

Second Federal Interagency Hydrologic Modeling Conference

July 28 – August 1, 2002

Riviera Hotel, Las Vegas, Nevada



Theme: **"Hydrologic Modeling for the 21st Century"**

**Sponsored by the Subcommittee on Hydrology,
Advisory Committee on Water Data**

<http://water.usgs.gov/wicp/acwi/hydrology/>

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BACKGROUND: The Subcommittee on Hydrology (SOH) held the Federal Interagency Workshop on Hydrologic Modeling Demands for the 90's in Fort Collins, Colorado in 1993. That highly successful workshop was limited to Federal participants. Subsequent to that Workshop, the SOH decided to hold a broader conference and to open it to all interested parties. The conference covered models addressing surface water quality and quantity issues and was held in 1998 in Las Vegas, Nevada. That conference, the First Federal Interagency Hydrologic Modeling Conference, was also very successful. One of the needs identified in that conference was for better coordination among similar model development/support activities in the profession. To address those needs and plan for the future, the SOH decided to hold this new conference, the Second Federal Interagency Hydrologic Modeling Conference (2nd FIHMC). In November 2000 a workshop was held in Tucson, Arizona to identify key issues and topics for the 2002 conference. The key issues and topics identified at the Tucson workshop are included in the papers being presented at this conference. The 2nd FIHMC will follow a mixed set of formats including formal presentations, mini-workshops, and model demonstrations.

The 2nd FIHMC will provide a rare opportunity for professionals from State and local agencies, universities, international entities, and the private sector, as well as Federal agencies, to learn from each other and to network.

CONFERENCE SITE: The Conference will be held at the Riviera Hotel and Casino situated on the famous "Strip" in Las Vegas, Nevada. Las Vegas averages 310 days of sunshine per year and, besides being the "Entertainment Capital of the World," features family recreation possibilities such as Lake Mead, Hoover Dam, Red Rock Canyon, and Wet'n Wild amusement park. A considerable number of interesting places (see <http://www.Vegasfreedom.com/>) are within several hours of Las Vegas.

TOPICS: About 180 papers and 30 demonstrations from the United States and several foreign countries, incorporating results of recent research and technology development and/or applications relating to surface water modeling have been accepted for presentation. Papers will be given in the following sessions:

SESSION TOPICS:

New observations and data for hydrologic modeling	Model sensitivity analysis and error estimates
Agency specific hydrologic modeling practices	Runoff Estimations Using Curve Numbers
Identifying model parameters	Hillslope and channel hydrologic modeling
Uncertainty estimates for data, parameters, and results	Hydrologic database issues including standards and quality
Remote sensing/GIS	Environmental modeling
Flood hydrology	Case studies of interagency cooperation in hydrologic modeling
Modeling of major river systems	Landscape erosion; sediment transport
Modeling water quality	Statistical and stochastic hydrology
Florida ecosystems	California Central Valley modeling topics
Agricultural modeling	Model applications
Dam safety and decommissioning	Reservoir management

For a complete listing of the papers accepted for presentations see "[Sessions and Speakers](#)" section of this announcement.

OPENING SESSION. The Conference Chair, Arlen Feldman, will make welcome and opening statements. Robert Johnson, Regional Director, Lower Colorado Region, USBR has been invited to welcome the group from a local perspective. Glenn Austin, Chair of the Subcommittee on Hydrology, will give a brief overview of the Subcommittee on Hydrology activities. David Ford will give the keynote address titled "Woo-hoo! What we can learn about hydrologic modeling from the Simpsons."

MODEL DEMONSTRATIONS: A 4.5-hour session for 30+ demonstrations will be offered. A light dinner will be provided during the demonstrations (see "[Sessions and Speakers](#)" section for demonstrations planned).

WHO SHOULD ATTEND: Federal, State, and local agency personnel, consultants, and researchers involved in the development and/or implementation of surface-water quantity and quality models, as well as individuals involved in decision making that depend upon information developed by these hydrologic-based models should attend. Individuals from outside of the United States are encouraged to attend the Conference.

SPONSOR

Subcommittee on Hydrology, of the Advisory Committee on Water Information.

SUBCOMMITTEE ORGANIZATIONS

Association of State Floodplain Managers
Agricultural Research Service
Defenders of Property Rights
Bureau of Land Management
Bureau of Reclamation
Federal Emergency Management Agency
Federal Highway Administration
Federal Energy Regulatory Commission
National Hydrologic Warning Council
National Science Foundation
National Weather Service
Natural Resources Conservation Service
US Army Corps of Engineers
US Environmental Protection Agency
US Forest Service
US Geological Survey

ORGANIZING COMMITTEE

Arlen Feldman, Conference Chair; COE, Hydrologic Engineering Center, 609 Second Street, Davis, CA 95616, 530-756-1104, Fax 530-756-8250, arlen.d.feldman@usace.army.mil
Doug Glysson, Operations Chair; USGS, 412 National Center Reston, VA, 20192, 703/648-5019, Fax 703/648-5722, gglysson@usgs.gov
Don Frevert, Co-Technical Program Chair; USBR, P.O. Box 25007 M/C D-8510, Lakewood, CO 80225, 303/445-2473, Fax 303/445-6351, dfrevert@do.usbr.gov
George Leavesley, Co-Technical Program Chair, USGS, Box 25046, MS 412, Lakewood, CO 80225, 303-236-5026, Fax 303/236-5034, george@usgs.gov
Jeff Rieker; Registration Chair; USBR, P.O. Box 25007 M/C D-8510, Denver, CO 80225, 303/445-2484, Fax 303/445-6351, jrieker@do.usbr.gov

