

TECHNICAL PROGRAM

First Federal Interagency Hydrologic Modeling Conference

(Small numbers following paper title indicate location in proceedings)

Monday, April 20, 1998

OPENING SESSION

8:45 a.m. -11:30 a.m.

Caribbean Ballroom

Moderator - Ming Tseng - Conference Chair

Opening Addresses will be give by the following individuals:

- Robert Hirsch, Chief Hydrologist, USGS
- Eluid Martinez, Commissioner, USBR

“History of the Subcommittee on Hydrology,” Nancy Lopez, Acting Chief, Information, Coordination, and Environmental Compliance Program, USGS

Panel Discussion:

Development and Maintenance of Numerical Models

Moderator: Donald Woodward, NRCS

Panelists:

Darryl Davis, Hydrologic Engineering Center, USACE

Roy Dodson, Dodson and Associates, Inc.

Sam Hui, Bechtel, Inc.

Ralph Wurbs, Texas A&M University

Purpose: Present current thinking and encourage discussion on development and usage of computer models in the hydrologic engineering profession. Emphasis will be placed on technology transfer and maintenance.

Background: Numerical models of hydrologic processes are being developed throughout the profession by government agencies, universities, and private industry. Developers need to be aware of user needs and the resources required to provide effective technology transfer and maintenance of the software. Users need to be aware of the models' capabilities and limitations as well as the resources required for proper application.

Format: Panelists will each give a brief introductory statement and a question and answer period will follow. All conference attendees are invited to ask the panelists questions.

Monday, April 20 - 1:00-2:30 p.m.

Session 1 - Environmental Watershed Quality and Quantity I

Caribbean Ballroom 1

Moderator - Abbi Ginsberg, FHWA

Co-Moderator - R. Lowrance, USDA

- 1:00 pm Hung, C. Y., EPA - *A Dynamic Model for Simulating the Long-Term Transport of Radionuclides from a Contaminated Land Surface to a Nearby Stream* (1-65)
- 1:20 pm Lowrance, R., USDA; Altier, L.S.; Williams, R.G.; Inamdar, S.P.; Bosch, D.D.; Sheridan, J. M.; Thomas, D.L.; Hubbard, R.K. - *The Riparian Ecosystem Management Model: Simulator for Ecological Processes in Riparian Zones* (1-81)
- 1:50 pm Inamdar, Shreeram, Un of GA; Sheridan, Joseph; Williams, Randy; Bosch, David; Lowrance, Richard; Altier, L.S.; Thomas, Dan - *The Riparian Ecosystem Management Model (REMM):Evaluation of the Hydrology Component* (7-17)
- 2:10 pm Bosch, D. D., USDA; Williams, R.G.; Inamdar, S.; Sheridan, J.M.; Lowrance, R.R. - *Erosion and Sediment Transport Through Riparian Forest Buffers* (3-31)

Session 2 - U. S, Army Corps of Engineers,

Hydrologic Engineering Center

Caribbean Ballroom 3

Moderator - Gary Conaway, USDA

Co-Moderator - Darryl Davis, USACE

- 1:00 pm Davis, Darryl W., USACE - *The HEC Nexgen Software Development Project* (5-17)
- 1:20 pm Bonner, Vernon, USACE; Brunner, Gary - *HEC-RAS (River Analysis System)* (5-1)
- 1:50 pm Peters, John C., USACE; Feldman, Arlen D. - *Hydrologic Modeling System (HEC-HMS)* (5-25)
- 2:10 pm Carl, Robert, USACE; Burnham, Michael - *Next Generation Flood Damage Analysis Program* (5-9)

Session 3 - Flood Frequency I

South Pacific Ballroom 3

Moderator - Frank Tsai, FEMA

Co-Moderator - Gary Dyhouse, USACE

1:00 pm Kosky, James A., USACE - *Hydrologic Modeling of Tygart Lake for Dam Safety Assurance Evaluation Report (4-53)*

1:20 pm Peck, Hilaire W., USACE; Duffe, Bruce J. - *Cowlitz River Flood Hazard Study (4-69)*

1:50 pm Dieckmann, Ronald J., USACE; Dyhouse, Gary R. - *Changing History at St. Louis - Adjusting Historic Flows for Frequency Analysis (4-31)*

2:10 pm Webb, Jerry W., USACE - *Regional Frequency & Extreme Event Analysis, Muskingum River Basin, Ohio (4-77)*

Session 4 - GIS Hydrology I

South Pacific Ballroom 6

Moderator - John Costa, USGS

Co-Moderator - Tom Evans, USACE

1:00 pm Viger, R. J., USGS; Markstrom, S. L.; Leavesley, G. H. - *The GIS Weasel - An Interface for the Treatment of Spatial Information in Watershed Modeling and Water Resource Management (7-73)*

1:20 pm Bullard, Kenneth L., USBR - *Boise Five Mile Drain - Future Flooding and Old Canal Crossings (7-33)*

1:50 pm Evans, Tom, USACE; Pabst, Art - *Standard Hydrologic Grid in Spatial Hydrologic Modeling (7-49)*

Monday, April 20 - 3:00 - 4:30 p.m.

