

DHS Bulletin



FY12 - No. 2

October through December 2011

Publications and Presentations

Journal Articles

- Clow, D.W., Peavler, R.S., Roche, J., Panorska, A.K., Thomas, J.M. and S. Smith, 2011, Assessing possible visitor-use impacts on water quality in Yosemite National Park. *Environmental Monitoring and Assessment*, 183 (1): 197-215.
- Lutz, A., Thomas, J.M., and M. Keita, 2011, Effects of population growth and climate variability on sustainable groundwater in Mali, West Africa. *Sustainability*, 3(1): 21-34; doi:10.3390/su3010021.
- Scott, J., M.R. Rosen, L. Saito, L., and D.L. Decker, 2011. The influence of irrigation water on the hydrology and lake water budgets of two small arid-climate lakes in Khorezm, Uzbekistan. *Journal of Hydrology* 410: 114-125.

Books

French, R.H. and J.J. Miller (eds.), 2011. Flood Hazard Identification and Mitigation in Semi- and Arid Environments. World Scientific Publishing Co., New York, NY, 236pp.

In addition to editing the book, we authored the following chapters:

- Chapter 1: "Introduction" by Richard H. French
- Chapter 2: "Geologic and Hydraulic Concepts in Arid Environments" by Julianne J. Miller
- Chapter 3: "Traditional Approaches to Flood Hazard Identification and Mitigation on Alluvial Fans" by Richard H. French and Julianne J. Miller
- Chapter 6: "Playa Lake Hazards and Resources" by Julianne J. Miller
- Chapter 7: "Needs and Benefits of Co-Operation" by Richard H French and others.

Conference Abstracts/Presentations

- Allen, R., A. Irmak, J. Huntington, R. Trezza, J. Kjaersgaard. (2011). Coping with Misbehaving Land-Use Types (mountains, trees, desert, playas, open water) with Metric and Other Satellite-Based Energy Balance Model. AWRA 2011 Annual Water Resources Conference, Albuquerque, New Mexico, November 7-10.
- Allen, R., J. Huntington, A. Irmak, H. deBruin. (2011). Conditioning Gridded Weather Data Sets from Land Data Assimilation Systems Before Use in Interpolating Satellite-Based Evapotranspiration. AWRA 2011 Annual Water Resources Conference, Albuquerque, New Mexico, November 7-10.

- Chen, D., H. Sun, and Y. Zhang. 2011. A Stochastic Approach to Vertical Dispersion of Coarse Sediments in Turbulent Open-Channel Flows, Abstract H53K-1563, AGU Fall Meeting, San Francisco, CA, December 6, 2011.
- Chen, L., H. Sun, and Y. Zhang. 2011. A New Stochastic Approach to Model Heterogeneous Surface Runoff, Abstract H43G-1297, AGU Fall Meeting, San Francisco, CA, December 6, 2011.
- Eissa, M., J. Thomas, G. Pohll, O. Shouakar-Stash, K. Dahab, R. Hershey, M. Dawoud, and M.A. Gomaa, 2011. Groundwater Recharge and Seawater Intrusion of the Quaternary Coastal Plain Aquifer in Wadi Watir Delta, Sinai, Egypt. Paper No. 2-5, Geological Society of America Annual Meeting, Minneapolis, MN, October 9-12.
- Gilbertson, L., G. Pohll, and J.L. Huntington (2011). Using Vegetation Indices from MODIS to Estimate Evapotranspiration for the Godomey Well Field in Benin. AGU Fall Meeting San Francisco, CA, December 5-9.
- Huntington J.L., A. Sullivan, R. Allen, T. Minor, C. Morton, G. Pohll, J. Thomas (2011). Water Transfers from Agriculture to Cities and Basin Management – ET Mapping Contributions in Nevada. Western States ET Workshop, Boise, ID, October 12-13. www.westernstatesetworkshop.com.
- Huntington, J., C. Morton, J. Beamer, A. Sullivan, B. Lyles, R. Allen, G. Pohll. (2011). Estimating Evapotranspiration from Irrigated Agriculture and Groundwater Discharge Areas in Nevada Using Remote Sensing and Weather Station Data. AWRA 2011 Annual Water Resources Conference, Albuquerque, New Mexico, November 7-10.
- LeFebvre, K., R.L. Hershey, and D. Decker, 2011. Evaluation of Radionuclide Mobilization and Redistribution during Playa Lake Formation on the Frenchman Flat Playa, Nevada Nuclear Security Site. Abstract H41H-1162. American Geophysical Union Fall Meeting, San Francisco, CA, December 5-9.
- Lutz, A., Thomas, J., Abatzoglou, J. and H. Diehl, 2011, Analysis of observational data: hydroclimate trends at sites in eastern Nevada. American Water Resources Association Annual Water Resources Conference, Albuquerque, New Mexico, November 7-10, 2011.
- McEvoy, D., L. Edwards, J.L. Huntington (2011). Utility of Precipitation Indices as Indicators of Drought in Nevada. AGU Fall Meeting San Francisco, CA, December 5-9.
- Niswonger, R.G. and J.L. Huntington (2011). The effects of climate-induced earlier drainage on watershed fluxes in snow dominated regions (Invited). AGU Fall Meeting San Francisco, CA, December 5-9.