TRANSPORTATION. McCarran Airport is the main airport serving Las Vegas and Clark County. It is located about 4 miles from the Riviera. McCarran Airport is ranked among the 10 busiest airports in the world based on the amount of passenger activity, serving over 60 air carriers. McCarran Airport averages as many as 840 flights a day and offers direct flights to over 60 U.S. cities. Transportation from the airport to the Riviera Hotel may be obtained by commercial shuttle or taxicab. Taxis and walk-up limo and mini-bus services are available out the West doors of the airport near baggage claim.

REGISTRATION

Registration fee:	\$340	before June 1
	\$390	after June 1

Includes:	<ul style="list-style-type: none">• Conference Proceedings• Grand Opening Reception• Monday's Reception• All refreshment Breaks• Demonstration Dinner
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The completed conference registration form and payment must be received prior to June 1, 2002 in order to receive the discounted rate. Spousal registration is \$45 and includes all of the above, minus the set of Proceedings. Pre-registration is encouraged.

Please use [conference registration form](#) at the end of this announcement or go on line to <http://www.usbr.gov/rsmg/fihmc/fihmcreg.html> to pre-register

The registration desk (located in the Royale Pavilion area of the Riviera's Convention Center) will be open for on-site registration as follows:

Sunday	July 28	7:00 a.m.	to	6:00 p.m.
Monday	July 29	7:30 a.m.	to	5:00 p.m.
Tuesday	July 30	8:00 a.m.	to	7:00 p.m.
Wednesday	July 31	8:00 a.m.	to	5:00 p.m.
Thursday	August 1	8:00 a.m.	to	noon.

STUDENT REGISTRATION

Full-time students may register for the Conference at a special fee of \$140 before June 1, 2002 and \$190 after June 1. These fees include all of the above full conference registration items. Student identification is required. A limited number of student registration fees will be waived for students interested in providing on-site audio-visual support. Interested students should contact Steve Markstrom at 303-236-3330 prior to June 1.

CANCELLATIONS

Cancellation with full refund will be accepted if received in writing no later than June 1. A \$35 processing fee will be deducted from written cancellations received between June 1 and July 19. **NO REFUNDS WILL BE GIVEN FOR CANCELLATIONS RECEIVED AFTER July 19, 2002.**

HOTEL REGISTRATION

The Conference will be held at the Riviera Hotel and Casino in Las Vegas, Nevada. A block of rooms has been reserved at a special room rate of \$79.00 plus tax, single or double occupancy for the Conference.

Rooms will be assigned on a first-come, first-served basis from the reserved block. Rooms not assigned from the block by **June 29** will be released, and reservations after that date will be handled on a space-available basis. To make your room reservations, complete the [room reservation form](#) included in this announcement and return it to Riviera Hotel, 2901 Las Vegas Blvd. South, Las Vegas, NV 89109 or call 1-800-634-6753. If you call, make sure to say you are attending the Hydrologic Modeling Conference to obtain the special room rate.

OPENING RECEPTION

A get-acquainted reception will be held on Sunday afternoon from 5:30 - 7:30 p.m. Come and meet old friends and make new ones while enjoying refreshments and hot and cold hors d'oeuvres.

SPEAKERS' BREAKFAST

A working breakfast will be served Monday through Thursday for each day's speakers. This will be a full breakfast and all speakers, session chairpersons, and audio/visual (A/V) assistants are requested to attend on the morning of the day of their presentation. Speakers and session chairpersons will be briefed on the day's activities. Speakers will coordinate their slides and presentations with the session chairs and A/V assistants during and after this meeting.

SPEAKERS' VIEWING ROOM

A special room will be set up for speakers to view their slides and computer presentations and for session chairpersons and A/V assistants to meet with speakers. Computers and 35 mm preview projectors will be available throughout the day in this room.

PROCEEDINGS

A printed volume of the Conference papers' abstracts and a CD with the full papers will be provided to all registered attendees. At the conference, additional printed abstract volumes will be available for \$15 and the CD for \$20. To order by mail after the conference, make check or money order payable to Federal Interagency Hydrologic Modeling Conference, and send to the G. Douglas Glysson, Office of Water Quality, 412 National Center, Reston, VA, 20192-5603.

MODEL DEMONSTRATIONS and DINNER. A 4.5-hour session for 30+ computer-model demonstrations and posters will be offered. A light dinner will be provided during the demonstrations. See list of scheduled demonstrations in this announcement.

FIELD TRIPS (All on Sunday, July 28)

7:30 am to noon, \$40.00, Must pre register by July 15

Hoover Dam:

One of the "Seven Modern Engineering Wonders of the United States"

The "Discovery Tour" of Hoover Dam allows people to hear a lectured presentation by professional guides, access to the Exhibit Hall, Visitor's Center, the indoor/outdoor observations decks and a 25-minute movie on the dam's original construction.

Hoover Dam Tours from Las Vegas



Viewing this magnificent, massive man made structure creates a respect for man's accomplishments. The strong desire to harness nature's power drove the human mind and body to build Hoover Dam in the hottest, driest area of the United States. In doing so, the seasonal flooding of the Colorado River was eliminated and millions of people now have drinking water and irrigation during the dry season.