Session 5 - Environmental Watershed Quality and Quantity II

Caribbean Ballroom 1

Moderator - Larry Bohman, USGS

Co-Moderator - D. Bosch, USDA

- 3:00 pm Altier, L.S., CA State U.; Williams, R.G.; Lowrance, R.R.; Inamdar, S.P. - *The Riparian Ecosystem Management Model (REMM): Plant Growth Component* (1-33)
- 3:20 pm Inamdar, Shreeram, Un of GA; Altier, Lee; Lowrance, Richard; Williams, Randy; Hubbard, Robert - *The Riparian Ecosystem Management Model (REMM): Nutrient Dynamics* (1-73)
- 3:40 pm Schaffranek, Raymond W., USGS - *Simulation Model for Open-Channel Flow and Transport* (1-103)
- 4:10 pm Nicholson, J. Patrick, N-Viro - *Sustainable Soil, Water and Air Quality Mankind's Ultimate Challenge and Opportunity in the 21st Century* (1-95)

Session 6 - Land Surface Erosion

South Pacific Ballroom 6

Moderator - Frank Geter, USDA

Co-Moderator - Charles Slaughter, USDA

- 3:00 pm Slaughter, Charles W., USDA; Goodwin, Peter - *Hydrologic Modeling Approaches for Integrated Management of Stream Systems* (1-119)
- 3:20 pm Johnson, Billy E., USACE; Julien, Pierre Y.; Watson, Chester C. - *Development of a Storm-Event Based Two-Dimensional Upland Erosion Model (CASC2D-SED)* (3-39)
- 3:40 pm Oliveira, Maria da Gloria Braz de, Brazil - *Analysis of the Temporal Evolution of the Sediment Production of the Pampulha Watershed and Evaluation of the Reservoir Silting* (3-47)
- 4:10 pm Randle, Timothy J., USBR; Yang, Chih Ted - *Predicting Sediment Yield From Arid Drainage Areas* (3-55)

Session 7 - Flood Frequency II

South Pacific Ballroom 3

Moderator - Jerad Bales, USGS

Co-Moderator - Ken Bullard, USBR

- 3:00 pm Naghettini, Mauro, Brazil - *The Relationship Between Extreme Rainfall Depths and Flood Volumes Under the Assumption of Exponentially-Tailed Probability Distributions* (4-61)
- 3:20 pm England, John F. Jr., USBR; Salas, Jose D.; Jarrett, Robert D. - *A Comparison of Moments-Based Estimators for Flood Frequency Analysis That Incorporate Historical Information* (4-37)
- 3:40 pm Fan, Shou-shan, U of WI - *Risk in Mitigating Hydrological Disasters* (4-45)
- 4:10 pm Kjelds, Jesper T., DHI, Inc. - *Flood Plain Management, Integrating Numerical Models and GIS* (8-59)

Session 8 - GIS Hydrology II

Caribbean Ballroom 3

Moderator - Joe Evelyn, USACE

Co-Moderator - Don Duizendstra, The Netherlands

- 3:00 pm Kelly, Glenn G., USGS - *Estimating Water Storage Potential in the Devils Lake Watershed Using High-Resolution, 7.5-minute U.S. Geological Survey Digital Elevation Models* (7-57)
- 3:20 pm Quimpo, Rafael G., U of Pittsburg; Al-Medeij, Jaber - *Automatic Watershed Model Calibration with Geographic Information Systems* (7-65)
- 3:40 pm Evans, Tom, USACE; Peters, John; Brunner, Gary - *GIS Data Exchange for Hydraulic and Hydrologic Modeling* (7-53)
- 4:10 pm Webb, Jerry W., USACE - *ModClark Model Development, Muskingum River Basin, Ohio* (7-81)

Tuesday, April 21 - 8:00 - 9:30 a.m.

Session 9 -US Army Corps of Engineers

Waterways Experiment Station

Caribbean Ballroom 3

Moderator - Paul Conrads, USGS

Co-Moderator - J. P. Holland, USACE

- 8:00 am Holland, J. P., USACE - *Overview of Hydro-environmental Modeling and Simulation Systems for the U.S. Department of Defense* (5-41)
- 8:20 am Richards, D.R., USACE - *Integration of Riverine, Estuarine, and Coastal Models into the Surface Water Modeling System* (5-57)
- 8:40 am Lin, H.C. Jerry, USACE; Richards, D. R.; Choate, M. - *Surface Water and Groundwater Interaction Modeling of South Florida* (5-49)
- 9:10 am Charley, William J., USACE; Pabst, Arthur F. - *Hydrologic Engineering Center NEXGEN Data Storage System (HEC-DSS)* (5-33)

