

# Conference Program

## AGU Hydrology Days 2003

March 31 - April 2, 2003

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### AGU Hydrology Days 2003

Program at a Glance

	<u>March 31</u>	<u>April 1</u>	<u>April 2</u>
8-10 AM	<a href="#">Groundwater - Management of Industrial Releases I</a>	<a href="#">Advances in Stream Restoration</a> - Poster Session	<a href="#">Hydrologic Uncertainty and Risk - Water Quality</a>
	Coffee Break	Coffee Break	Coffee Break
10-12 AM	<a href="#">Ground Water - Management of Industrial Releases II</a>	<a href="#">Ground Water</a>	<a href="#">Hydrology - Snow Hydrology</a>
	<a href="#">Luncheon</a> Recognition of Borland Lecturers	<a href="#">Luncheon</a> Presentation of Hydrology Days Award to Professor Jose D. Salas	Lunch Break
2-4 PM	<a href="#">Drought and Management</a>	<a href="#">The Dynamics of Drought</a>	<a href="#">Erosion - Sedimentation - Geomorphology</a>
	Coffee Break	Coffee Break	Coffee Break
4-6 PM	<a href="#">Infiltration Subsurface Flow</a>	<a href="#">Drought, Fire, and Forests</a>	<a href="#">Environmental Hydraulics - River Mechanics</a>

	<u>Mar 31</u>	<u>April 1</u>	<u>April 2</u>
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Mar 31	8:00 AM	<b>Groundwater – Management of Industrial Releases I</b>
Mar 31	8:00 AM	Groundwater – Management of Industrial Releases
		<b>Chairs: Professor Tom Sale</b> Department of Civil Engineering Colorado State University  <b>Professor Tissa Illangasekare</b> Division of Environmental Science and Engineering Colorado School of Mines
		<b>Transport</b>
		<b>Scale Dependence Of Dispersivity Estimated From Temporal Moments In Heterogeneous Porous Media</b>
	8:00	Daniel Fernàndez-Garcia, Tissa H. Illangasekare, Environmental Science And Engineering Division, Colorado School Of Mines. Harihar Rajaram: Department Of Civil, Environmental And Architectural Engineering, University Of Colorado, Boulder

	8:20	<p><b>Limiting Source Dimensions of Three-Dimensional Analytical Point Source Model for Solute Transport</b></p> <p>A. Noman M. Ahsanuzzaman, University of Oklahoma, Randall Kolar, PhD, University of Oklahoma, Musharraf Zaman, PhD, University of Oklahoma</p>
	8:40	<p><b>AFCEE Source Zone Initiative- Technical Assistance To FE Warren, NAS Fort Worth &amp; AFP 4</b></p> <p>Derrick Rodriguez, Division of Environmental Science and Engineering, Colorado School of Mines, 1500 Illinois St, Golden, CO 80401; E-mail: <a href="mailto:drrodrig@mines.edu">drrodrig@mines.edu</a> , Edward Hill, Colorado School of Mines, Bart Wilking, Colorado School of Mines, Tissa Illangasekare, Colorado School of Mines</p>
		<p><b>Reactive Barriers</b></p>
	9:00	<p><b>Electrically Induced Redox Barriers (e<sup>-</sup>barriers) - Borden Field Experiment</b></p> <p>Matthew N. BALLABAN, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada, Tom SALE, Department of Civil Engineering, Colorado State University, Fort Collins, Colorado, USA, David GILBERT, Department of Civil Engineering, Colorado State University, Fort Collins, Colorado, USA, Robert W. GILLHAM, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada</p>
	9:20	<p><b>Electrically Induced Redox Barriers for the Treatment of Ground Water – Warren AFB Field Experiment</b></p> <p>Matthew PETERSEN, Chemical Engineering Department, Colorado State University, Fort Collins, David GILBERT, Civil Engineering Department, Colorado State University, Fort Collins, Tom SALE, Civil Engineering Department, Colorado State University, Fort Collins,</p>
Mar 31	9:40	<p><b>Mid-Morning Break</b></p>
Mar 31	10:00	<p><b>Groundwater - Management of Industrial Releases II</b></p> <p><b>Chairs:</b> <b>Professor Tissa Illangasekare</b> Division of Environmental Science and Engineering Colorado School of Mines</p> <p><b>Professor Tom Sale</b> Department of Civil Engineering Colorado State University</p>
Mar 31	10:00	<p><b>Source Zone Treatments</b></p>
	10:00	<p><b>Issues Of Heterogeneity, Characterization, Mass Transfer And Up-Scaling Associated With Partial Source Zone Treatment At DNAPL Contaminated Sites</b></p> <p>Tissa H. Illangasekare, Division of Environmental Sciences and Engineering, Colorado School of Mines, Golden, CO 80401; e-mail: <a href="mailto:tissa@mines.edu">tissa@mines.edu</a></p>
	10:20	<p><b>Influence Of Pool Morphology On The Performance Of The Pitt For DNAPL Characterization</b></p> <p>Elena Moreno-Barbero, Dongping Dai and Tissa H. Illangasekare., Division of Environmental Science and Engineering, Colorado School of Mines, Golden</p>

