

EKT Working Group Discussions

October 10th, 2008

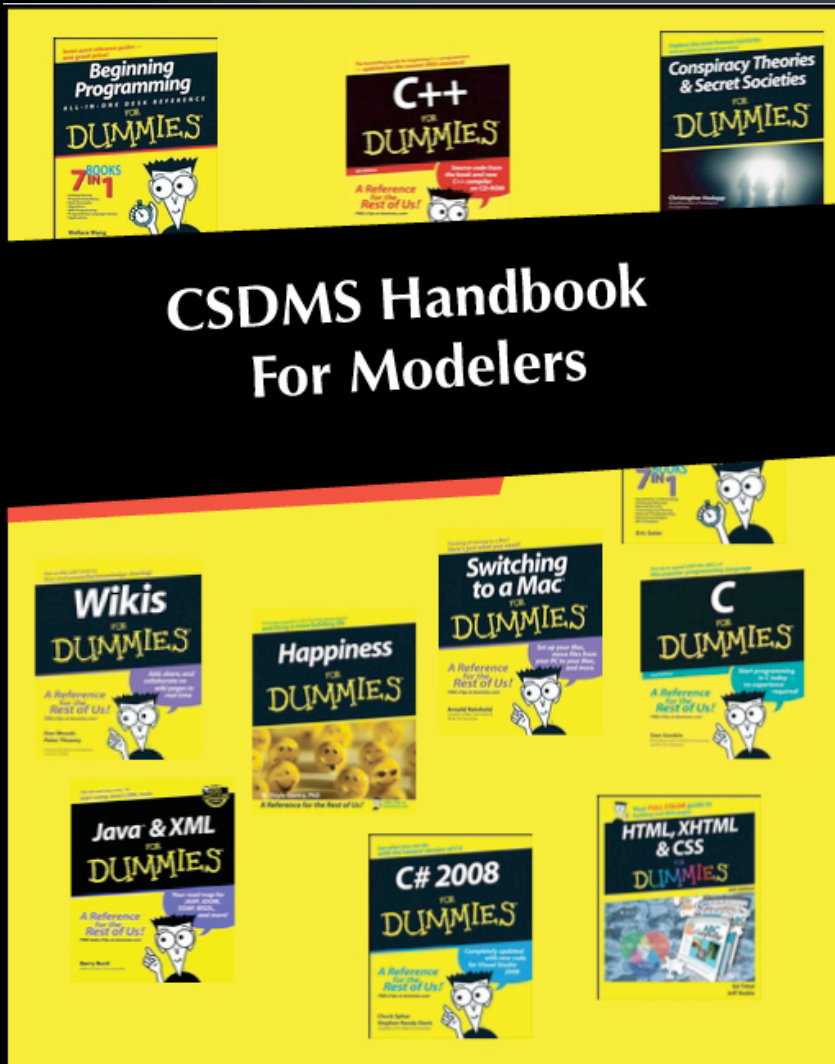
Discussion Topics

- Education of CSDMS modelers
- CSDMS website
- Knowledge Transfer to Industry and Federal Agencies
- Educational Material for
 - 1) undergraduates
 - 2) general public
- EKT short-term and long-term goals
- EKT Working Group organization

Modeler Education

- Handbook on website to guide CSDMS modelers
- 'Coding Camps'
- Working Group Meetings with focused, but condensed technical instruction (e.g. use of Subversion, use of the Wiki website, use of CCA)
- Individual Model websites with instruction on use and discussion forums.

Modeler Education



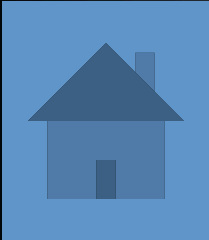
CSDMS Handbook For Modelers

Interactive Handbook available
on website to guide CSDMS
modelers:

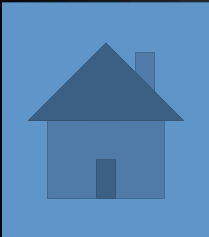
- 1) Explains requirements for
code contributors, e.g IRF
interface
- 2) Explains linking tools and
procedures (CCA, OpenMI)

[Web Link to Handbook](#)

Modeler Education



CHILD Model: Key model information hosted on CSDMS web



SedFlux Model Home with downloads, installation and input explanations, and issues discussion

Modeler Education

Critical skills for modelers in general. Parallel, computer sciences, coding, OO languages, vizualization, GUI programming skills?