Session 10 - Sedimentation in Yellow River

South Pacific Ballroom 6

Moderator - Tiao Chang, U of OH

Co-Moderator - Ming Tseng, USACE

- 8:00 am Ke, Sujuan, China; Zhang, Xuecheng; Lu, Guangqi - *Research on Ice Regime in Yellow River* (3-127)
- 8:20 am Qian, Yunping, China; Dong, Xuena; Lin, Yinping - *Analysis of Characteristics of Flow and Sediment in the Yellow River* (3-143)
- 8:40 am Xu, Jianhua, China; Li, Xuemei; Cui, Qing; Zhangzheng; Liu, Zhihong - *Inflow and Sediment Yield of the Yellow River Basin and Sediment Reduction Through Water Conservation* (3-151)
- 9:10 am Peng, Meixiang, China; Qiu, Shuhui; Zhao, Yingli - *Preliminary Analysis of the Influence of Climate Changes in Current Decade on Water and Sediment in the Upper and Middle Yellow River* (3-135)

Session 11 - Agricultural Non-Point Source (AgNPS)

Caribbean Ballroom 1

Moderator - Merlyn Bender, USBR

Co-Moderator - Roger Cronshey, USDA

- 8:00 am Miller, William J., Miller Ecological Consultants; Theurer, Fred D.; Alonso, Carlos V. - *A Computer Model to Predict Salmonid Fry Emergence* (2-125)
- 8:18 am Theurer, Fred D., USDA; Cronshey, Roger G. - *AnnAGNPS - Reach Routing Processes* (1-25)
- 8:36 am Cronshey, Roger G., USDA; Theurer, Fred D. - *AnnAGNPS - Non-Point Pollutant Loading Model* (1-9)
- 8:54 am Geter, W. Frank, USDA; Theurer, Fred D. - *AnnAGNPS - RUSLE Sheet & Rill Erosion* (1-17)
- 9:12 am Alonso, Carlos V., ARS; Theurer, Fred D.; Havis, Robert N. - *Simulating Sedimentation in Salmonid Redds* (8-1)

Session 12 - Flood Forecasting I

South Pacific Ballroom 3

Moderator - Arlen Feldman, USACE

Co-Moderator - Dave Matthews, USBR

- 8:00 am Matthews, David, USBR; Hartzell, Curtis; Super, Arlin; Carroll, Tom; Schaaque, John - *Integration of Quantitative Precipitation Forecasts with Hydrologic Models and River Basin Decision Support Systems* (6-57)
- 8:20 am Croley, Thomas E., II, NOAA - *Great Lakes Advanced Hydrologic Prediction System* (6-1)
- 8:40 am Larson, Lee, NOAA; Welles, Edwin - *A Summary of the National Weather Service Advanced Hydrologic Prediction System Demonstration in Des Moines, Iowa* (6-41)
- 9:10 am Markus, M., NOAA; Salas, J. D. - *Comparing Methods for Forecasting Total Summer Flows on Tributaries of the Colorado-Big Thompson System* (6-49)

Tuesday, April 21 - 10:00 - 11:30 a.m.

Session 13 - Reservoir System Operation

Caribbean Ballroom 1

Moderator - Fred Theurer, USDA

Co-Moderator - Richard Hayes, USACE

- 10:00 am Markstrom, Eric J., Riverside Technology; Schwartz, Stuart, S.; Steger, Robert G.; Brazil, Larry E.; Day, Gerald N. - *Probabilistic Forecasts in Multiobjective Analysis for Reservoir Operations* (2-85)
- 10:20 am Jangaard, Loren, USACE - *Additional Storage Study of Hanson Reservoir, Green River, WA* (2-77)
- 10:40 am Bales, Jerad D., USGS; Giorgino, Mary J. - *Dynamic Modeling of Water-Supply Reservoir Physical and Chemical Processes* (2-61)
- 11:10 am Hayes, Richard J., USACE; Bonner, Vernon R. - *Large-Scale Reservoir System Modeling* (2-69)

Session 14 - Bridge Scour and Channel Design

Caribbean Ballroom 3

Moderator - Karl Visser, NRCS

Co-Moderator - Jerry Webb, USACE

- 10:00 am Dou, Xibing, GKY & Associates; Jia, Yafei; Wang, Sam S.Y.; Jones, J. Sterling - *An Alternative Methodology to Study Local Scour at Bridge Piers* (3-1)
- 10:20 am Richardson, J. R.U of MO; Roberts, David M. - *Reducing Local Pier Scour by Flow Redirection* (3-23)
- 10:40 am Johnson, Terry L., NRC; Abt, Steven R. - *Design of Channel Riprap Using Overtopping Flow Methods* (3-17)
- 11:10 am Fripp, Jon B., USACE; Halstead, Kenneth C.; Bhamidipaty, Surya; Webb, Jerry W. - *Sediment Transport Analysis of the Athens, Ohio, LPP and a Comparison of Two Corps Sediment Transport Computer Models* (3-9)