	10:40	<p><b>Natural And Surfactant Enhanced Dissolution Of Field DNAPLs</b></p> <p>Dongping Dai, Satawat Saenton, and Tissa H. Illangasekare, Environmental Science and Engineering Division, Colorado School of Mines Coolbaugh Hall, 14<sup>th</sup> and Illinois St., Golden, CO 80401</p>
	11:00	<p><b>Consequences of Incomplete Remediation of the DNAPL-Contaminated Aquifers: Intermediate-Scale Experiments and Numerical Modeling Studies</b></p> <p>Satawat Saenton and Tissa H. Illangasekare, Division of Environmental Science and Engineering, Colorado School of Mines, Golden, Colorado, 80401 U.S.A.</p>
	11:20	<p><b>An Investigation of the Downstream Effects of DNAPL Source Zone Remediation.</b></p> <p>Bart Wilking, Division of Environmental Science and Engineering, Colorado School of Mines, 1500 Illinois St, Golden, CO 80401; Phone: (303) 273-3483, Derrick Rodriguez, Colorado School of Mines, Edward Hill, Colorado School of Mines, Tissa Illangasekare, Colorado School of Mines</p>
	11:40	<p><b>Vegetable Oil Delivery Techniques For Use As A Carbon Source In The Reductive Dechlorination Of Chlorinated Solvents In Saturated Porous Media</b></p> <p>Christy Woodward, Dongping Dai, Tissa H. Illangasekare, Division of Environmental Science and Engineering, Colorado School of Mines, Golden, CO 80401, USA. Email: <a href="mailto:tillanga@mines.edu">tillanga@mines.edu</a></p>
	Poster	<p><b>DNAPL Dissolution in Random Heterogeneity Fields</b></p> <p>Alan D. Turner, Environmental Science and Engineering, Center for the Experimental Study of Subsurface Environmental Processes (CESEP), Environmental Science and Engineering Department, Colorado School of Mines, Golden, CO., Tissa H. Illangasekare, Center for the Experimental Study of Subsurface Environmental Processes (CESEP), Environmental Science and Engineering Department, Colorado School of Mines, Golden</p>
	Poster	<p><b>Mass transfer characteristics of entrapped DNAPL during surfactant flushing in two-dimensional flow field.</b></p> <p>Yongcheol Kim<sup>1</sup>, Satawat Saenton<sup>2</sup>, Kangkun Lee<sup>1</sup>, and Tissa H. Illangasekare<sup>2</sup>.  <sup>1</sup>School of Earth and Environmental Sciences, Seoul National University, Seoul 151-747, South Korea, <sup>2</sup>Division of Environmental Science and Engineering, Colorado School of Mines, Golden, Colorado, 80401 U.S.A.</p>
	Poster	<p><b>One-Dimensional Column Studies of Emulsified Vegetable Oil for Dense Non-Aqueous Phase Liquid Subsurface Remediation</b></p> <p>Shannon Ullmann, Dongping Dai and Tissa H. Illangasekare, Division of Environmental Science and Engineering, Colorado School Of Mines, Golden, CO 80401. Email: <a href="mailto:sschakel@mines.edu">sschakel@mines.edu</a></p>
	Poster	<p><b>Use of Chemical Oxidation to Reduce Rate-Limited Matrix Diffusion of PCE from Low Permeability Materials – A Numerical Study</b></p> <p>Jeffrey L. Heiderscheidt, Environmental Science and Engineering Division, Colorado School of Mines, Golden, Colorado, Tissa H. Illangasekare, Professor, Environmental Science and Engineering Division, Colorado School of Mines, Golden, Colorado, Robert L. Siegrist, Professor and Interim Director, Environmental Science and Engineering Division, Colorado School of Mines, Golden, Colorado</p>

	<b>Poster</b>	<p><b>Microbially Influenced Mass Transfer from Entrapped Pools of Non-Aqueous Phase Tetrachloroethene: Preliminary Results of Small Flow-Cell Experiments</b></p> <p>Kent C. Glover, Ann Hoenke, Tissa H. Illangasekare, and Junko Munakata-Marr, Colorado School of Mines, Environmental Science and Engineering Division, Golden, Colorado</p>
	<b>Poster</b>	<p><b>Real Time Monitoring of NAPL Sources Using Photon Attenuation Techniques on Chlorinated Solvents</b></p> <p>Jose L. Gago and Tissa Illangasekare, Colorado School of Mines, Environmental Science and Engineering Division, Golden, Colorado</p>

