

# Ephemeral Flow

A NEWSLETTER ABOUT SAHRA

DECEMBER 2004

Welcome to the December issue of *Ephemeral Flow*, a newsletter for sharing information within the SAHRA community. *Ephemeral Flow* is sent to SAHRA researchers, staff, and students at all participating institutions approximately every two months, except during the summer. Your contributions and suggestions are critical to this newsletter's success and are always welcome. Please send items to Mary Black at [mblack@sahra.arizona.edu](mailto:mblack@sahra.arizona.edu)

## FEATURE

### ***SAHRA Breaks Ground on the New Upper Rio Grande Transect***

Foundations for the meteorological towers were dug and concrete poured in early November at the Mixed Conifer (MC) and Ponderosa pine (Pipo) sites in the Valles Caldera National Preserve in New Mexico. The first tower sections were erected during the concrete pour; the remaining tower portions will be erected after the concrete has cured.

An installation team subsequently spent three days in November working at Valles Caldera. Three team members were from CU (Eric Small, his lab assistant, and grad student P. Jacobson) and UA (grad student Keith Mussleman). Eric Small offers this report:

#### **Day 1 – Site selection**

We selected locations for soil moisture probes, snow pingers, and (possibly) trees for sap flow at both the Pipo and MC sites. At each site, we chose nine locations: three with overstory canopy, three at the edge of overstory canopy, and three in gaps (grassland). All sites were randomly selected. We started hand augering for soil moisture holes, and quickly gave up – opting for renting a power auger from a supplier in Los Alamos (photo right).



#### **Days 2 and 3 – Installation of probes at MC site**

We augered nine holes (by power and hand) at the MC site, typically to a depth of 100 cm. Thermocouple psychrometers (TCP) were installed in each hole at depths of 15, 30, 60, and 100 cm. Soil samples were taken from each depth in each hole. The holes were backfilled with the excavated soil.

Snow pinger masts were inserted 90 cm north of each TCP hole. With a boom length of 80 cm, this places the pinger (nearly) over the TCP profiles – allowing for direct comparison between snow depth and soil water potential time series. The actual pingers will be deployed at a later date.

#### **December field plans**

We intend to go back in early December to install TCPs at the Pipo site, deploy dataloggers at one or both sites, and Noah Molotch will deploy snow pingers at the MC site. Access to the MC site may only be via foot (ski/snowshoe) if there is a substantial storm between now and then.

## UPCOMING EVENTS

*Meetings, Workshops, Seminars, Short Courses*

**Dec. 13-17, 2004:** AGU Fall Meeting, San Francisco, CA

**Jan. 18, 2005:** SAHRA Executive Committee teleconference, 10 am. (*date tentative*)

**Feb. 7-9, 2005:** "Climate Change & Ecosystem Impacts in Southwest Forests and Woodlands" – Sedona Hilton – This workshop aims to make state-of-the-art climate and ecology research information relevant to on-the-ground application for decision makers, land managers and extension educators. See [ag.arizona.edu/extension/fh/](http://ag.arizona.edu/extension/fh/).

## COURSE ANNOUNCEMENTS

***Snow Hydrology – An Introduction to Physical, Chemical, and Biogeochemical Processes in Seasonally Snow-covered Systems***  
HWR 696F, sec. 3 (UA - Spring 2005)

The course covers the basics of snow formation in the atmosphere, distribution on the land surface, metamorphosis through the season, avalanche dynamics, water supply issues, and streamflow generation. It will meet several times in the first half of the semester, then convene for five days during spring break in the Jemez mountains of New Mexico, where students will get up close and personal with snow and participate in a snow survey of the Valles Caldera National Preserve. Space may be available for non-UA students and SAHRA faculty/researchers from other institutions. Contact Paul Brooks ([brooks@hwr.arizona.edu](mailto:brooks@hwr.arizona.edu)) for more information.