Session 15 - Drought Analysis

South Pacific Ballroom 6

Moderator - Don Frevert, USBR

Co-Moderator - Tiao Chang, U of OH

- 10:00 am Burke, T.T., Jr., Christopher Burke Eng., Ltd.; Rao, A. Ramachandra; Hamed, Khaled - *Investigation of Physical Mechanisms Underlying the Predictability of Droughts* (4-1)
- 10:20 am Chang, Tiao J., U of OH; Germain, Richard; Bartrand, Timothy A. - *Applications of GIS for a Drought Study* (4-9)
- 10:40 am Gu, Ying, China - *Application of Simulating Method on the Regional Drought Analysis* (4-17)
- 11:10 am Zhang, Xuecheng, China; Zhu, Xiaoyuan - *The Application of Mean Value Generation Function Model in Regional Drought Research* (4-25)

Session 16 - Hydrologic Modeling I

South Pacific Ballroom 3

Moderator - Mark Cocke, USDA

Co-Moderator - Reza Savabi, USDA

- 10:00 am Jackson, Thomas J., USDA - *Satellite Based Soil Moisture Measurement for Hydrologic Modeling* (7-107)
- 10:20 am Savabi, M. R., USDA; Richardson, C.W. - *Modeling Infiltration and Storm Runoff from Soils With Shrinkage Cracks* (7-131)
- 10:40 am Prasad, S. N., Un of MS; Romkens, M.J.M.; Helming, K. - *Rain Infiltration into Cracking Soils* (7-123)
- 11:10 am Chen, Zhiming, China - *A Conceptual Monthly Rainfall Runoff Model* (7-89)

Tuesday, April 21 - 2:00 - 8:00 p.m.

DEMONSTRATIONS

South Pacific Ballroom 4

Moderator - Abbi Ginsberg, FHWA

- Alonso, Carlos V., ARS; Theurer, Fred D.; Havis, Robert N. - *Simulating Sedimentation in Salmonid Redds* (8-1)
- Bingner, R. L., USDA; Butoi-Stanescu, O.; Rodrique, P.B. - *Internet-Based Decision Support Systems of Hydrology Tools for Wetland Determination* (8-9)
- Bingner, R. L., USDA; Darden, R.W.; Theurer, F.D.; Alonso, C.V.; Smith, P. - *AnnAGNPS Input Parameter Editor Interface* (8-15)
- Bonner, Vernon R., USACE; Brunner, Gary - *HEC-RAS (River Analysis System)* (5 1)
- Bowie, Randy, U of MS; Khan, Abdul; Jia, Yafei; Wang, Sam - *CCHE2D: A Two-dimensional Free Surface Flow and Sediment Transport Model for Natural Rivers* (8 19)
- Carl, Robert, USACE; Burnham, Michael - *Next Generation Flood Damage Analysis Program* (5-25)
- Cheng, M.S., Prince George's County, MD; Weinstein, N.; Victoria, C. - *Landscape Assessment of Wetland Functions (LAWF): A Geographic Information System (GIS) Model for the Evaluation of Wetland Functions* (7-97)
- Doe, William W. III, CSU; Julien, Pierre Y.; Ogden, Fred L.; Johnson, Billy E. - *Spatially Distributed Modeling of the Hydrologic Effects of Mechanized Maneuvers on Military Training Lands* (8-27)
- Flerchinger, G. N., USDA; Hardegree, S.P.; Johnson, G.L. - *The Simultaneous Heat and Water (SHAW) Model: A Research Tool for Management Decisions* (8-35)
- Garcia, Luis, CSU; Patterson, David; Bender, Merlynn; Kinerson, Russell - *Development of Water Quality Modeling Framework* (8-43)
- Ishii, A. L., USGS; Charlton, T.J.; Ortel, T.W., Vonnahme, C.C. - *Modeling System for Near Real-Time Flood Simulation for Salt Creek in Du Page County, Illinois* (8-51)
- Kittle, John L., J. L. Kittle Consulting; Hummell, Paul R.; Duda, Paul; Lumb, Alan M. - *A Modular Approach to Interactive Watershed Modeling* (7-115)
- Kjelds, Jesper T., DHI, Inc. - *Flood Plain Management, Integrating Numerical Models and GIS* (8-59)
- Lane, W. L., Consultant; Frevert, D. K.; Salas, J. D.; Chung, C. H. - *Modeling of River Systems Using the SAMS Package* (8-65)