Mar 31	12:00	<b>Luncheon – Recognition of Borland Lecturers</b>
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Mar 31	2:00 PM	<b>Drought and Management</b>
		<p><b>Chair: Professor Robert Ward</b>          Department of Civil Engineering Engineering          Colorado State University</p>
Mar 31	2:00 PM	<b>Drought and Management</b>
	2:00	<p><b>Borland Lecture</b></p> <p><b>Linking drought research to water resource management actions</b></p> <p>Professor John A. Dracup, Department of Civil and Environmental Engineering, University of California, Berkeley</p>
	2:30	<p><b>Climate, Water Resources, and Environmental Sustainability: Ensuring Adequate Water Supplies in the 21<sup>st</sup> Century.</b></p> <p>Martyn Clark, Chris Goemans, Charles Howe, Douglas Kenney, Rutherford Platt, Lee Rozaklis, James Saunders, Brad Udall, and John Wiener, Center for Science and Technology Policy Research, 1333 Grandview Avenue, Campus Box 488, University of Colorado at Boulder, Boulder, CO</p>
	2:50	<p><b>Drought and Water Policy: Implications for Colorado</b></p> <p>Neil S. Grigg, Water Resources Planning and Management Division, Civil Engineering Department, Colorado State University, Fort Collins, CO</p>
	3:10	<p><b>2002 Municipal Response To Drought In The Colorado Front Range</b></p> <p>Douglas Kenney, University of Colorado Natural Resources Law Center, Boulder, Colorado, Roberta Klein CIRES Center for Science and Technology Policy Research, Boulder, Colorado, Adam Morrison, University of Colorado Department of Political Science, Boulder, Colorado</p>
	3:30	<p><b>Assessment of Phosphorus Distribution in a Drought-Impacted Reservoir and Recommendations for Potentially Mitigating Eutrophication Concerns</b></p> <p>Blair Hurst, Ken Carlson, Chester Watson, Department of Civil Engineering, CSU</p>

	Poster	<b>Water Release from Cross-linked Polyacrylamide</b> C.H. Green, G. Butters, and G.E. Cardon, Colorado State University, Dept. of Soil & Crop Sciences
	Poster	<b>Coping with Droughts: Region-wide Reservoir Storage estimation for efficient Water Management, and Drought Mitigation</b> Jens Liebe, Center for Development Research, University of Bonn, Germany, Nick van de Giesen, Center for Development Research, University of Bonn, Germany, Marc Andreini, Center for Development Research, University of Bonn, Germany, and IWMI, Accra, Ghana,
Mar 31	3:50	Mid-afternoon Break
Mar 31	4:10	<b>Infiltration - Subsurface Flow</b>
		Chair: Professor Jorge A. Ramirez Department of Civil Engineering Engineering Colorado State University
Mar 31	4:10	<b>Infiltration - Subsurface Flow</b>
	4:10	<b>Spatial Relations Between Soil Electrical Conductivity and Soil Water Content, Texture, and Chemistry</b> M.C. McCutcheon, Hydrologic Technician, USDA-ARS WMU, Agricultural Engineering Research Center, Colorado State University, Fort Collins, H.J. Farahani, Agricultural Engineer, USDA-ARS WMU, Agricultural Engineering Research Center, Colorado State University, Fort Collins, J.D. Stednick Professor of Watershed Science, Forestry, Range, and Watershed Stewardship Department, Colorado State University, Fort Collins, G. Buchleiter, Agricultural Engineer, USDA-ARS WMU, Agricultural Engineering Research Center, Colorado State University, Fort Collins, T. Green, Hydrologic Engineer, USDA-ARS-NPA, Great Plains Systems Research, Fort Collins,
	4:30	<b>Aggregation scenarios to model water fluxes in watersheds with spatial changes in soil texture</b> Jose M. SORIA, Feike J. LEIJ, Rafael ANGULO-JARAMILLO, Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France; Carlos FUENTES, Instituto Mexicano de Tecnologia del Agua (IMTA), Mexico; Randel HAVERKAMP, Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France, J.-Yves PARLANGE, Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY
	4:50	<b>Analysis of short-time single-ring infiltration under falling-head conditions with gravitational effects</b> Rafael ANGULO-JARAMILLO, Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France; David ELRICK, Land Resource Science, University of Guelph, Ontario, Canada, J.-Yves PARLANGE, Pierre Gerard-Marchant, Department of Biological and Environmental Engineering, Cornell University, Ithaca, NY, Randel HAVERKAMP, Laboratoire d'Etude des Transferts en Hydrologie et Environnement, Grenoble, France