Come see how the construction men of the Hoover Dam triumphed over environmental and engineering difficulties to complete the monumental task to build the largest dam known to man in 1935.

The tour of Hoover Dam will be offered on the morning of Sunday, July 28. The cost of the tour, including transportation, will be \$40. The tour will depart the Riviera Hotel at 7:30 am and return at noon.

Spouses and other family members are welcome. However, participation is limited and everyone interested must sign up (along with their conference registration) no later than Monday, July 15.

8:30 am to 12:30 pm, \$40.00

Clark County Flood Control District and Lower Las Vegas Wash

Las Vegas is the fastest growing urban area in the nation. The rate of development by the private sector often outstrips the public sector's ability to provide services. Arid lands flood control within such a rapidly urbanizing area presents a unique set of challenges, as development often defines flow paths across alluvial fan surfaces. This field trip will present the challenges that confront the Clark County Regional Flood Control District as well as the District's answer to those challenges, particularly through master planning, the capital improvement plan, and the District's regulatory approach. More information about the Flood Control District can be seen at <http://www.ccrfed.org/>. The field trip will be in conjunction with the tour of the Lower Las Vegas Wash (hosted by SNWA), the watercourse by which all stormwater, urban drainage, and treated effluent make its way to Lake Mead.

The Lower Las Vegas Wash of Southern Nevada is an important tributary to the lower Colorado River system. The Wash watershed covers 1,500 square miles and is the only outlet for the entire Las Vegas Valley. Stormwater, urban drainage, and treated effluent discharge through the Las Vegas Wash and into Lake Mead, only 7 miles upstream of the drinking water intakes, which serve Southern Nevada. Over the past 25 years, rapid upstream urbanization has led to increased discharge and erosion of the Las Vegas Wash. Erosion activity has reduced, which was once 3200 acres of wetlands, down to less than 300 acres today. Channel incisement as great as 40 feet deep currently intercepts contaminated groundwater, further threatening downstream water quality. The field trip will focus on present efforts by the Southern Nevada Water Authority to stop erosion, rehabilitate wetlands areas, and improve water quality through a \$60 million capital improvements program. More information about the Las Vegas Wash Project can be seen at www.lvwash.org.

SHORT COURSES

EXCEL-LENT, Sunday, July 28, 9:00 am to 4:00 pm, \$150

The EXCEL spreadsheet software is one of the most used software packages in water resources organizations, yet most engineers and scientists use only a fraction of the spreadsheet's capabilities that are particularly useful in scientific analysis. This workshop is designed to teach you how to use some of the features particularly useful in engineering and water resources analysis. The workshop is based around examples of engineering spreadsheets that participants can use as a guide for their future applications. This workshop is designed for average spreadsheet users and no previous programming experience with macros or Visual Basic for Applications is required. The workshop is hands-on, therefore **participants must have their own notebook computer with EXCEL installed.**

MIKE SHE/MIKE 11, Sunday, July 28, 9:00 am to 4:00 pm, \$130.

Complex riverine and wetland flow systems and the interactions between surface water, ground water and evapotranspiration processes require an integrated mathematical hydrologic and hydrodynamic modeling approach. The presentations in this course will focus on the MIKE SHE modeling system (www.dhisoftware.com/mikeshe/) developed by DHI. The model system comprising the hydrological model MIKE SHE and the surface water model MIKE 11 enables a fully integrated, dynamic simulation of surface water and subsurface flow regimes. The modeling system can be used to address a wide range of water management issues and as a water management tool help to restore and preserve wetlands. The system is also frequently used to address and assess irrigation needs and demands. The modeling software is linked with GIS for database access, data management, post-processing and assimilation of the model results. The use of GIS also allows for advanced flood mapping to assess flood patterns, flood duration and possible crop damage.

GSTARS, Sunday, July 28, 8:00 am to 5:00 pm, \$150.

Today, the application of numerical models in hydraulics has become a common activity in many engineering projects. The application of the computer models requires not only an appropriate understanding of the engineering problem at hand, but also of the model's inner workings, that is, of the approximating assumptions that are imbedded in the mathematical model and how they are implemented in the computer program. This knowledge is essential for a successful application

of any model. In this short course, the theory and practice of modeling will be presented in a simple, easy to understand manner, with strong practical component and hands-on approach.

The short course will address the issues of numerical modeling of hydraulics and sediment transport in alluvial rivers using GSTARS 2.1 (Generalized Stream Tube model for Alluvial River Simulation version 2.1). GSTARS 2.1 is a numerical model developed by the US Bureau of Reclamation for simulating alluvial rivers with movable boundaries. It is a steady state model based on a one-dimensional backwater algorithm that can compute mixed regime flows (subcritical, supercritical, or any combination of the two). Sediment transport capabilities include: fractional transport, bed sorting and armoring, over 10 sediment transport functions for sizes ranging from clay to gravel, non-equilibrium transport, computation of channel width changes, etc. The model can be used as a one-dimensional model, or as a semi-two-dimensional model by the use of stream tubes. The user interacts with the model via an interactive graphical user interface.