- Larson, Roger, USBR; Labadie, John; Baldo, Marc - *MODSIM Decision Support System for River Basin Water Rights Administration* (8-73)
- Leavesley, G. H., USGS; Markstrom, S. L.; Brewer, M.S.; Viger, R. J. - *The Modular Modeling System (MMS) - The Physical Process Modeling Component of the Watershed and River System Management Program* (5-93)
- Malers, Steven, Riverside Technology; Bennett, Ray; Brazil, Larry - *Implementing a Water Resource Planning Model Within The Colorado River Decision Support System* (2-53)
- Marino, Laura, Hydrocomp; Crawford, Norman - *Hydrologic Forecast and Analysis Modeling (HFAM)* (8-81)
- Parker, Nancy L., USBR; Patterson, David A. - *PC HYDROSS Simulation System (PCHSS) A Graphical User Interface for the HYDROSS Model* (8-89)
- Peters, John C., USACE; Feldman, Arlen - *Hydrologic Modeling System (HEC-HMS)* (5-17)
- Schornick, James, USGS - *The U.S. Geological Survey Hydrologic Analysis Support Section Software Support Services for Hydrologic Modeling and Data Analysis* (8-95)
- Scott, John, CSU; Flug, Marshall - *Modeling with MODSIM: Klamath River Water Quantity for Protecting Fish and Other Resource Values* (8-103)
- Thurman, Jane L., USDA; Roberts, Ralph T. - *Preparing the ARS Water Database for the Twenty-First Century* (8-111)
- Vieira, Dalmo A., U of MS; Langendoen, Eddy J.; Bingner, Ronald L. - *FRAME - An Integrated Modeling System of Channel and Landscape Processes* (8-117)
- Walters, Roy A., USGS - *A Finite Element Model with Moving Boundaries: Application to Floods and Runup* (6-121)
- Weghorst, Paul, USBR; Ferrari, Ron; Nuanes, Sharon - *Using ARC/INFO to Process and Analyze Reservoir Hydrographic Survey Information* (8-125)
- Williams, R. G., USDA; Lowrance, R.R.; Altier, L. S.; Inamdar, S. P. - *Riparian Ecosystem Management Model (REMM): A Demonstration* (8-133)
- Wisbith, Stanley M., USACE; Buelow, David P. - *Ohio River Division Real-Time Modeling/Forecasting System* (8-139)
- Yang, Chih Ted, USBR; Trevino, Mark A.; Simoes, Francisco J.M. - *An Enhanced Generalized Stream Tube Model for Alluvial River Simulation* (8-143)
- Zagona, Edith A., U of CO; Fulp, Terrance; Goranflo, H. Morgan; Shane, Richard M. - *RiverWare: A General River and Reservoir Modeling Environment* (5-113)

Wednesday, April 22 - 8:00 - 9:30 a.m.

Session 17 - USBR and USGS WARSMP I

Caribbean Ballroom 3

Moderator - James Kuwabara, USGS

Co-Moderator - Don Frevert, USBR

- 8:00 am Lins, Harry, USGS; Frevert, Donald - *The Watershed and River Systems Management Program - An Overview* (5-101)
- 8:20 am Leavesley, G. H., USGS; Markstrom, S. L.; Brewer, M.S.; Viger, R. J. - *The Modular Modeling System (MMS) - The Physical Process Modeling Component of the Watershed and River System Management Program* (5-93)
- 8:40 am Kuhn, Gerhard, USGS; Parker, R. S.; Hay, L. E.; Leavesley, G. H. - *Precipitation Distribution Alternatives in Applying the Modular Modeling System in the San Juan River Basin, Colorado and New Mexico* (5-85)
- 9:10 am Vaccaro, J. J., USGS; Lynch, C. J.; Schurr, K. M.; Sharp, W.; Mastin, M.C.; Schramm, D. - *The Yakima River Basin Watershed and River System Management Program* (5-105)

Session 18 - Environmental Watershed Quality and Quantity III

Caribbean Ballroom 1

Moderator - Donna Myers, USGS

Co-Moderator - Greg F. Koltun, USGS

- 8:00 am Shenk, G. W., EPA; Linker, L.C.; Donigian, A.S. - *The Chesapeake Bay Program Models* (1-111)
- 8:20 am Mach, Rodney, USACE; Thibodeaux, Burnell - *An Innovative Approach to Improving Water Quality Through Stormwater Management* (1-89)
- 8:40 am Hsu, Shiang-Kueen, Taiwan; Horng, Ming-Jame; Lee, Yau-Hui - *An Integrated Modeling for Water Resources Management Study in Taiwan* (1-57)
- 9:10 am Feaster, Toby D., USGS - *Utilizing a Lagrangian-Eulerian Approach to Water-Quality Assessment of the Wateree River, South Carolina* (1-41)

Session 19 - Paleo Floods

South Pacific Ballroom 3

Moderator - Dean Ostenaar, USBR

Co-Moderator - Dan Levish, USBR

- 8:00 am Levish, Daniel R., USBR; Ostenaar, Dean A.; O'Connell, Daniel R.H. -
Paleohydrologic Bounds and Low Probability Floods (4-93)
- 8:20 am Ostenaar, Dean A., USBR; Levish, Daniel R. - Paleohydrology: Long-Term
Bounds on Unwarranted Extrapolation in Modeling (4-109)
- 8:40 am O'Connell, D.R.H., USBR; Levish, D. R.; Ostenaar, D. A. - Risk-Based
Hydrology: Bayesian Flood-Frequency Analyses Using Paleoflood Information
and Data Uncertainties (4-101)
- 9:10 am Jarrett, Robert D., USGS - Paleoflood Investigations for Assessing Extreme
Flooding for Elkhead Reservoir, Northwestern *Colorado* (4-85)

Wednesday, April 22 - 10:00 - 11:30 a.m.