	<a href="#">Mar 31</a>	<a href="#">April 1</a>	<a href="#">April 2</a>
<b>Apr 1</b>	<b>8:00 AM</b>	<b>Advances in Stream Restoration</b>	
		<p><b>Chairs: Professor Chester C. Watson</b> Department of Civil Engineering Colorado State University</p> <p><b>Dr. William Annable</b> Department of Civil Engineering Colorado State University</p>	
<b>Apr 1</b>	<b>8:00 AM</b>	<b>Advances in Stream Restoration</b>	
	8:15	<p><b>Common themes in channel design failure: Case studies from southern Ontario</b></p> <p>John Parish and Paul V. Villard, PARISH Geomorphic Ltd., Georgetown, ON, L7G 4J9, Email: <a href="mailto:pvillard@parishgeomorphic.com">pvillard@parishgeomorphic.com</a></p>	
	8:30	<p><b>Channel Remediation and Restoration Design for Silver Bow Creek, Butte Montana</b></p> <p>C. Gary Wolff, Senior Engineer, Mussetter Engineering, Inc., Fort Collins, Colorado, Robert A. Mussetter, Principal Engineer, Mussetter Engineering, Inc., Fort Collins, Colorado, Bill Bucher, Senior Engineer, Maxim Technologies, Inc., Helena, Montana</p>	
	8:45	<p><b>Shortcomings in Applying Regional Hydraulic and Morphologic Databases in Natural Channel Design Projects</b></p> <p>W. K. Annable - Engineering Research Center, Department of Civil Engineering, Colorado State University, Fort Collins</p>	
	9:00	<p><b>Collecting continuous flow data on headwater reaches of the Little Snake River, Colorado</b></p> <p>Russell J. Anderson and Brian P. Bledsoe, Civil Engineering Department, Colorado State University, Fort Collins, CO</p>	
	9:15	<p><b>Process controls on stream and river channel width</b></p> <p>Russell J. Anderson and Brian P. Bledsoe, Civil Engineering Department, Colorado State University, Fort Collins, CO</p>	
	9:30	<p><b>Fine Sediment Dynamics in the Upper Colorado River During Spring Runoff and Summer Baseflows: Implications for Flow Recommendations and Biological Productivity</b></p> <p>Michael D. Harvey, Robert A. Mussetter, and Chad E. Morris, Mussetter Engineering, Inc., 1730 S. College Avenue, Suite 100, Fort Collins, CO.</p>	
	9:45	<p><b>Factors affecting predictions of stream reach morphology using remotely sensed data: implications for restoration and habitat evaluation</b></p> <p>Alejandro N. Flores, Civil Engineering Department, Colorado State University, Brian P. Bledsoe, Civil Engineering Department, Colorado State University</p>	

	<b>Poster</b>	<b>Application of Physical Principles of the Unit Hydrograph Method in Characterizing Streamflows for River Restoration and Management</b>  Margaret A. Matter and Luis Garcia, Bioresources and Agricultural Engineering, Civil Engineering Department Colorado State University
	<b>Poster</b>	<b>How much water do stream fish need? Or 1D computer stream models in a 3D world</b>  Philip Harrison, Department of Earth Sciences, Univesity of Northern Colorado, Greeley, CO
	<b>Poster</b>	<b>Habitat Improvement Techniques for Aquatic Fishery: Application Experiences at Ta-Chia River in Taiwan</b>  Bing-Shyan, Lin, Department of Hydraulics, Feng Chia University, Taichung, Taiwan, Chao-Hsien Yeh Associate Professor, Department of Hydraulics, Feng Chia University, Taiwan, Hui-Pang Lien, Associate Professor, Department of Hydraulics, Feng Chia University, Taiwan, Ching-Hao Tuan, Professor, Department of Soil and Water Conservation, National Chung Hsing University, Taiwan,
	10:00 AM	<b>Main Poster Session</b>
	10:45 AM	<b>Mid-Morning Break</b>

<b>Apr 1</b>	<b>11:00 AM</b>	<b>Ground Water – Water Resources</b>
		<b>Chair:</b> Professor Deanna Durnford Department of Civil Engineering Colorado State University
<b>Apr 1</b>	<b>11:00 AM</b>	<b>Ground Water – Water Resources</b>
	11:00	<b>Improving MODFLOW's RIVER Package for Unsaturated Stream/Aquifer Flow</b>  Garey Fox, Water Resources, Hydrologic, and Environmental Sciences Division, Department of Civil Engineering, Colorado State University
	11:15	<b>Estimating Streambed and Aquifer Parameters from a Stream/Aquifer Analysis Test</b>  Garey Fox, Water Resources, Hydrologic, and Environmental Sciences Division, Department of Civil Engineering, Colorado State University
	11:30	<b>Calibrated Groundwater Flow and Salinity Transport Modeling in the Lower Arkansas River Basin of Colorado</b>  J. Philip Burkhalter, Timothy K. Gates and John W. Labadie - Dept. of Civil Engineering, Colorado State University, Fort Collins, CO
	<b>Poster</b>	<b>On Soil Salinity Mapping Using Satellite Imagery</b>  Aymn Elhaddad and Luis Garcia, Civil Engineering Department, Colorado State University, Fort Collins, CO

	Poster	<b>Criteria For Risk Evaluation In Groundwater Management Projects: A Comparative Study</b>  Cinzia Miracapillo, Geologisch-Paläontologisches Institut der Universität Basel,
	Poster	<b>Information Content in Transient Drawdown Data</b>  Tom Clemo, Center for the Geophysical Investigation of the Shallow Subsurface, Boise State University, Boise, ID, Paul Micheals, Geological Sciences Department, Boise State University, Boise, ID, R. Michael Lehman, Idaho National Environmental and Engineering Laboratory, Idaho Falls, ID