The short course will be presented in a cooperative workshop style, in which the lectures will be supplemented with examples and an application session. After this short course, the participants will be able to:

- Apply GSTARS 2.1 to their problems.
- Understand the input requirements of the model.
- Prepare the input data and run GSTARS 2.1.
- Analyze the model output.
- Have a better general understanding about sediment transport modeling.

Participants are encouraged to bring their own laptops. A limited number of computers will be available to share for those who do not bring their laptops. GSTARS 2.1 may be installed in their laptops.

ArcHydro, Thursday, August 1, 1:00 pm to 5:00 pm, \$95

ArcHydro is a geodatabase design and a set of accompanying tools geared for support of water resources applications in the ArcGIS environment. ArcHydro is designed to provide the basic GIS data structures and tools that, among other applications, can be used for watershed delineation, river network tracing, and area-based computations, originating both from raster or vector data. Another key ArcHydro design feature is that it can be easily extended to meet specific project needs, basically serving as the initial building block for a complex analysis or management environment. The workshop will provide an overview of three key aspects of ArcHydro: database design, standard tools, and methodology for database and tool extension. Several examples of real projects will be provided to demonstrate the ArcHydro capabilities. No prior GIS knowledge is required. All participants will receive the “Arc Hydro: ArcGIS for Water Resources” book and accompanying CD with the tools.

SAMS-02, Thursday, August 1, 1:00 pm to 5:00 pm, \$90

The US Bureau of Reclamation (USBR) has been actively involved in using and developing statistical/stochastic techniques for analyzing, modeling, and simulating hydrological processes such as streamflows. In the late 1970's and throughout the 80's the so-called LAST computer package was developed and has been widely utilized not only by USBR personnel but by many organizations worldwide. In the 1990's USBR and Colorado State University collaborated in developing a new computer package for stochastic analysis, modeling, and simulation called SAMS. The latest version of this software, SAMS-02 includes a number of statistical tools for data analysis and data transformations and a number of modeling schemes for synthetic

generation of annual and seasonal streamflow such as monthly flows at simple and complex river systems.

SAMS has been applied in many complex systems involving several sites such as the Colorado River system, the Great Lakes system, and The Nile River system.

The main purpose of this course THE NEW SAMS-02 COMPUTER PACKAGE is to provide an extended computer demonstration of the capabilities of SAMS-02. The course will include a demonstration of a number of applications and the last 45-60 minutes will be to run specific cases that are of interest to the attendees. The participants will receive printed copies of some examples and a diskette containing the executable of SAMS-02 Demo version.

FIHMC Program at a Glance

Sunday				
7:30 - noon	Field Trip to Hoover Dam			
8:30 -12:30	Clark County Flood Control District and Lower Las Vegas Wash Filed Trip			
8:00 – 5:00	Short Course: GSTARS			
9:00 – 4:00	Short Course: EXCELLENT		Short Course: MIKE SHE/MIKE 11	
5:30 – 7:30	Opening Reception			
Monday				
8:30 - noon	Opening Session			
1:30 – 3:00	Hydrologic Database Issues	Flood Hydrology I	Interagency MOU	Hillslope and Channel Modeling I
3:30 – 5:00	Identifying Model Parameters	Flood Hydrology II	New Observations and Data for Modeling	Hillslope and Channel Modeling II
5:30 – 6:30	Reception			
Tuesday				
8:30 – 10:00	Uncertainty Estimates for Parameters, Data, I	Flood Hydrology III	Agency Specific Hydrologic Modeling Practices I	Modeling Water Quality I
10:30 - noon	Uncertainty Estimates for Parameters, Data, II	Flood Hydrology IV	Agency Specific Hydrologic Modeling Practices II	Modeling Water Quality II
1:30 – 3:00	Model Sensitivity and Parameter Estimation	Modeling of Major River Systems	Agency Specific Hydrologic Modeling Practices III	Modeling Water Quality III
4:30 – 9:00	Computer Demo's and Dinner			
Wednesday				
8:30 – 10:00	Environmental Modeling	Reservoir Management	Agency Specific Hydrologic Modeling Practices IV	Agricultural Modeling I
10:30 - noon	Erosion and Sediment Transport I	Model Applications I	Agency Specific Hydrologic Modeling Practices IV	Agricultural Modeling II
1:30 – 3:00	Erosion and Sediment Transport II	Model Applications II	Statistical and Stochastic Hydrology I	Remote Sensing and GIS I
3:30 – 5:00	Erosion and Sediment Transport III	Model Applications III	Statistical and Stochastic Hydrology II	Dam Safety and Decommissioning
Thursday				
8:30 – 10:00	Runoff Estimations Using Curve Numbers	Florida Ecosystems I	Case Studies, Interagency Cooperation	Remote Sensing and GIS II
10:30 - noon	California Central Valley Modeling	Florida Ecosystems II		Remote Sensing and GIS III
1:00 – 5:00	Short Course: ArcHydro		Short Course: SAMS-02	

SESSIONS AND SPEAKERS (Sessions and Speakers listed in alphabetical order, not in order of presentation)
(Draft, subject to change)

