Conference Program

AGU Hydrology Days 2011

March 21 - March 23, 2011

Program at a Glance

	Monday	Tuesday	Wednesday
8 - 6 pm	Posters	Posters	Posters
8	Registration	Registration	Registration
8 - 10	Snow Hydrology	Droughts - Precipitation - Weather	Urban Water and Waste Water Management
	Mid-morning break	Mid-morning break	Mid-morning break
10 - 12	Water Management/Optimization - Crops - Irrigation	Climate Variability and Change	Water Quality
12 - 2	Lunch Borland Lecture in Hydrology	Lunch Hydrology Days Award Lecture	Lunch Borland Lecture in Hydraulics
2 - 4	Flow and Transport Processes in Subsurface Systems I	Water, Atmosphere, Ecosystem Research	Environmental Fluid Mechanics, CFD, Hydraulics
	Mid-afternoon break	Mid-afternoon break	Mid-afternoon break
4 - 6	Flow and Transport Processes in Subsurface Systems II	Hydrologic and Hydraulic Modeling	Stream Restoration, Channel Hydraulics, Sediment and Erosion
	Adjourn	Adjourn	Adjourn

		Monday
Date	**Time**	**Session**
March 21	**8:00 am**	**Registration - Cherokee Park Room - Lory Student Center**
March 21	**8:30 am**	**Snow Hydrology**
		Chair: Professor Steven Fassnacht **Department of Forest, Range and Watershed Stewardship, CSU** **Cherokee Park Room - Lory Student Center**
March 21	8:30	**Practical snow depth sampling around a Snow Telemetry (SNOTEL) station: an example at Joe Wright, Colorado**
		Amir Kashipazha and Steven Fassnacht Watershed Science Program, Colorado State University
	8:45	**Spatial variability of snow density over alpine terrain: Central Spanish Pyrenees, Spain**
		J.I. López-Moreno, S.R. Fassnacht, J. Latron, J.T. Heath, and K. Musselman Instituto Pirenaico de Ecología, CSIC, Zaragoza,, Spain
	9:00	**Spatial interpolation of snow water equivalent (SWE) by multivariate regression using surface observations and MODIS satellite data**
		Amir Kashipazha, Steven Fassnacht and Stephanie Kampf Watershed Science Program, Colorado State University
	9:15	**Snowpack Measurement Variability Across the Lago Escondido and Lake Limnopolar Watersheds, Byer's Peninsula, Antarctica**
		S.R. Fassnacht and M. Toro Watershed Science Program, Colorado State University
	9:30	**Practical methods for using vegetation patterns to estimate avalanche frequency and magnitude**
		Sara Simonson Natural Resource Ecology Laboratory, Watershed Science Program, Colorado State University
March 21	**9:45 am**	**Mid-morning break**
March 21	**10: am**	**Water Management/Optimization - Crops - Irrigation - Salinity**
		Chair: Professor Luis A. García **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	10:00	**Water supply management: emerging trends and issues**
		Neil S. Grigg Department of Civil and Environmental Engineering, Colorado State University
	10:15	**Conflicts over Water Quality Management in Sacramento-San Joaquin Delta**
		Masih Akhbari and Neil Grigg Department of Civil and Environmental Engineering, Colorado State University
	10:30	**Dworshak Dam-Storage Optimization - Improving Power Generation with Historic and Climate Change Hydrology**
		Jeremy Giovando and Andre Dozier Department of Civil and Environmental Engineering, Colorado State University
	10:45	**Using Deterministic and Geostatistical Techniques to Estimate Soil Salinity at The Sub-Basin and Field Scale**
		Ahmed Eldeiry and Luis A. García Department of Civil and Environmental Engineering, Colorado State University
	11:00	**Developing Early and Late Planted Corn Regional Crop Coefficients Using A Satellite–Based Energy Balance Model (Reset) in the South Platte River Area of Colorado**
		Aymn Elhaddad, Luis A. Garcia, Jon Altenhofen, and Mary Hattendorf Department of Civil and Environmental Engineering, Colorado State University
	11:15	**Clustering of Hydraulic Conductivity Realizations to Reduce Computational Time Analysis for Monte Carlo Simulations**
		Ayman Alzraiee and Luis A. García Department of Civil and Environmental Engineering, Colorado State University
	11:30	**Improved Agricultural Irrigation Scheduling Using a Soil Water Content Sensor**
		Jordan L. Varble and José L. Chávez Department of Civil and Environmental Engineering, Colorado State University
	11:45	**Appraising Surface Water Quantity and Quality in the Upper Arkansas River Basin in Chaffee County, Colorado**
		G. H. Steed , T. K. Gates, J. D. Niemann and J. W. Labadie Department of Civil and Environmental Engineering, Colorado State University
March 21	**12:00**	**Lunch - North Ball Room - Lory Student Center**
		Borland Lecture in Hydrology **Soil Moisture Processes in the Shallow Subsurface Near Land/Atmospheric Interface- Opportunities, Challenges and New Research Approaches** **Professor Tissa H. Illangasekare** **Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines, Golden, CO**