Apr 1	12:00	<b>Luncheon – Presentation of Hydrology Days Award</b>
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Apr 1	2:00 PM	<b>The Dynamics of Drought</b>
		<b>Chair:</b> Professor Roger A. Pielke, Sr. Department of Atmospheric Science Colorado State University
Apr 1	2:00 PM	<b>The Dynamics of Drought</b>
	2:00	<b>Borland Lecture:</b> <b>Characterizing the Dynamics of Droughts</b>  José D. Salas, Professor, Department of Civil Engineering, Colorado State University, Fort Collins, Colorado
	2:30	<b>Drought in Colorado -Where are we in 2003?</b>  Roger A. Pielke, Sr., Department of Atmospheric Science, Colorado State University, Fort Collins, Colorado - Colorado State Climatologist
	2:45	<b>On the probabilistic characterization of drought events</b>  A. Cancelliere, B. Bonaccorso, and G. Rossi, Civil and Environmental Engineering Department, University of Catania, Catania, Italy, J. D. Salas, Department of Civil Engineering, Colorado State University, Fort Collins, USA (on sabbatical leave at ETH, Zurich, Switzerland)
	3:00	<b>Effects of Drought on Antibiotic Occurrence and Water Quality in a River Influenced by Urban and Agricultural Activity</b>  Ben Lengacher, Kenneth Carlson, Shinwoo Yang, Department of Civil Engineering, Colorado State University, Fort Collins
	3:15	<b>Drought In An Evolutionary Context: Molecular Evidence From Endemic Colorado River Fishes In Western North America</b>  Marlis R. Douglas, Ph.D., and Michael E. Douglas, Ph.D., Conservation Genetics, Biodiversity and Molecular Ecology, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO, and Patrick C. Brunner, Ph.D., Molecular Systematics and Biodiversity Division, Swiss Federal Research Station, Waedenswil, Switzerland
	3:30	<b>Severe Drought: A Review of the 2002 Water Year in Colorado</b>  Nolan J. Doesken, Atmospheric Science Department, Colorado State University, Fort Collins, Colorado - Michael A Gillespie, Snow Survey Division, Natural Resources Conservation Service, U.S. Department of Agriculture



Apr 1	3:45	Mid-afternoon Break
Apr 1	4:00	<b>Drought, Fire and Forests</b>
		<b>Chairs: Professor Lee H. MacDonald</b> Department of Forest, Rangeland, and Watershed Stewardship Colorado State University
Apr 1	4:00	<b>Drought, Fire and Forests</b>
	4:00	<b>Drought, fire and forests – lessons from 1851 and 2002</b>  William H. Romme, Department of Forest, Range, and Watershed Stewardship, Colorado State University, Fort Collins
	4:15	<b>Use of a Rainfall Simulator to Assess Controls on Post-Fire Runoff and Sediment Production, Colorado Front Range</b>  Darren J. Hughes, Watershed Science Academic Program, Forest, Rangeland, and Watershed Stewardship Dept., Colorado State University, Fort Collins, <a href="mailto:djhughes@cnr.colostate.edu">djhughes@cnr.colostate.edu</a> , Juan de D. Benavides-Solorio, Centro de Investigacion Regional de Pacifico Centro, Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias, Guadalajara, Jalisco, Mexico <a href="mailto:jdedios@cirpac.inifap.conacyt.mx">jdedios@cirpac.inifap.conacyt.mx</a> , Lee H. MacDonald, Forest, Rangeland, and Watershed Stewardship Dept., Colorado State University, Fort Collins <a href="mailto:leemac@cnr.colostate.edu">leemac@cnr.colostate.edu</a>
	4:30	<b>Post-Fire Erosion in the Colorado Front Range: Rates and Recovery</b>  Joseph H. Pietraszek and Lee H. MacDonald, Watershed Science Academic Program, Forest, Range, and Watershed Stewardship Dept., Colorado State University, Fort Collins, Juan de D. Benavides-Solorio, National Council of Science and Technology, Guadalajara, Mexico
	4:45	<b>Effectiveness of BAER treatments in the Bobcat, Hayman, and Schoonover Fires</b>  Daniella T.M. Rough, Lee H. MacDonald, and Joseph W. Wagenbrenner, Watershed Science Program, College of Natural Resources, Colorado State University, Fort Collins, CO
	5:00	<b>Streamflow and sediment yield following the 2000 Bobcat fire, Colorado Front Range</b>  Matt D. Kunze, John D. Stednick, Watershed Science Program, Department of Forest, Rangeland, and Watershed Stewardship, Colorado State University, Fort Collins
	5:15	<b>Effects of the Hayman Fire and Thinning on Sediment Production Rates, Channel Morphology, and Water Quality</b>  Zamir Libohova, Watershed Science Academic Program, Forest, Rangeland, and Watershed Stewardship Dept., Colorado State University, Fort Collins, Lee H. MacDonald, Watershed Science Academic Program, Forest, Rangeland, and Watershed Stewardship Dept., Colorado State University, Fort Collins
	5:30	<b>Effect of Forest Thinning on Soil Moisture after 12 Years</b>  Steve Thomas, Watershed Science Academic Program, Forest, Rangeland, and Watershed Stewardship Dept., Colorado State University, Fort Collins