Agency specific hydrologic modeling practices

National Weather Service Site Specific Hydrologic Modeling and Forecasting	Brazil, L et al
Infusing new science into the National Weather Service River Forecast System	Carter, G
Corps water management system decision support modeling	Charley, W and Evans, T
Towards a closer integration of GIS into simulation frameworks: The OMS example	David, O et al
HEC Software – Present Status and Activities, Future Prospects	Davis, D
Predicting System Response in Watersheds with Surface Water and Groundwater Interactions	Downer, C et al
General Data Representation and Interchange Approaches	Fine, S
U.S. EPA's Multimedia Integrated Modeling System Framework	Fine, S
Overview and Status of the Hydrologic Forecast System in the National Weather Service Weather Forecast Offices	Glaudemans, M
Development of Integrated Water Resources Modeling, Assessment, and Decision Support Tools	Holland, J et al
MIKE SHE – a generalized integrated hydrological modeling system	Kjelds, J et al
Colorado's Decision Support Systems Water Resource Planning Model, StateMod	Malers, S, and Bennett, R
Distributed Data Sharing and Module Integration Framework	Pelton, M and Dorow, K
Hydrologic Modeling System (HEC-HMS) New Capabilities and Future Plans	Scharffenberg, W et al
Dynamic information architecture system (DIAS): Multiple model simulation management	Simunich, K et al
Distributed modeling for improved NWS river forecasts	Smith, M
Integrated water resources modeling and object oriented code architecture	Sorensen, H and Kjelds, J
An overview of USDA-ARS water quality models	van Genuchten, M et al

Agricultural modeling

Application of AGNPS on Small and Large Scale Watersheds for Conservation Management Planning	Bingner, R and Theurer, F
Discussion of the benefits and limitations of the models AGNPS and AnnAGNPS	Finney, V
Point and Field Scale Simulation Models for Decision Support of Midwestern Agricultural Water Quality	Heilman, P et al
The HYDRUS software packages for simulating water, heat, and solute movement in the subsurface	Simunek, J and van Genuchten, M
Impoundment Feature in AnnAGNPS	Theurer, F and Bingner, R
Integrated Watershed-Channel Modeling of Sediment and Nutrients	Vieira, D et al
Pesticide fate and transport modeling: An approach for ARS water quality models at 3 scales	Wauchope, D et al
Subsurface Flow Component Development for AnnAGNPS	Yuan, Y and Bingner, R

California Central Valley modeling topics

CALSIM: A generalized modeling tool for complex reservoir system operations simulation	Arora, S et al
CALSIM II: Next generation model fro the planning and management of California's state water project and Central Valley project	Arora, S et al
Analysis of Potential Hydrometeorological Responses to Climate Change within the San Joaquin River Basin (SJR)	Bashford, K et al

California Central Valley modeling topics (cont.)

The development of hydrologic models using HEC-HMS for the Sacramento and San Joaquin River basins comprehensive study	Dunn, C and Collins, B
Simulation of Potential Climate Change Impacts on Water Resources, Water Quality, Agricultural Production and the Rural Economy in the San Joaquin River Basin	Hidalgo, H et al

Case studies of interagency cooperation in hydrologic modeling

Application of a distributed, physically based, hydrologic model to improve streamflow forecasts in the upper part of the Truckee River basin	Boyle, D et al
An evaluation of real-time streamflow forecasts from a distributed, physically based, hydrologic model applied in the upper Rio Grande basin	Gorham, T et al
Watershed and river systems management program -- assessment of runoff forecasts for the Yakima project, WA	Mastin, M et al
Modeling Water Operations On The Rio Grande In New Mexico	Yuska, M

Dam safety and decommissioning

2-D model for dam decommissioning	Delcau, M and Greimann, B
Removing Matilija dam's sediment	Greimann, B et al
Hydrological Assessment System for Reservoir Spillway Capacity	Jeong, C et al
Development of Design Storm for Spillway Remediation of Dams in Nicaragua	Stout, S and Webb, J
Demonstration of Portfolio Risk Assessment For Huntington District Dams	Webb, J et al

Environmental modeling

Evaluating Water Allocations for Drought Management	Campbell, S et al
The Ecosystem Functions Model (EFM)	Dunn, C et al
Complexities of Ecosystem and River Management Decisions	Flug, M et al
Modeling Climatic and Forest Management Effects on Annual Water Yield across the Southern US	Sun, G et al

Flood hydrology

Calibrating Synthetic Storms to Predicted Peaks for the Colorado River Basin in Texas	Anderson, M
Unsteady Flow Modeling With HEC-RAS	Brunner, G
PMF estimation using systematic, historical and paleoflood information	Frances
Distributed Modeling of Large Basins For A Real Time Flood Forecasting System in Spain: Description, Estimation, Calibration and Validation	Frances
Evaluation of a radar-based one-hour rainfall nowcasting algorithm for flash flood warnings	Fulton, R and Seo, D
Cost-Effective Methods for Estimating Peak Discharge of Floods	Jarrett, R
Regional Flood-Frequency Relations Using -Gage Station, Historical, and Paleoflood Data	Jarrett, R
Determination of Flood Frequency of the Missouri River Below Gavins Point Dam	Kay, Roger
Identification and Assessment of Regional Frequency Distribution - A Case Study	Minocha, V and Upadhyaya, P
Using Hydraulic Routing to Determine the Accuracy of Hypothetical Flood Hydrology	Perkins,
A Comprehensive Frequency Analysis is Presented on the Llano River in the Colorado River Basin of Texas	Reis, B et al
The new USDA-NRCS Windows TR-55 small watershed model	Scheer, C
A dynamic wave (FLDWAV) simulation of the October 1998 flood on the lower Guadalupe River, Texas	Shultz, M
Jflow: A real-time hydrological model	Vieux, B and Vieux, J
Simulations of Flooding on Tchoutacabouffa River at State Highways 15 and 67 at D'Iberville, Mississippi	Winters, K
Two-dimensional flow model of near real-time flood mapping	Fulford, J and Jones, J