***Data Assimilation in Hydrology - Merging Data with Models***  
HWR696f, sec. 1 (UA - Spring 2005)

The aim of this course is to help students develop a strong understanding of the issues and concepts underlying the science and art of merging data with hydrologic models, and to review and critique recent developments in this field. You will gain a firm foundation in the Bayesian principles of assimilating information, how to implement this theory in the form of practical and efficient methods, and how to reflect uncertainty in the model predictions. For more details, go to [www.hwr.arizona.edu/696f/](http://www.hwr.arizona.edu/696f/) or contact Hoshin Gupta ([hoshin.gupta@hwr.arizona.edu](mailto:hoshin.gupta@hwr.arizona.edu)) or Yuqiong Liu.

## PEOPLE

We would like to hear from those of you outside the UA and from new students. And if you know of a SAHRA participant who did not receive this newsletter, please send his/her email address and name. If you have something to announce – honors, grants, research, new babies, etc. – please send your news to Mary Black at [mblack@sahra.arizona.edu](mailto:mblack@sahra.arizona.edu).

### New SAHRA Students for 2004/05

**Deirdre Brosnihan** began work in Fall 2004 on a MS degree in hydrology and water resources at the UA. She previously received a BS in environmental resource engineering from SUNY College of Environmental Science and Forestry in Syracuse, NY. Her research interests are urban water issues, including sustainable water resource development, greywater, and water reclaim. She is an RA for Gary Woodard.

**Jenny Druhan** is a new MS student at UA in Hydrology and Water Resources. She received a BS in environmental studies from the University of North Carolina at Asheville, with an emphasis on pollution control. She is studying salinization in the Hueco Bolson Aquifer under the guidance of James Hogan.

### Student and Faculty News/Milestones

**Hoshin Gupta**, Associate Director of SAHRA, has accepted a position as professor in the Hydrology and Water Resources Department at the UA, effective December 15. Hoshin has guided the organization and development of SAHRA's research efforts since its inception and is in large part responsible for the Center's success. His wise guidance and calm demeanor will be greatly missed at the Marshall Building. Although he is stepping down from his role of Associate Director, Hoshin will continue as co-leader of SAHRA's Integrated Modeling Macro-theme.

**Melissa Lopez**, who has served SAHRA well throughout her undergraduate years at the UA, is graduating with a BA in journalism in December 2004. That's great for Melissa, but potentially disastrous for SAHRA. Not to fear: beginning in January 2005 Melissa will be back working full-time at SAHRA as an Office Assistant Senior. You can send congratulations to Melissa at [lopezm@sahra.arizona.edu](mailto:lopezm@sahra.arizona.edu).

### Students Who Finished Ph.D.s, in 2003/04

Kudos to **Wolfgang Schmid**, who recently completed his Ph.D. dissertation, "A Farm Package for MODFLOW-2000: Simulation of Irrigation Demand and Conjectively Managed Surface-Water and Ground-Water Supply." Wolfgang officially graduated in August 2004 from the UA Dept. of Hydrology and Water Resources.

**Andrew Hinnell** receives his MS degree in Hydrology and Water Resources at the UA this December and is continuing on for a Ph.D. His thesis topic is "The Influence of TDR-Rod-Induced Flow Disruption on Measured Water Content During Steady-State Flow."

### Publicity/Honors

Congratulations to **Rosalind Bark** and **Arun Wahi**, both SAHRA-supported grad students at UA, who won first place in the Institute for the Study of Planet Earth's Second Annual Graduate Student Poster Competition in the social science and natural/physical science categories, respectively. Rosalind's poster was "Private Property Values and Riparian Corridors in Tucson, Arizona"; Arun's was "Quantifying Mountain Front Recharge in the San Pedro River Basin, Arizona, Using Isotopic Tracers." To view pictures of the winners and ISPE-Fest, visit [www.ispe.arizona.edu/events/ispefest/ispefest\\_04/ispefest\\_04.html](http://www.ispe.arizona.edu/events/ispefest/ispefest_04/ispefest_04.html)

## ADMIN NOTES

### Time To Update the Records!

OMS updates for all SAHRA participants are now overdue. If you have not updated your record regarding your personal information, papers, presentations, etc., please do so before you leave for the holidays. Your participation in this process is vital to the reporting and planning process.