	<a href="#">Mar 31</a>	<a href="#">April 1</a>	<a href="#">April 2</a>
<a href="#">Apr 2</a>	8:00	<b>Hydrologic Uncertainty and Risk</b>	
		<b>Chair: Professor Tim Gates</b> Department of Civil Engineering Colorado State University	
	8:00	<b>Hydrologic Uncertainty and Risk</b>	
	8:00	<b>The Axis of Risk and Uncertainty in Hydrologic Design</b>  J. D. Salas, Department of Civil Engineering, Colorado State University, Fort Collins, USA - P. Burlando, Institute of Hydromechanics and Water Resources Management, ETH, Zurich, Switzerland - J.H. Heo, and D.J. Lee School of Civil & Environmental Engineering, Yonsei University, Seoul, 120-749, Korea	
	8:15	<b>Progress in Stochastic Analysis, Modeling, and Simulation: SAMS-2003</b>  O.G. B. Sveinsson, International Research Institute (IRI), Columbia University, N. York – J. D. Salas, Professor of Civil Engineering, Colorado State University, Fort Collins, Colorado - W.L. Lane, Private Consultant, Golden, Colorado, D.K. Frevert, Hydraulic Engineer, U.S. Bureau of Reclamation, Technical Services Center, Lakewood, Colorado	
	8:30	<b>Storage analysis using stochastic nonparametric streamflow simulation: Case study of the proposed Seaman reservoir expansion in Northern Colorado</b>  Satish Regonda, Balaji Rajagopalan and Kenneth Strzepek Department of Civil Environmental and Architectural Eng., University of Colorado, Boulder, CO	
		<b>Watershed Modeling</b>	
	8:45	<b>Application of TOPMODEL in the Distributed Model Intercomparison Project (DMIP)</b>  Christina Bandaragoda, Civil and Environmental Engineering Department, Utah State University, Logan, UT, David G. Tarboton, Civil and Environmental Engineering Department, Utah State University, Logan, UT, Ross Woods, National Institute of Water and Atmospheric Research, NIWA, Christchurch, New Zealand	
		<b>Water Quality</b>	
	9:00	<b>Role Of Stream Stability And Channel Morphology In Controlling Phosphorus Export From Agricultural Watersheds</b>  Joel A. Tillery, Civil Engineering, Colorado State University, Kenneth H. Carlson, Civil Engineering, Colorado State University, Chester C. Watson, Civil Engineering, Colorado State University	
	9:15	<b>Modeling the Influence of Irrigated Agriculture on Selenium Levels in the Uncompahgre River in Western Colorado</b>  R. Blair Hanna, Water Resources, Hydrologic and Environmental Sciences Division, Civil Engineering Department, Colorado State University, Jim C. Loftis, Civil Engineering Department, Colorado State University, Eric C. Schuck, Department of Agriculture and Resource Economics, Colorado State University, Fort Collins, CO	

	9:30	<b>A method of conducting Watershed Scale Sediment Impact Assessments for two highly erodible basins in Northern Mississippi :Implications for phosphorus loading and water quality.</b>  Brett Jordan, Department of Civil Engineering, Colorado State University, Fort Collins CO
	9:45	<b>Influence of Bedrock Geology on Water Quality in Selected Front Range Reservoirs</b>  Julie Woodke, Department of Forest, Rangeland, and Watershed Stewardship, Colorado State University, Fort Collins
	<b>Poster</b>	<b>Local Regression Quantile Estimator for Flood Frequency Analysis</b>  Somkiat Apipattanavis, Dept. of Civil, Environmental and Architectural Engg. Campus Box 428, ECCE B41University of Colorado Boulder, CO 80309-0428, USA
	<b>Poster</b>	<b>The Application of Quantitative Assessment of Land Use Changes Impact on Water Conservation for Reservoir Watershed</b>  Tien-Yin Chou Director and Professor, GIS Research Center, Feng Chia University, Taichung, Taiwan., Zheng Dao Xie, Chief, Conservation Division, Water Resources Agency, Ministry of Economic Affairs, Taiwan. Mei-Hsin Chen, Lecture and Project Division Manager, GIS Research Center, Feng Chia University, Taichung, Taiwan.
	<b>Poster</b>	<b>Analyzing nonvolatile organic disinfection by-products using gas chromatography/mass spectrometry</b>  Xian Qiming, School of Environment, Nanjing University

	10:00 AM	Mid-Morning Break
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<b>Apr 2</b>	<b>10:15 AM</b>	<b>Hydrology - Snow Hydrology</b>
		<b>Chair: Professor Jim C. Loftis</b> Department of Civil Engineering Colorado State University
<b>Apr 2</b>	<b>10:15 AM</b>	<b>Hydrology - Snow Hydrology</b>
	10:15	<b>Parameter estimation technique for a water balance model and application to measured data</b>  V. Toninelli, DIIAR, Politecnico di Milano, Milano, ITALY, D.G. Salvucci, Departments of Earth Sciences and Geography, Boston University, Boston, Massachusetts, USA, M. Mancini, DIIAR, Politecnico di Milano, Milano, ITALY
	10:30	<b>Is Pan Evaporation Decreasing Across the Conterminous United States? If it is, so what?</b>  Michael T. Hobbins and Jorge A. Ramirez, Water Resources, Hydrologic and Environmental Sciences Division, Civil Engineering Department, Colorado State University, Fort Collins; Thomas C. Brown, Rocky Mountain Research Station, U. S. Forest Service, Fort Collins

