

Date: 14 Nov 2011

**SUBJECT: Training Announcement to the USACE Community
Surface Water Modeling System (SMS)
Adaptive 2D Flow and Transport (AdH)**

As you may know, SMS software is provided FREE to any USACE employee or to their on-site contractors. SMS interfaces with many USACE products, including: hydrodynamic, transport, storm, and wave models.


“Introduction to SMS” workshops are offered by ERDC-CHL on an as needed basis (minimum class size = 5). The SMS course (agenda shown below) will start from scratch, assuming that you are new to finite element numerical modeling and new to the surface water modeling graphical user interface. The goal of the course is to introduce you to fundamental 2D finite element modeling concepts and usage of SMS, which will prepare you for the 2D Flow and Transport Adaptive Hydraulics (AdH) numerical modeling class. However, the course can be adapted to meet specific needs of the host District.

If you need are interested in the “Introduction to SMS” class, email your request to the SMS hotline support: SMS@usace.army.mil

SMS computer requirements:

- Windows XP, Vista, or Win-7 Operating System, or a Macintosh Apple running a virtual form of windows (may be either a 32- or 64-bit chip)
- See graphic below.

SMS 11.0 System Requirements		
Windows XP	Windows Vista	Windows 7
■ RAM: 512 MB (2GB Recommended)	■ RAM: 1 GB (4GB Recommended)	■ RAM: 1 GB (4GB Recommended)
■ CPU: SMS software is CPU intensive. We recommend the fastest CPU your budget allows. A multi-core CPU may be useful for multi-tasking while SMS is running. However, SMS software does not use more than a single core at this time, so a faster dual core may provide better performance than a slower quad core CPU.		
■ Graphics Card: For all display features to be enabled, OpenGL 1.5 must be supported. We recommend NVIDIA® Quadro® based graphics cards because of their superb OpenGL support. The use of a dedicated graphics card is strongly recommended. Integrated graphics cards are often problematic.		
■ Display Resolution: 1024 x 768 or greater		



NOTE: Graphics Card. Although the minimum requirement is support of OpenGL 1.5 or higher, we recommend a card that supports OpenGL 2.1 or higher. Always download and install the latest drivers from your graphics card vendor.

SMS On-Line Tutorials and Videos:

SMS Version 11.x: Download and install the Tutorials available from the CHL web page: <http://chl.erd.c.usace.army.mil/smsdownload>. By default these tutorials will be installed under C:\SMS 11.0\Tutorials. Simply, double click "tutorial_links.html", which will use your internet browser.

For a general overview, Start the SMS program. At the top of the SMS window, under Help, request SMS Help. In addition, there is a learning center located on the SMS developer's web site: <http://www.aquaveo.com/sms-learning>

SMS Version 10.1: same process as version 11.x above

There are 4 videos available and may be downloaded from the CHL web site. <http://chl.erd.c.usace.army.mil/smsdownload>

SMS Hotline Support

US Army Corps of Engineers, Engineer Research and Development Center (ERDC)
Coastal and Hydraulics Laboratory (CHL), Vicksburg, MS
voice: 601-634-2344 (7:30am – 11:30am M-F)
email: SMS@usace.army.mil

Workshop Agendas Shown Below.

**Introduction to SMS 11 with emphasis on Finite Element 2D Modeling
USACE – ERDC – CHL, Vicksburg, MS**

Day1: The SMS Basics

- Introductions (10-min)
- Outline of the Course, discuss schedule (5-min)
- SMS Managers Overview (20-min)
- Basic Modeling Overview (1-hr)
- Break
- Steps to Success (30-min)
- Geometry Building Blocks (30-min)
- Digitizing & bathymetry (20-min)
- SMS basic points (20-min)
- Lunch
- SMS all the Details (2.5-hr)
- Workshop: 2D Mesh Construction (2-hr)

Day2: SMS Hands On Applications

- Build a Mesh Go-By with Mesh Examples (25-min)
- SMS Image Registration and Companion Formats (20-min)
- Film Loop Animation Examples (20-min)
- Break
- Workshop-Using SMS to animate transient solution (1-hr)
 - flow trace
 - drogue plot
 - concentration animation
- Workshop-Using the SMS Plot Wizard (1-hr)
 - Analysis of numerical model results
- Lunch
- Workshop: Feature Stamping (training structures or cut channels)
- Workshop: Scatter Data / SHOALS / LIDAR Management

END of the two-day SMS workshop.

Contact Information

SMS: Ms. Darla McVan, 601-634-2869, darla.m.mcvan@usace.army.mil

**ADH 2D Hydrodynamics (Shallow Water) Workshop
USACE – ERDC – CHL, Vicksburg, MS**

Day-1: ADH background, philosophy, and capabilities

- Distribute disks
- What is ADH
 - Multiphysics
 - Adaptive Mesh
- ADH references
 - Manual
 - Quick Reference
- Basic ADH Approach
 - Hydrodynamic Example (San Diego)
 - BC file parameter explanation
 - Run example
- Lunch
- Continue Hydrodynamic Example
 - View and analyze results
 - Adaption
 - Constituent Transport (generic)
 - Constituent Transport (baroclinic)
- Steady State Example (Riprap)
- ADH modeling with SMS 10.1
- On your Own (Bayou Sorrel)

Day-2: More ADH

- Constituent Transport (vorticity-Riprap)
- Hotstarting
- Structure Example (Dike)
 - Observe resolution effects
 - Removing mesh elements
- Supercritical Flow (Contraction)
 - BC file explanation
 - Print adapted mesh
- Lunch
- Riverine Example (Kate Aubrey)
 - Steady State
 - Dynamic
 - Adaption
- Sediment Transport Approach
 - non-cohesive (sand) transport
- Non-cohesive Sediment Transport Example (Riprap)
 - BC file parameter explanation
 - Results

Day-3: Additional ADH Capabilities

- Vessel Transport Example
- Control Structures
- Water Quality / Ecosystems
- Discussion of needs or desires for ADH
- Conclude by noon

Contact Information

ADH: Ms. Jennifer Tate, 601-634-2511, jennifer.n.tate@usace.army.mil