March 21	**2:00 pm**	**Flow and Transport Processes in Subsurface Systems I**
		Chairs: Derrick Rodriguez, PhD and Kathleen M. Smits, PhD **Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines** **Cherokee Park Room - Lory Student Center**
	2:00	**Returning to Colorado State University 33-years later: A summary of the continuing career and impact of Dr. Tissa Illangasekare**
		Derrick Rodriguez Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines
	2:15	**Experimental study of the capillary trapping during supercritical CO2 sequestration through analogue test fluid injection at small to intermediate laboratory scales**
		Luca Trevisan , Tissa H. Illangasekare, Derrick Rodriguez, Abdullah Cihan, Jens Birkholzer, and Quanlin Zhou Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines
	2:30	**Numerical simulation of CO2 injection into deep saline aquifers**
		Ana Gonzalez-Nicolas, Brent Cody, and Domenico Baú Department of Civil and Environmental Engineering, Colorado State University, Fort Collins
	2:45	**Design of Experiment and Response Surface Modeling of CO2 Sequestration in Deep Saline Aquifers**
		Baozhong Liu and Ye Zhang Department of Geology and Geophysics, University of Wyoming
	3:00	**The Application of Chaos, Fractals and SDE's to the Study of Multiphase Flow**
		David Dean Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines
	3:15	**Multi-site CO2 Sequestration Optimization using a Dynamic Programming Approach**
		Brent Cody, Ana Gonzalez-Nicolas, and Domenico Bau Department of Civil and Environmental Engineering, Colorado State University
	3:30	**Air entrapment behavior in small scale coarse soil pockets in the shallow subsurface**
		Toshihiro Sakaki, Anuchit Limsuwat, and Tissa H. Illangasekare Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines
	3:45	**Stable Isotope Signature, Groundwater Return Flow and Seasonal Changes in the South Platte River**
		Katherine Davila Olmo, William E. Sanford and John Stednick Department of Geosciences, Colorado State University
March 21	**4:00 pm**	**Mid-afternoon break**
March 21	**4:15 pm**	**Flow and Transport Processes in Subsurface Systems II**
		Chair: Professor Domenico Baú **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	4:15	**Validation of a New Conceptual Model of TCE Vapor Generation from Dissolved Groundwater Plumes**
		Carolyn Sauck, Tissa Illangasekare, Toshihiro Sakaki, Benjamin Petri, John Christ Environmental Science and Engineering Department, Colorado School of Mines
	4:30	**Estimating the Spatial Distribution of First-Order Solute Decay Constants in Groundwater Systems**
		Ryan T. Bailey and Domenico A. Baù Department of Civil and Environmental Engineering, Colorado State University
	4:45	**Desorption and transport of uranium in contaminated aquifers: Bridging the gaps between laboratory and field scales**
		Michael B. Hay, Derrick R. Rodriguez, Andrew W. Miller, Matthias Kohler, Kelly J. Johnson, James A. Davis, and Gary P. Curtis ESE Division, Colorado School of Mines
	5:00	**Quantifying Natural LNAPL Losses Using CO2 Traps**
		Kevin McCoy, Julio Zimbron, and Tom Sale Department of Civil and Environmental Engineering, Colorado State University
	5:15	**Thermal conductivity of soils as affected by temperature**
		Kathleen M. Smits, Toshihiro Sakaki and Tissa H. Illangasekare Center for Experimental Study of Subsurface Environmental Processes, Colorado School of Mines,
	5:30	**Aquifer Storage and Recovery Optimization**
		Anne Maurer Department of Civil and Environmental Engineering, Colorado State University
	5:45	**Enhanced 3D visualizations to support CSM development and remedial system optimization**
		Matt Spurlin, Melissa Straten, Craig Divine, Adam Griffin and Kelly Houston ARCADIS-US, Inc., Site Investigation and Remediation Division, Boulder, Colorado