All PIs for SAHRA projects are also required to update project reports through the OMS by December 13. Please contact your macro-theme leaders if you have questions about reporting requirements; technical questions related to the OMS may be sent to Ramon Vazquez ([ramon@sahra.arizona.edu](mailto:ramon@sahra.arizona.edu)) or Mary Black ([mblack@sahra.arizona.edu](mailto:mblack@sahra.arizona.edu)).



## Happy Holidays!

Have a safe and wonderful holiday break. Thanks for your contribution to a very successful year.

SAHRA Staff

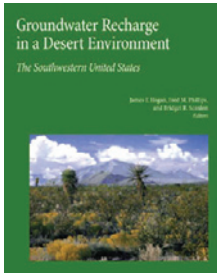


## CONTACT US!

Please let us know when you have news to share or a reason to brag. Students, let us know for example when you have completed your oral exam, defended your thesis/dissertation, or accepted a position in the real world (or even academia). Faculty members, are you offering a new course, hosting a workshop, leading a panel, editing a new journal? Too bashful to talk about your own accomplishments? Anonymous or second-party tips on newsworthy announcements will also be gratefully accepted.

## ANNOUNCEMENTS

### New Books



A new AGU monograph, *Groundwater Recharge in a Desert Environment: The Southwestern United States*, edited by James Hogan, Fred Phillips, and Bridget Scanlon, has

just been published. The volume contains chapters authored by the following present and former SAHRA researchers: Hogan, Phillips, Michelle Walvoord, Kyle Blasch, Ty Ferré, Dave Goodrich, Dave Williams, Russ Scott, Kevin Hultine, John Wilson, Huade Guan, Chris Eastoe, Ailang Gu, Austin Long, Chris Duffy, and Eric Small. It provides new perspectives and research on groundwater recharge, which is arguably the most difficult component of the hydrologic cycle to measure, particularly in arid/semi-arid regions, which exhibit extremely small and highly variable recharge fluxes. The volume lists at \$90, but is available to AGU members for \$63.

*Rainfall-Runoff Modelling in Gauged and Ungauged Catchments*, by Thorsten Wagener, Howard Wheeler, and Hoshin Gupta was just published by Imperial College Press (UK) and World Scientific (USA, \$60). This monograph presents the first extensive treatment of rainfall-runoff model identification in gauged and ungauged catchments. It is based on the results of a study on the identification of conceptual lumped rainfall-runoff models for gauged and ungauged catchments. A detailed problem analysis and an extensive review form the basis for the development of a MATLAB modeling toolkit consisting of two components: a Rainfall-Runoff Modeling Toolbox (RRMT) and a Monte Carlo Analysis Toolbox (MCAT).

SAHRA researchers may be interested in a new volume from CRC Press (Boca Raton, FL, Dec. 2004, \$119.95) *Economics and Ecological Risk Assessment: Applications to Watershed Management*, by Randall Bruins and Matthew Heberling.

The book describes studies in six U.S. watersheds where ecological and economic analyses were required to satisfy Endangered Species Act requirements, natural resource damage assessment, Clean Water Act permitting, and community development planning. The success of ecological-economic integration is examined for each study area. SAHRA postdoc Steve Stewart contributed to this volume.

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### Water News Watch Milestone

The 10,000<sup>th</sup> article was posted this month to Global Water News Watch. Congratulations are especially due to Louise Shaler, who has overseen this monumental effort the last three years. Please visit Global Water News Watch on SAHRA's website at [www.sahra.arizona.edu/newswatch/index.html](http://www.sahra.arizona.edu/newswatch/index.html) or subscribe to personalized email water news updates at [www.sahra.arizona.edu/newswatch/subscribe.html](http://www.sahra.arizona.edu/newswatch/subscribe.html).