Florida ecosystems

Simulation of Effects of Changes in Freshwater Inflow on Salinity Distributions: Suwannee River Estuary, Florida	Bales, J
Coupling Ecological and Hydrologic Modeling: SICS and ATLSS	Cline, J and Swain, E
A high resolution historical precipitation database for Florida	Fuelberg, H et al
Numerical Simulation of Integrated Surface-Water/Ground-Water Flow and Solute Transport in the Southern Everglades	Langevin, C et al
Application of the Everglades Agro-Hydrology Computer Model (EAHM) on South Florida Farm Fields	Savabi, M and Shinde, D
An overview of the tides and inflows in the mangroves of the Everglades project	Schaffranek, R and Jenter, H
Hydrologic and Water Quality Modeling in St Lucie Estuary Watershed, Florida	Wan, Y and Scully, S
Wetland Monitoring and Model Simulation For Environmental Protection	Yan, J et al

Hillslope and channel hydrologic modeling

Daily Flow Routing with the Muskingum-Cunge Method in the Pecos River RiverWare Model	Boroughs, C and Zagona, E
Simulated effects of a change in land cover on velocity distribution at a bridge in southeastern Arkansas	Funkhouser, J and Barks, C
A Study on Runoff Routing Scheme for Distributed Model	Guo, J and Liang, X
Simulation of flows around a submerged weir in channel bendways	Jia
Muskingum-Cunge Flood Routing Procedure in NRCS Hydrologic Models	Merkel, W
Development of a Predictive Relationship for Infiltration into Swelling/Cracking Soils an Update	Prasad, S and Romkens, M
Use of Soil Survey Information for Determining Soil Hydraulic Parameters for Hydrologic Modeling	Rawls, W and Pachepsky, Y
Estimating the unsaturated soil hydraulic properties using a hierarchical set of pedotransfer functions	Schaap, M, et al
Use of Velocity Data to Calibrate and Validate Two-Dimensional Hydrodynamic Models	Wagner, C and Mueller, D

Hydrologic database issues including standards and quality

The Ingest, Quality Control, and Processing of Hydrometeorological Data at National Weather Service Field Offices	Glaudemans, M
Information systems development techniques and their application to the hydrologic database derivation application	Leavy, T et al
A vision for a standardized hydrologic data exchange format	McFadden, D
Managing Hydrologic Data for Operational Forecasting	McFadden, D et al

Identifying model parameters

Results from the second international model parameter estimation experiment (MOPEX) workshop - SAC-SMA and NOAA LSM experience	Duan, Q
Recent Developments in Automatic Calibration and Application to Hydrologic Modeling	Hogue, T et al
General methodology of parameters estimation of non-linear regressions by modified least squares criterion	Kachiashvili, K and Melikdzhanian
Incorporating Hydrograph Shape Descriptors in Model Parameter Estimation	Shamir, E et al
FLDWAV Application: Transitioning from Calibration to Operational Mode	Sylvestre, J et al

Landscape erosion; sediment transport

Application of HEC-6 Model to Evaluate the Potential Effects of Ecosystem Restoration Projects	Bhowmik, N et al
Is Knickpoint Retreat a Mass Failure-Limited Process Rather Than an Erosion-Limited Process? Insights gained from monitoring and modeling pore-water pressure effects on the retreat of knickpoints	Collison, A et al

Landscape erosion; sediment transport (cont.)

Simulation of Meandering Channel Migration Processes With an Enhanced Two-dimensional Numerical Model	Duan, J
Kankakee River Sediment Management Plan	Hrzic, M
Sedimentation investigation of the South Delta of the San Joaquin River, CA	Klumpp, C
CONCEPTS: A Process-Based Computer Model of Instream Hydraulic and Geomorphic Processes	Langendoen, E
Physically-Based Distributed Modeling of Event-Scale Erosion: The Relationship Between Rainfall Erosivity and Suspended Sediment Discharges	Ogden, F and Daraio
Forest road erosion, sediment transport and model validation in the Southern Appalachians	Riedel, M and Vose, J
Grid Resolution Effects on Upland Erosion Predictions	Rojas, R and Julien, P
Incorporating Bank-Toe Erosion by Hydraulic Shear into the ARS Bank-Stability Model	Simon, A et al
CCHE1D – Flow and Channel Morphology Model for Channel Networks	Vieira, D et al
CCHE2D Nonuniform Sediment Transport Model	Wu, W et al

Model applications

Hydrologic Modeling of San Diego Creek Watershed, Orange County, California	Chieh, J et al
Performance analysis of a lumped and distributed model using discharge time series of the Jeker catchment in Belgium	El-Nasr, A
Simulating best management practice effects on water quality in the Town Brook watershed, New York	Gitau, M.W. et al
Calibrating and Validating Hydrologic Model Performance for a Forested Watershed in a Snow Regime: The Dueling Model Mica Creek Watershed Study	Ice, G et al
HEC-ResSim Capabilities and Plans	Klipsch, J et al
A New Model To Predict Runoff From Wetland Regions	Kreymborg, L et al
Development of the NOAA land surface model at NCEP/EMC	Lohmann, D et al
AGWA - Automated Hydrologic Modeling for Landscape Assessment	Miller, S et al
Simulation of Channel Losses and Recharge For an Aquifer Recharge Zone Watershed Using HSPF	Ockerman,
Use of Hydrological Models When Designing Water Projects in Turkmenistan	Vecher, A et al
Water Supply Study for the Big Sandy Watershed	Webb, J et al
XTOP_PRMS, a semi-distributed model for simulating hydrologic processes at the five USGS WEBB sites	Webb, R et al