		Tuesday
Date	**Time**	**Session**
March 22	**8:00 am**	**Registration - Cherokee Park Room - Lory Student Center**
March 22	**8:30 am**	**Droughts - Precipitation - Weather**
		Chair: Professor Jorge A. Ramirez **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	8:30	**Colorado Drought Index Comparison**
		Wendy Ryan and Nolan Doesken Department of Atmospheric Science, Colorado State University
	8:45	**Determination of Distribution Functions Model for Annual Rainfall at Hulu Langat, Selangor, Malaysia**
		Jazuri Abdullah and Pierre Y. Julien Department of Civil and Environmental Engineering, Colorado State University
	9:00	**Spatial Distribution of Rainfall Events in Selangor, Malaysia**
		Nur Shazwani Muhammad and Pierre Julien Department of Civil and Environmental Engineering, Colorado State University
	9:15	**Fort Collins Weather Station Instrumentation Comparison**
		Wendy Ryan and Nolan Doesken Department of Atmospheric Science, Colorado State University
	9:30	**Review of the 2010 Water Year in Colorado**
		Nolan J. Doesken, Mike Gillespie and Wendy Ryan Department of Atmospheric Science, Colorado State University
March 22	**9:45 am**	**Mid-morning break**
March 22	**10:00 am**	**Climate Variability and Change**
		Chair: Professor Jorge A. Ramirez **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	10:00	**Stochastic Hydrology in the Framework of Climate Variability and Change**
		José D. Salas Department of Civil and Environmental Engineering, Colorado State University
	10:30	**Vulnerability of Future U.S. Water Supply to Shortage**
		Romano Foti, Jorge A Ramírez and Thomas C Brown Department of Civil and Environmental Engineering, Colorado State University
	10:45	**Impacts of climate change on the hydrologic response of headwater basins in Colorado**
		Caleb R. Foy, Mazdak Arabi, and Jorge A. Ramírez Department of Civil and Environmental Engineering, Colorado State University
	11:00	**Estimation of Non-stationary Design Flow in the Upper Green River Basin under Climate Change Scenarios**
		Taejung Song and Gi-Hyeon Park Department of Civil and Architectural Engineering, University of Wyoming, Laramie, WY
	11:15	**Extended Hirsch Method for Probabilistic Stream Flow Forecasting**
		Simon Draijer Riverside Technology, Inc .
	11:30	**Local Understanding of Hydro-climatic Changes in Mongolia**
		T. Sukh, S.R. Fassnacht, M. Fernández-Giménez and M. Laituri Watershed Science Program, Colorado State University
	11:45	**Vulnerability of hydropower generation in snowmelt-driven basins to nonstationary climate: A case-study of Dworshak Reservoir in Idaho**
		Andre Dozier, Jordan Lanini, Peter Furey, and Stephanie Kampf Department of Civil and Environmental Engineering, Colorado State University
March 22	**12:00**	**Lunch - North Ball Room - Lory Student Center**
		Hydrology Days Award Lecture **At last it is possible to measure area-average soil moisture!** **Professor W. James Shuttleworth** **Department of Hydrology and Water Resources, University of Arizona**