Session 20 - USBR and USGS WARSMP II

Caribbean Ballroom 3

Moderator - Mark Ayers, USGS

Co-Moderator - Mark Trevino, USBR

- 10:00 am Fulp, Terrance J., USBR; Frevert, Don K. - *Watershed and River Systems Management Program: Current and Future Applications in the Bureau of Reclamation* (5-71)
- 10:20 am Zagona, Edith A., U of CO; Fulp, Terrance J.; Goranflo, H. Morgan; Shane, Richard M. - *RiverWare: A General River and Reservoir Modeling Environment* (5 113)
- 10:40 am Davidson, P., USBR; King, D. L.; Ozga, J.; Simons, J. - *Watershed and River Systems Planning Model in the San Juan River Basin, Colorado* (5-65)
- 11:10 am King, D. L., USBR; Parker, R. S.; Kuhn, Gerhard - *River Operations Modeling in the San Juan River Basin* (5-79)

Session 21 - General Non Point Source

Caribbean Ballroom 1

Moderator - David Wolock, USGS

Co-Moderator - Clint Truman, USDA

- 10:00 am Truman, Clint, USDA; Davis, Frank; Leonard, Ralph - *Influence of Rainfall Timing and Amount on Phosphorus Losses Associated with Runoff and Sediment - a GLEAMS Simulation* (1-151)
- 10:20 am DiLuzio, M., Texas A&M; Arnold J. G.; Srinivasan, R.; Bingner, R.L. - *The Combination of a Rainfall Event Model and a Continuous Simulation Model for a Better Assessment of Nonpoint Source Pollution* (1-135)
- 10:40 am Ascough, James C. II, USDA; McMaster, Gregory S.; Shaffer, Marvin J.; Hanson, Jon D.; Ahuja, Lajpat R. - *Economic and Environmental Strategic Planning for the Whole Farm and Ranch: The GPFARM Decision Support System* (1-127)
- 11:10 am Preston, Stephen D., USGS; Smith, Richard A.; Schwarz, Gregory E.; Alexander, Richard B.; Brakebill, John W. - *Spatially Referenced Regression Modeling of Nutrient Loading in the Chesapeake Bay Watershed* (1-143)

Session 22 - Flood Forecasting II

South Pacific Ballroom 3

Moderator - Abbi Ginsberg, FHWA

Co-Moderator - K. Michael Nolan, USGS

- 10:00 am Davis, Darryl W., USACE; Pabst, Arthur F. - *Modernizing the US Army Corps of Engineers Water Control Data System* (6-9)
- 10:20 am Lai, Chintu, Taiwan; Wang, Tsan-Wen; Hsu, Nien-Sheng; Hsu, Shiang-Kueen - *A Comprehensive Flow Model for Flood Forecast/Hindcast for Tidal Reaches* (6 33)
- 10:40 am Epstein, D. J., Riverside Technology; Welles, E.; Day, G. N. - *Probabilistic Hydrologic Forecasting Methods and Tools* (6-17)
- 11:10 am Knapp, H. Vernon, State of IL; Rice, William W. - *Application of a Continuous Simulation Watershed Model for Near Real-Time Flow Forecasting and Dam Operations* (6-25)

Wednesday, April 22 - 1:00 - 2:30 p.m.

Session 23 - Major River Systems I

Caribbean Ballroom 3

Moderator - Dave Mueller, USGS

Co-Moderator - Gary Conaway, USDA

- 1:00 pm Chen, Songsheng, China; Zhang, Xuecheng - *Modeling on Closure Discharge of the Main Stream of TGP* (2-1)
- 1:20 pm Xiong, Ming, China; Ji, Xuewu - *A Comprehensive Summary on the Study of Flood Stochastic Simulation for Three Gorges Project* (2-21)
- 1:40 pm Wang, Ling, China; Lin, Yingping; Chu, Yongwei; Cui, Qing - *Research on Flow Cut-outs in the Lower Yellow River* (2-13)
- 2:10 pm Feng, Xiangming, China - *Effects of Hydraulic Projects in San-Hua Reach of the Yellow River to Floods and Runoff* (2-7)

