanie Hood (mkhood@usgs.gov) or Alan Ward (amward@usgs.gov).

Lodging

The course coordinator is responsible for selecting the hotel for out-of-state participants and instructors to stay at. Hotel information will be provided to the confirmed, selected participants **after** the class registration deadline date has occurred. Confirmed participants will be required to call and make their own reservations. A student confirmation/information e-mail will be sent to the confirm selected participants approximately 3-4 weeks prior to the class start date containing the hotel information.

Local Transportation

Class participants are responsible for securing their own transportation arrangements and are encouraged to car-pool wherever possible. The OED-NTC will post a list of confirmed class participants on the OED web page at:

<http://training.usgs.gov/NT/carpool.html> to assist you in forming cost-effective car-pool arrangements. Golden West Commuter Shuttle is available at Denver International Airport (DIA) for those who choose not to rent a car. Golden West is located at the airport in the main building. You can pay for your shuttle ticket upon arrival at their booth. Golden West's telephone number is (303) 342-9300 and their website is: <http://www.gwcommuter.com> for additional information.

Dianne Jeffries
Chief
US Geological Survey
Office of Employee Development

Attachment

SPARROW Surface-Water Quality Modeling

QW2438

October 24-27, 2006

Agenda

SPARROW Concepts and Modeling Techniques (days 1 and 2)

Modeling objectives

Time and space scales of the model

Comparisons with other models

Model Infrastructure: stream network topology, data requirements

Monitoring station load estimation: concepts, computer programs, and guidance on station and record selection

Model specification: sources, landscape variables and functions, and stream and reservoir transport functions

Nonlinear parameter estimation: methods, measures of model fit, evaluation and interpretation of parameters

Model predictions and uncertainty analysis

The SPARROW User's Guide: Estimation and Use of SPARROW Models (days 2 and 3)

Model input/output data and directory structure

Introduction to the modeling software using the Statistical Analysis System (SAS)

Use of the SPARROW control file for estimation and prediction

Executive and evaluation of example model specifications

Model output components for estimation and prediction

Developing GIS datasets to map model output

Trouble-shooting the models: common execution errors, calibration testing, identification of load outliers with residual analysis, prediction testing

Forecasting and simulation with the model

SPARROW Estimation and Prediction Exercise (days 3 and 4)

Hands-on estimation of an example SPARROW model

Modifying the variables

Modifying the process specifications

Retrieving and evaluating the results