Applied skills to CSDMS compliancy and model linking, best practices on test data and manuals

Modeler/Scientist Education

- Links to interested field scientists are being made through Workshop, ie. SEPM Clinoforms, SEDIBUD, AAPG deepwater session. These are CSDMS co-sponsored and explicitly bring modelers into field, explicitly invite modelers to give keynotes at more observational conferences or workshops



SEDIBUD, September 2008



Clinoform excursion, August 2008

CSDMS Website

CSDMS
COMMUNITY SURFACE DYNAMICS MODELING SYSTEM

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CSDMS teaching repository

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 - 1.1 Teaching Materials
 - 1.2 Presentations
 - 1.3 Papers

Teaching Materials

- 1. Overeem, 09/02/08: "Geological Modeling Presentations".
This zipped file contains presentations that are part of a course on Geological Modeling, intended for graduate level teaching. Feel free to download the material for use in your own courses. This course aims at exploring Geological Modeling techniques as: 1. Learning tools to study complex interactions of sedimentary depositional systems and time varying boundary conditions. 2. Quantitative tools to create geological models of the subsurface, including realizations of subsurface properties like grain-size distribution, porosity and permeability. 3. A means to quantify uncertainties in the subsurface models by running sensitivity tests.
[zip file of PPT's](#)
- 1. Overeem, 09/17/08: "Geological Modeling Lab on Coastal Stratigraphy".
The exercise is part of a course on Geological Modeling, intended for graduate level teaching. The zipped file contains an executable of a teaching model, BarSim, developed originally by Joep Storms. The archive contains notes for a 3-hour computer lab as well as the background literature. Feel free to download the material for use in your own courses and please provide feedback or expand the material! The exercise allows graduate students hands-on experience with a simple stratigraphic model to get insight in setting up stratigraphic simulation experiments. Focus is on exploration of the effects of external forcing factors, i.e. sediment supply and sea-level, on wave-dominated coasts and barrier islands.
[zip archive with model and notes](#)

Presentations

Presentations, materials and notes from past CSDMS-sponsored workshops and meetings are available at [Past_Meetings](#)

Papers

- S. Peckham (2008) Evaluation of model coupling frameworks for use by the Community Surface Dynamics Modeling System (CSDMS), Proceedings of MODFLOW and More 2008: Ground Water and Public Policy Conference, May 18-21, 2008, Golden, CO, 535p. [PDF version](#)

Teaching Materials now contains PPT's of a geological modeling course and model exercises
Intended for download for teaching faculty, animation of wave modeling

CSDMS Website

Image Gallery has been started, extend to 'Animation Gallery'
Intended for download for teaching faculty, students and the general public

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CSDMS Image Gallery

The images on this page illustrate aspects of environments that the CSDMS Project tries to capture by a suite of models. Contributors when you are using these images.

[Upload](#) your images if you are willing to share your best Surface Dynamics images and movies. Make sure to add at least:

1. Location
2. Date taken
3. Credit
4. Keywords
5. Short description

How does it work?
Login, Upload your figure (see Toolbox, [Upload](#)); remember the image name. Go to the last gallery page, click on edit, and fill in the various attribute fields.



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This page has been accessed 1,074 times.

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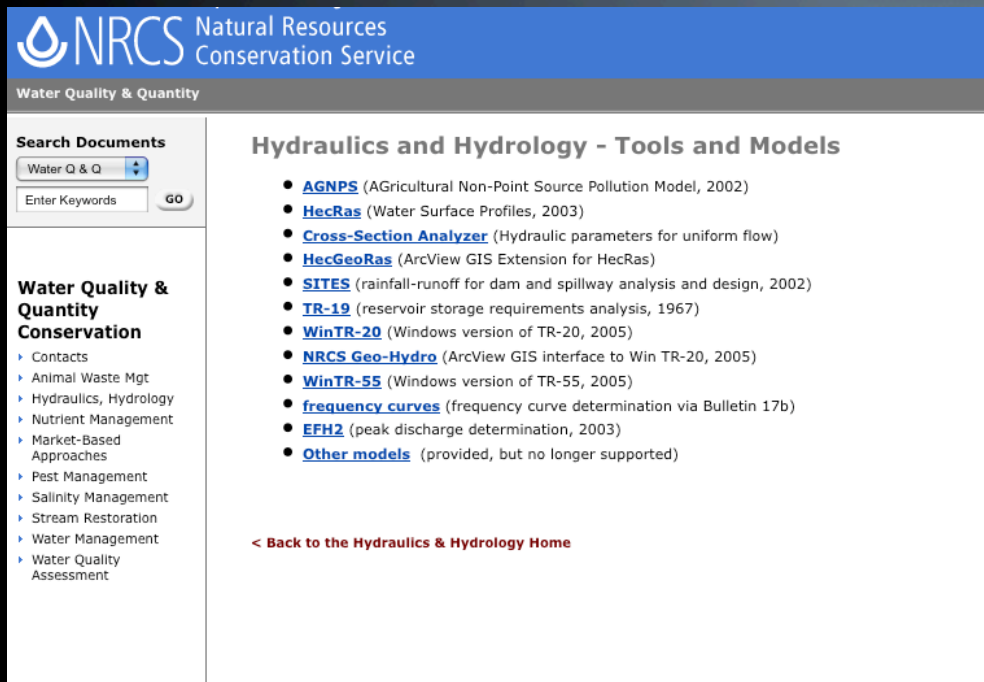
Location: North Slope, AK
Date: June 2008
Credit: Irina Overeem
Keywords:
Description: Connected Thaw Lakes and Patterned Ground

CSDMS website

- **Is the present website efficient for EKT purposes?**
- **How to advertise existing materials?**
- **How to get CSDMS members to actively add content?**
- **What can be added?**
- **Is there a need or use for forum/threads?**

Knowledge Transfer to Industry and Federal Agencies

Longterm objective: modeling in a virtual numerical laboratory, accessible for non specialist users.