Session 24 - Sedimentation I

South Pacific Ballroom 3

Moderator - Tim Randle, USBR

Co-Moderator - Cassie Klumpp, USBR

- 1:00 pm Sanchez, Viola, USBR - *River Channel Changes Downstream of Cochiti Dam, Middle Rio Grande, New Mexico* (3-111)
- 1:20 pm Makar, Paula W., USBR; Strand, Robert I.; Baird, Drew C. - *Geomorphic Analysis of the Rio Grande San Acacia to the Narrows of Elephant Butte Reservoir* (3-103)
- 1:40 pm Klumpp, Cassie C., USBR; Samad, Mohammed A. - *Stable Channel Analysis of the Rio Grande in the Upper Reaches of Elephant Butte Reservoir* (3-71)
- 2:10 pm Langendoen, Eddy J., U of MS; Bingner, Ronald L.; Kuhnle, Roger A. - *Modeling of Long Term Changes of Unstable Streams* (3-79)

Session 25 - Data Input for Models

Caribbean Ballroom 1

Moderator - Lee Larson, NOAA

Co-Moderator - Marshall Flug, USGS

- 1:00 pm Flug, Marshall, USGS; Seitz, Heather L.H.; Scott, John - *A Data Gathering Technique for River Resource Identification* (7-9)
- 1:20 pm Garbrecht, Jorgen, USDA; Starks, Patrick J.; Williams, Robert - *A GIS-Numerical Modeling Approach to Identify Regions with Suitable Water Resources for a Dual Crop Rotation* (1-49)
- 1:40 pm Davinroy, Robert D., USACE; Gordon, David C.; Kreighbaum, David W. - *Remote Sensing of Detrimental Flow Conditions at Lock and Dam 24, Upper Mississippi River* (7-1)
- 2:10 pm Straub, Timothy D., USGS; Parmar, Paminder S. - *Comparison of Rainfall Records Collected by Different Rain-Gage Networks* (7-25)

Wednesday, April 22 - 3:00 - 4:30 p.m.

Session 26 - Major River Systems/Reservoir System Operation

Caribbean Ballroom 3

Moderator - Richard Hayes, USACE

Co-Moderator - Harvey Jobson, USGS

- 3:00 pm Malers, Steven, Riverside Technology; Bennett, Ray; Brazil, Larry - *Implementing a Water Resource Planning Model Within The Colorado River Decision Support System (2-53)*
- 3:20 pm Huang, Wen-Cheng, Taiwan; Yang, Fu-Ti - *Applicability of Decision Support System for Reservoir Operation in Taiwan (2-37)*
- 3:40 pm Hess, Glen W., USGS; Berris, Steven N. - *Simulation of Selected Reservoir and River-Diversion Operations in the Truckee River and Carson River Basins, California and Nevada (2-29)*

Session 27 - Sedimentation II

South Pacific Ballroom 3

Moderator - Tim Stamey, USGS

Co-Moderator - Mike Ports, Parsons Brinckerhoff, Inc.

- 3:00 pm Shea, Conor, Parsons Brinckerhoff, Inc.; Ports, Michael; Froehlich, David - *Alternatives Analysis for Reduction of Maintenance Dredging of a Tidal Inlet (3-119)*
- 3:20 pm Lee, Hong-Yuan, Taiwan; Hsieh, Hui-Ming; Lee, Sen-Yuan; Yang, Jinn-Chuang; Yang, Chih Ted - *Numerical Simulations of Scour and Deposition in a Channel Network (3-87)*
- 3:40 pm Leput, Walter, USACE; Park, Howard - *Hildebrand Lock & Dam Sedimentation Problem and Solution (3-95)*
- 4:10 pm Duizendstra, Don, The Netherlands; Flokstra, Cor - *The Necessity of Modeling Non-Uniform Sediment in an 1-D Morphological Model for a Gravel Bed and a Sand Bed River in the Netherlands (3-63)*

Session 28 - River Hydraulics I

Caribbean Ballroom 1

Moderator - Jim Thomas, USBR

Co-Moderator - D. Holtschlag, USGS

3:00 pm Winer, Harley, USACE - *UNET Model of Connected Estuaries in Coastal Louisiana* (6-129)

3:20 pm Cheng, Haiyun, China; Rui, Xiaofang - *An Analytical Diffusion Model and Its Application to Water Level Forecast* (6-81)

3:40 pm Holtschlag, D. J., USGS; Grewal, M.S. - *Estimating Ice-Affected Streamflow by Extended Kalman Filtering* (6-105)

4:10 pm Ji, Xuewu, China - *Flood Disasters and the Three Gorges Projects on the Yangtze* (2-45)

Thursday, April 23 - 8:00 -9:30 a.m.