Reeves, D.M., R. Parashar, K. Pohlmann, Y. Zhang, E.M. LaBolle, C. Russell, and J. Chapman, Threshold behavior in deep vadose zone fluid flow and radionuclide transport behavior at Rainier Mesa, Nevada, poster at 2011 AGU Fall Meeting, San Francisco, CA, December 6, 2011.

Sun, H., J. Zhu, W. Chen, and Y. Zhang. 2011. A fractal Richards' equation to capture the non-Boltzmann scaling of water flows in unsaturated soils, Abstract H51H-1293, AGU Fall Meeting, San Francisco, CA, December 6, 2011.

Walsh, D., D.M. Reeves, G. Pohl, C. Cooper, and B. Lyles, Fracture characterization in the Astor Pass geothermal field, Nevada, poster at 2011 AGU Fall Meeting, San Francisco, CA, December 6, 2011.

Zhang, Y. 2011. Upscaling subdiffusion in regional-scale alluvial aquifers using a tempered stable model with predictive parameters, Abstract H51H-1292, AGU Fall Meeting, San Francisco, CA, December 6, 2011.

New Projects

Development of a Regional Water Management Plan for the Carson River Watershed

PI: Alex Lutz
Agency: Carson Water Subconservancy District / DOI - Bureau of Reclamation
Amount: \$14,305
Summary: This project continues the study of changes in runoff and climate in the Carson River Watershed.

Advanced Computer Vision, Robotics, and Visualization Algorithms for Improving Planetary Exploration and Understanding

PI: Dan Coming
Agency: NSHE
Amount: \$241,686
Summary: This project aspires to support and promote NASA's research priorities by advancing the state of the art in three, closely interrelated, focal areas: computer vision, robotics, and immersive visualization.

Finalizing a Nevada Wetland Program Plan (WPP) and Assessing Biotic Integrity of the State's Priority Wetlands: Isolated Great Basin and Mojave Desert Springs

PI: Don Sada
Agency: Nevada Natural Heritage Program / EPA
Amount: \$289,348
Summary: The goals of the project are to: 1- Create and submit a Nevada Wetland Program Plan (WPP) , 2- compile information to integrate groundwater hydrology, landscape associations, physicochemical characteristics of the aquatic system, and biology to develop a conceptual model of spring ecology, 3-determine biotic consequences of environmental stressors (e.g., livestock use, diversion, channelization, impoundment, water chemistry, scouring floods, drying, etc.), and 4-create a preliminary assessment of reference condition.

Glaciochemical Analysis of 2010/2011 West Antarctic Ice Cores

PI: Joe McConnell
Agency: Woods Hole Oceanographic Institute
Amount: \$60,299
Summary: The ultra-trace ice core chemistry laboratory at the Desert Research Institute will analyze a ~150 m ice core using DRI's unique Continuous Flow Analysis with Trace Elements system.

Final Closure of Heap Leach Facilities at the Rochester Mine

PI: Bill Albright
Agency: Coeur Rochester Mine
Amount: \$8,000
Summary: The Desert Research Institute will prepare a scope of work regarding final closure of heap leach facilities at the Rochester Mine northeast of Lovelock, Nevada. Effective closure means reducing drainage from the heap to a very low level. The high altitude, relatively short growing season at the site, shortage of suitable borrow soils and questions regarding ability of the processed material to perform as a cover component are challenges that must be met to design and establish an effective cover.