The screenshot shows the NRCS website interface. The header includes the NRCS logo and 'Natural Resources Conservation Service'. Below this is a 'Water Quality & Quantity' section. On the left, there is a 'Search Documents' box with a dropdown menu set to 'Water Q & Q' and a 'GO' button. Below the search box is a 'Water Quality & Quantity Conservation' sidebar with a list of links: Contacts, Animal Waste Mgt, Hydraulics, Hydrology, Nutrient Management, Market-Based Approaches, Pest Management, Salinity Management, Stream Restoration, Water Management, and Water Quality Assessment. The main content area is titled 'Hydraulics and Hydrology - Tools and Models' and contains a list of links to various tools and models: AGNPS (Agricultural Non-Point Source Pollution Model, 2002), HecRas (Water Surface Profiles, 2003), Cross-Section Analyzer (Hydraulic parameters for uniform flow), HecGeoRas (ArcView GIS Extension for HecRas), SITES (rainfall-runoff for dam and spillway analysis and design, 2002), TR-19 (reservoir storage requirements analysis, 1967), WinTR-20 (Windows version of TR-20, 2005), NRCS Geo-Hydro (ArcView GIS interface to Win TR-20, 2005), WinTR-55 (Windows version of TR-55, 2005), frequency curves (frequency curve determination via Bulletin 17b), EFH2 (peak discharge determination, 2003), and Other models (provided, but no longer supported). At the bottom of the main content area is a link: '< Back to the Hydraulics & Hydrology Home'.

Example: USDA model Tools



Example: Engineers without Borders

Knowledge Transfer to Industry And Federal Agencies

- Annual Industry Consortium Meeting with a review of research activities and experimental data and demonstrations of products in development.
- To provide opportunity for consortium members to help plan and guide research and product development in directions that are relevant to their respective businesses, thus directly benefiting their companies.
- Semiannual Newsletter on CSDMS Highlights

Educational material

- Well-documented real-world and/or model animations to explain surface-dynamics processes. Every movie should have a short description, and more detailed explanation, key words.



Ashton and Murray Model, Coastal Evolution of Wave-dominated coast

Educational material

- **Well-documented real-world and/or model animations to explain surface-dynamics processes. Every movie should have a short description, and more detailed explanation, key words.**

Arctic Coastal Erosion

-Summer of 2008, time-lapse coast observation

- Warming permafrost and longer sea-ice free Arctic Ocean promote rapid coastal retreat

-- Discussion and Recommended Reading

-- Authors: Cameron Wobus (CIRES), Irina Overeem, Bob Anderson, Nora Matell (INSTAAR), Gary Clow, Frank Urban, Ben Jones (USGS)



Worked with Andrew Revkin, NY Times journalist, posted on DotEarth Blog.

Educational material

- **Selected models to be developed as teaching tools for hands-on modeling experience. These modules will have a summary, learning objectives and student sheets.**

BARSIM

Simulating Coastal Evolution

BARSIM Student Sheet

- Construct a falling sea-level curve
- Run falling sea level scenario for 20,000 yrs
- Study effects of falling sea-level on barrier deposits
- Discussion and Recommended Reading
- Authors: Irina Overeem and Joep Storms

Educational material

- **Brainstorm on new materials**
- **Materials to be integrated in problem-based, real world examples? (TIES example)**
- **How to get individual members to actively contribute material?**
- **Assignments to different working groups to develop educational material?**

Short-term Goals

- **EKT Goals for 2009?**
- **One really good example to showcase educational module**
- **Same module could be targeted at different levels, link to more datasets (Predator-prey example)**
- **Really good examples: include metrics for assesment of learning, interactive modules**
- **AGU session?**

Long-term Goals

Vision for EKT: virtual numerical lab for non-specialist users.

EKT Goals for 2010-2012: BIG IDEAS?

**Educational Material for
undergraduate and
general public**

Education for Modelers

**Knowledge Transfer to
Industry and Government**

Website

BIG IDEAS ON EKT

- Series of labs with added process complexity
- Make the EKT modeling framework so that it can keep improving and growing. Tool for module use and student assessment for individual teachers.
- 'GOOGLE Earth' like application that set your model input-conditions automatically streamed. Recommended model linkages
- Testing of scaling across time and scales within CSDMS, educate on geomorphic effectiveness
- Publish in educational journals
- Surface Processes Animations for NP's
- GEoWall as a visualization tools

EKT Organization

- EKT Working Group needs a chair!

KAREN!!!

- Additional membership?
- Help give input on profile for an EKT person

Examples of Education and Outreach Websites

- <http://www.edumedia-sciences.com>
- <http://geology.com/teacher>
- National Earth Science Teachers Association (NESTA features a journal)
- <http://www.nestanet.org/php/index.php>
- www.pooljaar.nl