March 22	**2:00 pm**	**Integrated Water, Atmosphere, Ecosystem Research**
		Chair: Professor Jorge A. Ramirez **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	2:00	**Evapotranspiration response of a high elevation Rocky Mountain (Wyoming, USA) forest to a bark beetle epidemic**
		John Frank, Bill Massman, and Brent Ewers U.S. Forest Service, Rocky Mountain Research Station, Fort Collins, CO
	2:20	**Measurements of Surface Energy Balance Components in Dryland Wheat/Fallow and Limited-Irrigation Corn**
		T.R. Green , S.A. Saseendran, R.H. Erskine, L.R. Ahuja, M.R. Murphy, L. Ma, W.C. Bausch and A.A. Andales USDA, Agricultural Research Service (ARS), Agricultural Systems Research Unit, Fort Collins, CO, USA
	2:40	**A conceptual model for soil moisture estimation and downscaling based on topographic attributes**
		Michael L. Coleman and Jeffrey D. Niemann Department of Civil and Environmental Engineering, Colorado State University
	3:00	**Dynamics of Self-organized Vegetation Patterns**
		Romano Foti and Jorge A Ramírez Department of Civil and Environmental Engineering, Colorado State University
	3:20	**Mapping nitrogen deposition to identify critical nitrogen loads for nutrient enrichment and acidification of sensitive U.S. mountain lakes**
		Eric E. Richer and Jill S. Baron Natural Resource Ecology Laboratory, Colorado State University
March 22	**3:40 pm**	**Mid-afternoon break**
March 22	**4:00 pm**	**Hydrologic and Hydraulic Modeling**
		Chair: Professor Mazdak Arabi **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	4:00	**The Integration of GIS and Watershed Erosion Models to Support the Assessment of Surface Mine Reclamation**
		X. Shawn Huang, Anthony B. Alvarado, Lyle W. Zevenbergen , and John N. Cochran River Engineering, Ayres Associates
	4:20	**Mangyeong River Hydraulic Modeling Analysis**
		Jaehoon Kim and Pierre Y. Julien Department of Civil and Environmental Engineering, Colorado State University
	4:40	**Single objective vs. multi-objective calibration of watershed models**
		Mahdi Ahmadi and Mazdak Arabi Department of Civil and Environmental Engineering, Colorado State University
	5:00	**Comparison of Bayesian and Alternative Parameter Searching Techniques in Hydrosystem Modeling**
		Haw Yen and Mazdak Arabi Department of Civil and Environmental Engineering, Colorado State University