	10:45	<p><b>Inter-comparison of spatial estimation schemes for precipitation and temperature in hydrologic modeling</b></p> <p>Yeonsang HWANG, Balaji RAJAGOPALAN, Dept. of Civil, Environmental and Architectural Engineering, University of Colorado, Boulder; Martyn CLARK, Research Scientist, CIRES Center for Science and Technology Policy Research, University of Colorado, Boulder, Subhrendu GANGOPADHYAY, Dept. of Civil, Environmental and Architectural Engineering, and CIRES Center for Science and Technology Policy Research, University of Colorado at Boulder</p>
	11:00	<p><b>Spatial and temporal snowpack variation for the Salt River in Arizona</b></p> <p>Steven Fassnacht, Watershed Sciences Program, Department of Forest, Rangeland and Watershed Stewardship, Colorado State University, Fort Collins</p>
	11:15	<p><b>Snow covered area images based representation of spatial distribution pattern of snow in a mountainous watershed</b></p> <p>Jinsheng You and David G. Tarboton, Utah State University, Civil &amp; Environmental Engineering Department, Logan UT, Charles H. LUCE, USDA Forest Service, 316 E. Myrtle St. Boise, ID</p>
	Poster	<p><b>Engineering Design Parameter Of Storms In Venezuela</b></p> <p>Edilberto Guevara. Professor of Civil Engineering, Carabobo University, Valencia. Venezuela</p>
	Poster	<p><b>GIS-based temperature interpolation for distributed modeling of reference evapotranspiration</b></p> <p>Shujun Li, David G. Tarboton, Mac McKee, Civil and Environmental Engineering Department, Utah State University, Logan, UT</p>
	Poster	<p><b>Evolutionary Neural Network Modeling for Describing Rainfall-Runoff Process</b></p> <p>Alireza Nazemi, Department of Civil Engineering, Ferdowsi University of Mashhad, Mashhad, Iran, Hossein Poorkhadem,-N., Department of Mechanical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran, Mohammad –R. Akbarzadeh –T., Department of Electrical Engineering, Ferdowsi University of Mashhad, Mashhad, Iran, Seyed Mahmood Hosseini, Department of Civil Engineering, Ferdowsi University of Mashhad, Mashhad, Iran</p>
Apr 2	12:00	Lunch Break
Apr 2	1:30 PM	<b>Erosion - Sedimentation - Geomorphology</b>
		<p><b>Chair:</b> Professor Brian Bledsoe Department of Civil Engineering Colorado State University</p>
		<b>Erosion - Sedimentation - Geomorphology</b>
	1:30	<p><b>Cellular automata models of particle interactions in sediment entrainment</b></p> <p>Nancy E. Brown, Department of Geosciences, College of Natural Resources, Colorado State University, Fort Collins, CO, Jorge A. Ramirez, Water Resources, Hydrologic and Environmental Sciences Division, Civil Engineering Department, Colorado State University, Ellen E. Wohl, Department of Geosciences, College of Natural Resources, Colorado State University</p>

	1:45	<p><b>Predicting the Spatial Distribution of Fine Sediment In Stream Networks</b></p> <p>Christopher O. Cuhaciyian, Civil Engineering Department, Colorado State University, Fort Collins, CO., Brian P. Bledsoe, Civil Engineering Department, Colorado State University, Fort Collins, CO</p>
	2:00	<p><b>Relative Effects of Lithology on Fine Sediment Deposition In the Coast Range of Oregon</b></p> <p>Kurt A. Sable and Ellen E. Wohl, Geosciences Department, Colorado State University, Fort Collins CO, Contact: <a href="mailto:ksable@cnr.colostate.edu">ksable@cnr.colostate.edu</a></p>
	2:15	<p><b>Investigation of the Hydraulic Patterns in a Riffle using Three-Dimensional Velocity Characteristics</b></p> <p>Tracy L. Phelps, Department of Earth Resources, Colorado State University, Fort Collins, CO, Ellen E. Wohl, Department of Earth Resources, Colorado State University, Fort Collins, CO</p>
	2:30	<p><b>Shear stress distributions in streams with high bank roughness</b></p> <p>Shaun K. Carney, Civil Engineering Department, Colorado State University, Fort Collins, CO , e-mail: <a href="mailto:skcarney@engr.colostate.edu">skcarney@engr.colostate.edu</a> , Brian P. Bledsoe, Civil Engineering Department, Colorado State University, Daniel Gessler, Alden Laboratories, 30 Shrewsbury Street, Holden, MA</p>
	<b>Poster</b>	<p><b>Variation of bedload rating and flow competence curves with stream and bed material parameters</b></p> <p>Kristin Bunte and Steven R. Abt, Engineering Research Center, Colorado State University, Fort Collins, CO. e-mail: <a href="mailto:kbunte@engr.colostate.edu">kbunte@engr.colostate.edu</a> , email: <a href="mailto:sabt@engr.colostate.edu">sabt@engr.colostate.edu</a></p>