Modeling of major river systems

Great Lakes Large Basin Runoff Model	Croley, T and He, C
Water Availability Modeling across Four State Boundaries	Harkins, D et al
A Development Framework for Two-Dimensional Large Basin Operational Hydrologic Models	He, C and Crowley, T
Development of Data in Support of the Kansas River Basin Flow Frequency Study	Owens, A et al

Model sensitivity analysis and error estimates

Great Lakes Evaporation Model Sensitivities and Errors	Croley, T and Assel, R
A kinematic runoff and erosion model used for research and watershed assessments	Goodrich, D et al
A Sensitivity Study of Roughness Parameters with Variable Infiltration Variability (VIC) Land Surface Model	Huang, M and Liang, X
Bias in Runoff Parameter Estimation Induced by Rainfall Data	Straub, T and Bednar, R

Modeling water quality

The Bull Run River-Reservoir System Model	Annear, R and Wells, S
Willamette River and Columbia River Waste Load Allocation Model	Berger, C et al
Total Maximum Daily Load Modeling System For the Grand Calumet Watershed, Indiana	Bunch, B et al

Modeling water quality (cont.)

Development of a Dissolved Oxygen Model for the Beaufort River using Neural Network Models	Conrads, P et al
Mattawoman Creek Watershed TMDL Study	Deliman, P et al
Modeling of water quantity and quality at catchment scale	El-Sadek, A et al
An operations model for temperature management of the Truckee River	Neumann, D et al
Accurate Modeling of Water Quality Transport in Open Channels	Patel, R and Misra, R
Using Artificial Neural Network Models to Estimate Water Temperatures in Small Streams in Western Oregon	Risley, J and Roehl, E
Development of a Neural Network Model for Dissolved Oxygen in the Tualatin River, Oregon	Rounds, S
Basis for the CE-QUAL-W2 Version 3 river basin hydrodynamic and water quality model	Wells, S
Development of a Cost-effective NPS Pollution Control Strategy for TMDL Implementation by Applying AGNPS and Optimization Technique	Zhen, J and Yu, S

New observations and data for hydrologic modeling

Activities to improve WSR-88D radar rainfall estimation in the National Weather Service	Fulton, R
Use of statistically and dynamically downscaled atmospheric model output for hydrologic simulations in three mountainous basins of the w US	Hay, L et al
A test of the distributed hydrologic model CASC2D with WSR-88D radar precipitation data input Hydrologic database issues including standards and quality	Jorgesen, J and Hunter, S
Alternative Methods To Determine Shortages and Naturalized Flows Abstract	King, D et al
Multivariable, Multi-process Validation of Hydrological Models	Lakshmi, V

Remote sensing/GIS

HEC-GeoRAS: GIS Support for Hydraulic Modeling and Analysis	Ackerman, C and Brunner, G
FLDVIEW: The NWS Flood Forecast Mapping Application	Cajina, N et al
Implementation of a Real-Time Flood Mapping System in Honduras	Day, G et al
Geospatial hydrologic model extension (HEC-GeoHMS)	Doan, J
The Evolution of GIS Based Hydrologic Model Integration and Object Oriented Model Interface Design at the U.S. Bureau of Reclamation	Heinzer, T and Sebhat, M
Soil Moisture Mapping Using Satellite Microwave Remote Sensing: Current and Future Data for Hydrologic Modeling	Jackson, T
Methods and Tools For The Development of Hydrologically Conditioned Elevation Data and Derivatives For National Applications	Kost, J
ARC-VIEW GIS Interface for the Agricultural Non-Point Source Pollutant Model (AGNPS)	Liu, S and Merkel, W
Data sharing: A GIS approach	Rieker, J
Application of Geographical Information System (GIS) Technologies for the Marlinton Local Protection Project	Smith, S and Webb, J
Assessment of Watershed Management on Reservoir Eutrophication: An Integrated GIS-Based Modeling Approach	Tsou, M et al
AGNPS watershed modeling with GIS databases	Usery, E.L. et al

Reservoir management

Multi-objective Simulation and Optimization of Reservoir Operation using EXCEL	Fontane, D
Optimizing daily reservoir scheduling at TVA with RiverWare	Magee, T et al
A Study on Optimal Reservoir Operation Using Dynamic Programming and Genetic Algorithm	Shin, H et al
A Hydrologic Forecast and Reservoir Operations Model for the Winnepesaukee River, NH	Woodbury, M et al

Runoff Estimations Using Curve Numbers

Curve number methods: Origins, applications, and limitations	Hawkins, R et al
Runoff curve number method: Beyond the handbook	Hawkins, R et al
Runoff curve number method: Examination of the initial abstraction ratio	Hawkins, R et al
Rainfall-runoff by curve numbers: Does it work? Is it science?	Hawkins, R et al