		Wednesday
Date	**Time**	**Session**
March 23	**8:00 am**	**Registration - Cherokee Park Room - Lory Student Center**
March 23	**8:20 am**	**Urban Water and Waste Water Management I**
		Chair: Professor Sybil Sharvelle **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	8:20	**Evaluating Contaminant Removal Rates of Graywater Utilizing a Constructed Wetland Treatment System**
		Jesse Bergdolt and Sybil Sharvelle Department of Civil and Environmental Engineering, Colorado State University
	8:40	**Is Graywater Reuse a New Way to Water Sustainability and What Is Its Effects on Soil Quality?**
		Masoud Negahban Azar , Sybil Sharvelle, Mary Stromberger and Larry Roesner Department of Civil and Environmental Engineering, Colorado State University
	9:00	**Simultaneous Phosphorus and Nitrogen Removal in Wastewater by Using Aluminum Based Water Treatment Residual**
		Qian Liang, Lucas Loetscher, Sybil Sharvelle, and Kenneth Carlson Department of Civil and Environmental Engineering, Colorado State University
	9:20	**Source Separation and Treatment of Anthropogenic Urine**
		Kim Fewless, Larry Roesner, and Sybil Sharvelle Department of Civil and Environmental Engineering, Colorado State University
March 23	**9:40 am**	**Mid-morning break**
March 23	**10:00 am**	**Water Quality**
		Chair: Professor Ken Carlson **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	10:00	**Geospatial Analysis of Phosphorus Concentrations on the Poudre River in Northern Colorado**
		Stephen Goodwin, Cortney Cowley, Ji-Hee Son, Mazdak Arabi, and Kenneth Carlson Department of Civil and Environmental Engineering, Colorado State University
	10:20	**Geospatial Analysis of the Occurrence and Transport of Phosphorus in the Poudre River Basin in Northern Colorado**
		Cortney Cowley, Stephen Goodwin, Ji-Hee Son, Mazdak Arabi and Kenneth Carlson Department of Civil and Environmental Engineering, Colorado State University
	10:40	**Reactive stream stabilization for minimizing transport of phosphorus and nitrogen from agricultural landscapes**
		Ji-Hee Son , Chester C. Watson , David S. Biedenharn, Kenneth H. Carlson Department of Civil and Environmental Engineering, Colorado State University
	11:00	**Responses of Urban Shallow Lakes to Early Stages of Rehabilitation**
		Xiaoju Zhang and Larry. A. Roesner Department of Civil and Environmental Engineering, Colorado State University
	11:20	**Removal of Odorous Algal Metabolite from Horsetooth Reservoir Water by Powdered Activated Carbon**
		Kirk Koester and Pinar Omur-Ozbek Department of Civil and Environmental Engineering, Colorado State University
	11:40	**A Review of Occurrence and Mitigation of Algal Odorants and Toxins in Surface Waters**
		Pinar Omur-Ozbek Department of Civil and Environmental Engineering, Colorado State University
March 23	**12:00**	**Lunch - North Ball Room - Lory Student Center**
		Borland Lecture in Hydraulics **Hydrodynamic Processes in the Sacramento/San Joaquin Delta: Examples of hydrodynamic processes that might be important and probably are hard to model** **Professor Stephen G. Monismith** **Department of Civil and Environmental Engineering, Stanford University**
March 23	**2:00 pm**	**Environmental Fluid Mechanics, Computational Fluid Dynamics, Hydraulics**
		Chair: Professor Karan Venayagamoorthy **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	2:00	**On the turbulent Prandtl in stably stratified turbulence**
		Karan Venayagamoorthy and Derek Stretch Department of Civil & Environmental Engineering, Colorado State University
	2:15	**Evaluation of turbulent Prandtl (Schmidt) number parameterizations for stably stratified environmental flows**
		Zachary A. Elliott and Subhas K. Venayagamoorthy Department of Civil and Environmental Engineering, Colorado State University

	2:30	**Passive scalar dispersion around submerged obstacles in tidal flows using numerical simulation**
		Hyeyun Ku and Subhas K. Venayagamoorthy Department of Civil and Environmental Engineering, Colorado State University
	2:45	**Numerical simulation of intrusive gravity currents**
		Sangdo An and Pierre Y. Julien Department of Civil and Environmental Engineering, Colorado State University
	3:00	**Hydraulics and mixing efficiency of small drinking water disinfection systems**
		Jordan M. Wilson Department of Civil and Environmental Engineering, Colorado State University
	3:15	**Interflow dynamics of turbid density currents in thermally stratified Imha Reservoir, S. Korea**
		Sangdo An and Pierre Y. Julien Department of Civil and Environmental Engineering, Colorado State University
March 23	**3:30 pm**	**Mid-afternoon break**
March 23	**3:45 pm**	**Stream Restoration, Channel Hydraulics, Sediment and Erosion**
		Chair: Professor Christopher Thornton **Department of Civil and Environmental Engineering, CSU** **Cherokee Park Room - Lory Student Center**
	3:45	**Geomorphic Lessons Learned from Floodplain Interactions and Urban Stream Natural Channel Restoration**
		David Bidelspach PE, MS MEng. Stantec Consulting
	4:00	**An innovative, low cost stream restoration and mitigation in the Flint Hill Prairie region of North Central Oklahoma**
		Michael J Geenen, Stantec Consulting, Fort Collins, CO
	4:15	**Restoration of Four Rivers in Korea**
		Kiyoung Park and Pierre Y. Julien Department of Civil and Environmental Engineering, Colorado State University
	4:30	**An Assessment of the Uncertainty in Sediment Transport Simulations Due to Parameter Estimation and the Selection of a Sediment Transport Equation**
		Shaina Sabatine and Jeffrey D. Niemann Department of Civil and Environmental Engineering, Colorado State University
	4:45	**Fine sediment in pool-tail areas measured with pebble counts, grid counts, and armor samples**
		Kristin Bunte, Steven R. Abt, John P. Potyondy, Kurt W. Swingle Department of Civil and Environmental Engineering, Colorado State University
	5:00	**Maximum outer-bank velocity reduction for vane-dike fields installed in channel bends**
		S. Michael Scurlock, Amanda L. Cox, Christopher I. Thornton, and Drew C. Baird Department of Civil and Environmental Engineering, Colorado State University
	5:15	**Methodology for calculating shear stress in a meandering channel**
		Kyung-Seop Sin, Christopher I. Thornton, Amanda L. Cox and Drew C. Baird Department of Civil and Environmental Engineering, Colorado State University
	5:30	**Development of transition mat scour protection design methodology and comparison to the state-of-the-practice**
		Michael O. Turner, Amanda L. Cox, Christopher I. Thornton Department of Civil and Environmental Engineering, Colorado State University
	5:45	**Evaluation of Sedimentation and Erosion Trends in the Sacramento River near the M&T/Llano Seco Pump Station**
		James L. Woidt, Amanda L. Cox, and Christopher I. Thornton Department of Civil and Environmental Engineering, Colorado State University