New Hires (Oct 2011 - Dec 2011)

- ✦ Srijana Dawadi – Hourly Technical (SNSC)
- ✦ Shai Sela – Hourly Technical (SNSC)
- ✦ Jeffrey Erwin – Hourly Technical (NNSC)
- ✦ Mark Lobsinger – Hourly Technical (NNSC)
- ✦ Judy Dillon – Hourly Technical (NNSC)
- ✦ Ajay Kalra – Postdoctoral Fellow (SNSC)

Did You Know...

- Yong Zhang's daughter, Emerald, was born 12/20/2011. Everyone is doing great. Congratulations!
- Jenny Chapman and Jeff Daniels received an "Outstanding Performance" from the S.M. Stoller Corporation for their commitment to excellence in the development of the Project Rulison Risk Assessment.
- DRI sponsored, and Justin Huntington helped organize, the First Annual Western States ET Workshop, Boise Idaho, October 12-13, "Using ET to Reduce Costs and Improve Efficiency in Water Resource Management." For more information go to www.westerstatesetworkshop.com.
- Justin Huntington graduated with his PhD in December, and was promoted to Assistant Research Professor from Assistant Research Scientist. Congratulations!

DOE Contract

Effective November 1, 2011, DRI has a new Technical Research, Engineering, and Development Services contract with the U.S. Department of Energy, National Nuclear Security Administration. The contract extends until October 31, 2016 and has a ceiling value of \$35,926,593.

This is an umbrella contract through which we are able to negotiate and compete for work each federal fiscal year, up to the ceiling limit. The amount we are ultimately awarded depends on the hard work of our researchers and particularly the efforts of our major project managers, Colleen Beck, Ted Hartwell, Julie Miller, and Chuck Russell. Though we work collaboratively in the group of Nevada Site Office contractors and laboratories, the competition for scope and funding is intense, with our researchers going head to head with others from Los Alamos, Livermore, NOAA, the USGS, NSTec, and Navarro-Intera. We ended our previous contract on October 31, 2011, with a total research value for the 2006-2011 period of about \$29 million. We look forward to another 5 years of environmental research in service to our nation. About \$5.6 million in research has been secured thus far for federal FY 2012. Funded projects for this contract include:

- DOE Underground Test Area projects \$2,133,649 – PI: Chuck Russell
- DOE Soils projects \$954,241 – PI: Julie Miller
- DOE Community Environmental Monitoring Program \$1,500,000 – PI: Ted Hartwell
- DOE Cultural Resources Monitoring Program and American Indian Program \$1,000,000 – PI: Colleen Beck

Proposals (submitted this quarter – Oct through Dec)

Date Submitted	PI(s), Co-PI(s)	Sponsor	Title	Budget (\$)
24-Oct-11	McConnell, Joe	National Science Foundation	Collaborative Research: Continuous Records of Greenhouse Gases and Aerosol Deposition During the Holocene: Testing the Fidelity of New Methods for Reconstructing Atmospheric Change	606,848
26-Oct-11	Schumer, Rina	DoD - Office of Naval Research	Multidisciplinary University Research Initiative	210,076
09-Nov-11	Daniels, Jeff	Nevada Cancer Institute; DoD	Heritable, epigenetic effects of ionizing radiation on human cells.	30,618
14-Nov-11	Cooper, Clay	American Chemical Society - Petroleum Research Fund	Seismically Driven Outgassing of CO2 from Water in Laboratory Porous Media	100,000
15-Nov-11	Fitzgerald, Brian	State of NV Div State Lands-Dept Conserv & Nat Resources	Investigation of Lake Tahoe's Nearshore: Correlating On-shore impacts with water clarity and invasive species	44,924
16-Nov-11	Heyvaert, Alan	State of NV Div State Lands-Dept Conserv & Nat Resources	Implementation of Data Analysis System for Stormwater Status and Trends Evaluation	248,759
23-Nov-11	McConnell, Joe	Her Majesty the Queen in Right of Canada	Measuring Black Carbon and Source Tracers in Canadian Snow and Ice	43,878
29-Nov-11	Thomas, Jim Pohll, Greg	US Agency for International Development	Groundwater Management near Contamination Sources using Evolutionary Computational Algorithms	99,825
15-Dec-11	Chen, Li	US Department of Agriculture	Hydrologic Assessment of Stream Environment Zones (SEZ) to Support the Review of SEZ Policies and Development of a SEZ Classification System	111,582