	2:45 PM	Mid-Afternoon Break
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<b>Apr 2</b>	<b>3:00 PM</b>	<b>Hydraulics - River Mechanics</b>
		<p><b>Chair: Professor Pierre Y. Julien</b>          Department of Civil Engineering          Colorado State University</p>
<b>Apr 2</b>	<b>3:00 PM</b>	<b>Hydraulics</b>
	3:00	<p><b>History Of Hydraulics and Fluid Mechanics At Colorado State University</b></p> <p>Pierre Y. Julien and Robert N. Meroney, Civil Engineering Department, Colorado State University</p>
	3:15	<p><b>Identification of the Ordinary High-Water Mark of the Snake River, Western Idaho, USA</b></p> <p>R.A. Mussetter, Ph.D., P.E., Mussetter Engineering, Inc., 1730 S. College Avenue, Suite 100, Fort Collins, CO 80525, M.D. Harvey, Ph.D., P.G., Mussetter Engineering, Inc., 1730 S. College Avenue, Suite 100, Fort Collins, CO 80525, D.J. Anthony, Ph.D., Mussetter Engineering, Inc., 1730 S. College Avenue, Suite 100, Fort Collins, CO 80525,</p>
	3:30	<p><b>Island Ageing and Dynamics in the Snake River, Western Idaho, USA</b></p> <p>Michael D. Harvey, Mussetter Engineering, Inc., Robert A. Mussetter, Mussetter Engineering, Inc., Deborah J. Anthony, Mussetter Engineering, Inc.</p>

	3:45	<b>South Platte River at Globeville Physical Model</b> Peter M. McCarthy, Thomas E. Brisbane, and Steven R. Abt, Hydraulics Program, Civil Engineering Department, Colorado State University, Fort Collins
	4:00	<b>Depicting channel reaches at sub-link scales using digital elevation models</b> Alejandro N. Flores, Civil Engineering Department, Colorado State University, Brian P. Bledsoe, Civil Engineering Department, Colorado State University
	4:15	<b>Using CFD to Define the Hydraulic Zone of Influence at Cooling Water Intake Structures</b> Dan Gessler, Alden Research Laboratory, John Richardson, Alden Research Laboratory, Doug Dixon, Electric Power Research Institute
	4:30	<b>Development of theoretically based design criteria for a porous V-weir</b> Chance J. Bitner, Hydraulics Division, Department of Civil Engineering, Colorado State University, Christopher I. Thornton, Hydraulics Division, Department of Civil Engineering, Colorado State University
	4:45	<b>An Objective Method for the Intercomparison of Terrain Stability Models and Incorporation of Parameter Uncertainty</b> Kiran Chinnayakanahalli, David G. Tarboton, and Robert T Pack, Civil and Environmental Engineering Department, Utah State University, Logan, UT
	5:00	<b>Long-term effects of dam removal on aquatic biodiversity of the Colorado River</b> Michael E. Douglas, Ph.D. and Marlis R. Douglas, Ph.D., Conservation Genetics, Biodiversity and Molecular Ecology, Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO
		<b>Geomorphology -Hydrologic Regime</b>
	5:15	<b>Predicting Flow Regime for Ungauged Streams in the Western United States</b> Stephen C. Sanborn, Civil Engineering Department, Colorado State University, Fort Collins, CO, Brian P. Bledsoe, Civil Engineering Department, Colorado State University, Fort Collins, CO
	5:30	<b>Mountain Floodplain Hydrologic Regime Alteration due to Beaver Activity</b> Cherie J. Westbrook and David J. Cooper, Department of Earth Resources and Graduate Degree Program in Ecology, Colorado State University, Fort Collins, CO, <a href="mailto:cherie@cnr.colostate.edu">cherie@cnr.colostate.edu</a>
	<b>Poster</b>	<b>Effective discharge determination</b> Carmen Bernedo and Jorge A. Ramirez, Water Resources, Hydrologic and Environmental Sciences Division, Civil Engineering Department, Colorado State University, Fort Collins
	<b>Poster</b>	<b>Preliminary Analysis Of Sediment Transport Capacity In The Colorado Plateau</b> Robert T. Milhous, Fort Collins Science Center. U.S. Geological Survey.

	<b>Poster</b>	<b>GIS Database Implementation for San Antonio River Authority</b> Durmus Cesur, San Antonio River Authority, GIS/Database Administrator, Finance and Administration-Information Technology, San Antonio, TX
	<b>Poster</b>	<b>Effect of performance of Canal System in Ganges</b> Kobadak and Pabna integrated rural development project on poverty. S.H.M.Fakhruddin Saad Siddiqui