Session 29 - River/Estuary Water Quality I

Caribbean Ballroom 3

Moderator - Abbi Ginsberg, FHWA

Co-Moderator - Tamara Wood, USGS

8:00 am Rounds, Stewart, USGS; Wood, Tamara - *Using CE-QUAL-W2 to Assess the Ammonia Assimilative Capacity of the Tualatin River, Oregon* (2-133)

8:20 am Wood, Tamara, USGS; Rounds, Stewart - *Using CE-QUAL-W2 to Assess the Effect of Reduced Phosphorus Loads on Chlorophyll-a and Dissolved Oxygen in the Tualatin River, Oregon* (2-149)

8:40 am Mao, Hongmei, China; Ye, Shouze; Ji, Xuewu - *Water Quality Modeling of Maopingxi Pollution Zone in Three Gorges Project Construction Zone* (2-117)

9:10 am J. Izurieta D., Mexico; A. Ruiz L.; Ma. A. Gomez B.; P. Saldana F.; L. Marquez B.A. Lerdo de T.; R. Lopez - *Water Quality Simulation in the Cazonas River, Mexico* (2-109)

Session 30 - River Hydraulics II

Caribbean Ballroom 1

Moderator - Randolph Parker, USGS

Co-Moderator - Ming Tseng, USACE

8:00 am Gee, D. Michael, USACE; Tseng, Ming T. - *Unsteady Flow Model for Forecasting Missouri and Mississippi Rivers* (6-97)

8:20 am Pridal, Daniel, USACE; Knofczynski, Joel - *Missouri River Forecast Model From Gavins Point Dam to Rulo, Nebraska* (6-113)

8:40 am Allison, Rebecca R., USACE - *Development of an Unsteady Flow Hydraulic Model of the Lower Missouri River* (6-65)

9:10 am Babayan, A. V., Russia; Nadolin, K.A. - *Modeling Substance Spreading in 2-D (in plane) Steady Stream* (6-73)

Session 31 Hydrologic Modeling II

South Pacific Ballroom 3

Moderator - Wayne Webb, USGS

Co-Moderator - Joe VanMullem, USDA

8:00 am Van Mullem, Joseph A., USDA - *Modeling Prairie Snowmelt Runoff* (7-155)

8:20 am Cheng, M.S., Prince George's County, MD; Weinstein, N.; Victoria, C. -
*Landscape Assessment of Wetland Functions (LAWF): A Geographic Information
System (GIS) Model for the Evaluation of Wetland Functions* (7-97)

8:40 am Garen, David C., USDA; Marks, Danny - *Spatially Distributed Energy Budget
Snowmelt Modeling in Mountainous Regions of the Western United States* (7-101)

Thursday, April 23 - 10:00 -11:30 a.m.

Session 32 - River/Estuary Water Quality II

Caribbean Ballroom 3

Moderator - Stewart Rounds, USGS

Co-Moderator - Paul Conrads, USGS

- 10:00 am Chen, C. C., Taiwan; Lee, C.Y. - *Using GIS and AgNPS Model to Study the Water Resources Conservation of Nan-Haw Reservoir Watershed in Taiwan* (1-1)
- 10:20 am Dzedzic, M., Brazil; Fernandes, C.; Fill, H.; Tozzi, M. - *Environmental Assessment of the Barigui River Watershed* (2-101)
- 10:40 am Conrads, Paul A., USGS - *Effects of Model Output Time-Averaging on the Determination of the Assimilative Capacity of the Waccamaw River and Atlantic Intracoastal Waterway near Myrtle Beach, South Carolina* (2-93)
- 11:10 am Thuc, Tran, Vietnam - *Development and Application of a Mud Transport and Bed Evolution Model for Estuary* (2-141)

Session 33 - River Hydraulics III

Caribbean Ballroom 1

Moderator - S. K. Nanda, USACE

Co-Moderator - Roy Walters, USGS

- 10:00 am Denlinger, Roger P., USGS; Walters, Roy A.; Levish, Dan; Ostenaar, Dean - *Robust Methods for Flood Routing Over Highly Irregular Terrain* (6-89)
- 10:20 am Walters, Roy A., USGS - *A Finite Element Model with Moving Boundaries: Application to Floods and Runup* (6-121)
- 10:40 am Wu, Reuy-Bean, Taiwan; Chang, Yao-Tser; Cheng, Yih-Pin - *Two-Dimensional Floodplain Modeling of Rivers in Taiwan* (6-137)

Session 34 - Hydrologic Modeling III

South Pacific Ballroom 3

Moderator - David Garen, USDA

Co-Moderator - Andreas Schumann, Germany

- 10:00 am Kittle, John L., J. L. Kittle Consulting; Hummell, Paul R.; Duda, Paul; Lumb, Alan M. - *A Modular Approach to Interactive Watershed Modeling* (7-115)
- 10:20 am Sun, G., USDA; Riekerk, H.; Comerford, N.B. - *Modeling the Hydrology of Wetland-Upland Systems on a Flat Terrain in Florida* (7-147)
- 10:40 am Schumann, Andreas H., Germany; Garen, David C. - *Spatially Distributed Hydrologic Modeling for Streamflow Simulation and Forecasting* (7-139)
- 11:10 am Zarriello, Phillip J., USGS - *Comparison of Nine Uncalibrated Runoff Models to Observed Flows in Two Small Urban Watersheds* (7-163)