		Monday, Tuesday and Wednesday
Everyday	**All day**	**Posters**
		Chair: Professor Jorge A. Ramirez **Department of Civil and Environmental Engineering, CSU** **North Ball Room - Lory Student Center**
		GIS for Environmental Management
		Durmus Cesur San Antonio River Authority, San Antonio, TX
		Thermally Enhanced Bioremediation of Hydrocarbon Impacted Subsurface
		Natalie Rae Zeman, Susan K De Long and Tom C Sale Department of Civil and Environmental Engineering, Colorado State University, Fort Collins
		Mapping of Snow Transition Zones in the Colorado Front Range
		Cara Moore, Stephanie Kampf, Eric Richer, Steven Fassnacht, Brandon Stone, and Michael Lefsky Natural Resources Ecology Laboratory, Colorado State University
		Potential Community Water and Cost Savings Resulting from Reuse and Conservation Practices as Predicted by an Integrated Urban Water Model
		Matthew Becker Department of Civil and Environmental Engineering, Colorado State University
		Dependence of Hydraulic Conductivity on Measurement Scale in an Alpine Glacial Till
		Tyler B. Houghton, Michael J. Ronayne and John D. Stednick Department of Geosciences, Colorado State University
		Identifying and Quantifying Hydrologic Processes Underlying Recent Wetland Loss in Yellowstone National Park
		Derek Schook and David Cooper Graduate Degree Program in Ecology, Department of Forest, Rangeland and Watershed Stewardship, Colorado State University
		Aspen Dorm Graywater Reuse Project
		Brock Hodgson and Sybil Sharvelle Department of Civil and Environmental Engineering, Colorado State University
		Modified Nanofiltration Membranes for Selective Separation of Sugar Solutions
		Heath H. Himstedt, Katie Marshall, Sarah Williams, Ranil Wickramasinghe Department of Chemical and Biological Engineering, Colorado State University
		Spatial variability of fines affects results from various grid-count sampling schemes
		Kristin Bunte, Steven R. Abt, John P. Potyondy, Kurt W. Swingle Department of Civil and Environmental Engineering, Colorado State University
		Peak Streamflows of the Animas River at Durango, Colorado
		Robert T Milhous Torries Peak Analysis, Fort Collins, Colorado
		Stochastic Analysis of Crop Yield Uncertainty, Field Scale Study
		Ayman Alzraiee and Luis A. García Department of Civil and Environmental Engineering, Colorado State University
		Comparison of Drainage and Evapotranspiration from Three Irrigation Plans
		Jonathan H. King and William E. Sanford Department of Geosciences, Colorado State University, Fort Collins, Colorado
		An Evaluation of BMP Size on Water Quality Performance
		Jason Messamer, Chris Olson, and Larry A. Roesner Department of Civil and Environmental Engineering, Colorado State University