Statistical and stochastic hydrology

CORRDSS - Hydrologic time-series cross correlation	Doan, W
QGEN - Generation of annual peak flow data	Doan, W
Disaggregation of intermittent stochastic processes	Durrans, S
Simplified probabilistic extreme flood hydrographs for dam safety	England, J
Risk Assessment and Uncertainty Analysis of Flood Quantile Estimation Based on GEV Distribution	Heo, J and Lee, D
Hydrological Prediction/Forecasting Modeling Using Computational Intelligent Techniques	Hsieh, B
Modeling of hydrological series and level of river water pollution with the help of multi-dimensional Markov series	Kachiashvili, K
The 2002 Version of SAMS - Stochastic Analysis Modeling and Simulation	Salas, J et al

Uncertainty estimates for data, parameters, and results

Impact of Parametric and Radar-Rainfall Uncertainty on Flow Simulations From a Distributed Hydrologic Model	Carpenter, T and Georgakakos, K
Surface runoff and infiltration with run-on on spatially variable hillslopes	Nahar, N and Govindaraju, R
Long-term salinity prediction with uncertainty analysis: Applications for Colorado River near Glenwood Springs, CO	Prairie, J et al
A Reliability Estimation in Hydrological Modeling with TOPMODEL	Rouabah, M
Watershed Modeling: A Historical Perspective	Singh, V and Frevert, D
Application of GLUE to HSPF in Goodwin Creek	Skahill, B et al
Comparing semianalytical and numerical groundwater contaminant transport modeling	Whelan, G et al

Demonstration and Poster Session

HEC-GeoRAS: GIS Support for Hydraulic Modeling and Analysis	Ackerman, C
National Weather Service Site Specific Hydrologic Modeling and Forecasting	Brazil, L et al
HEC RAS: the Corps' River Analysis System	Brunner, G.
FLDVIEW: The NWS Flood Forecast Mapping Application	Cajina, N et al
Simulating Water Storage, Delivery, Temperature and Fish Production in the Klamath River	Campbell, S et al
Catchment Geometric Representation and Identification of Sediment Yield Parameters in a Distributed Catchment Model (Poster only)	Canfield, H and Lopes, V
Corps Water Management System	Charley, W. et al.
Demonstration of the NOHRSC Operational Snow Mass/Energy Balance Model for the Continental U.S.	Cline, D et al
Dam Removal Express Assessment Models (DREAM)	Cui, Y et al
The Object Modeling System (OMS)	David, O et al
HEC-GeoHMS: Geospatial extension for Hydrologic Modeling and Analysis	Doan, J
Environmental Resources Analysis System	Flug, M et al
Multi-objective Simulation and Optimization of Reservoir Operation using EXCEL	Fontane, D
The Evolution of GIS Based Hydrologic Model Integration and Object Oriented Model Interface Design at the U.S. Bureau of Reclamation	Heinzer, T and Sebhat, M
Alternative Precipitation Inputs For Near Real-Time Flood Simulation For Salt Creek In Northeastern Illinois	Ishii, A
Hydrological Assessment System for Reservoir Spillway Capacity	Jeong, C et al
CCHE2D flow and sediment transport model with graphical user interface	Khan, A and Wang S
The Modular Modeling System (MMS): A toolbox for water and environmental resources management	Leavesley, G. et al
Demonstration of DHI modeling systems	Kjelds, J and Sorensen, H
A multidimensional surface water modeling system for computational models of flow and transport	McDonald, R et al
The 2002 Version of SAMS - Stochastic Analysis Modeling and Simulation	Salas, J et al
HEC HMS: the Corps' Hydrologic Modeling System	Scharffenberg, W.
GSTARS 2.1 (Generalized Stream Tube model for Alluvial River Simulation) version 2.1	Simoes, F
Demonstration of the ARS-Bank-Stability Model (Ver. 2.0)	Simon, A et al
Upper Rio Grande water operations review and environmental impact statement and URGWOM	Stockton, G
The GIS Weasel	Viger, et al
The HYDRUS software packages for simulating water, heat, and solute movement in the subsurface	van Genuchten, M et al
The Rosetta model	van Genuchten, M et al
Jflow: A real-time hydrological model	Vieux, B and Vieux, J
Modeling Water Operations On The Rio Grande In New Mexico	Yuska, M

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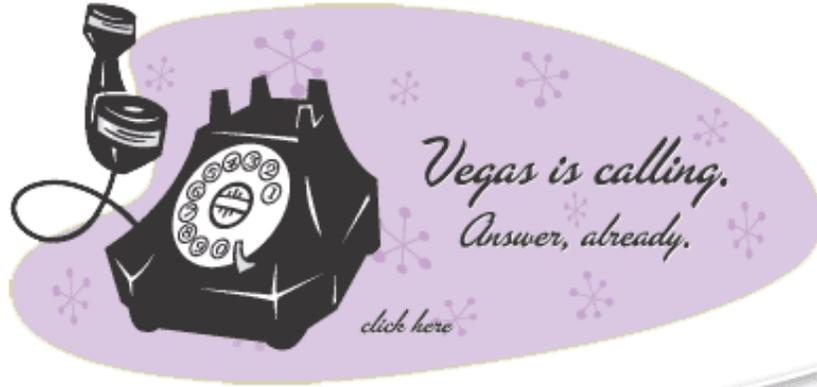
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