

Ephemeral Flow

A NEWSLETTER ABOUT SAHRA

APRIL/MAY 2006

Welcome to the April/May 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. Your contributions and suggestions are always welcome. Please send items to Mary Black at mblack@sahra.arizona.edu.

FEATURES

International Hydrology Prize Awarded to Shuttleworth

In case you've been hiding under a rock or working in the field the past week and haven't heard the news, SAHRA Director Jim Shuttleworth has been awarded the 2006 International Hydrology Prize by the International Association of Hydrological Sciences. Shuttleworth, a UA professor of hydrology and water resources and atmospheric sciences, is only the sixth U.S. citizen to receive the prize in its 25-year history. It is awarded annually to an individual who has made an outstanding and practical contribution to hydrology on an international basis. Shuttleworth was cited "for his innovative, international leadership over more than thirty years, contributing to the growth of hydrology into a major discipline of Earth System Science."



Jim's work has produced new theories and methods in the field of natural evapotranspiration, and new understandings of the relationships among hydrology, climate, weather prediction, and ecology. An advocate of the direct application of hydrologic research in support of societal needs and a founding leader of Hydrology for the Environment, Life, and Policy (HELP), a joint initiative of UNESCO and the World Meteorological Organization, his collaborations and field studies have taken him to nearly every continent. We couldn't be more proud to have him as our director and colleague!

The prize is considered by many as the field of hydrology's greatest honor, and although it lacks an accompanying pot of cash, it has one considerable advantage: it's awarded in Paris in the springtime.

World Water Forum 2006

SAHRA was well-represented at the 4th World Water Forum in Mexico City in March. Attendees included Juan Valdes, Gary Woodard, Vince Tidwell, Anne Browning-Aiken, Kathy Jacobs, Bob Varady, and Susanna Eden. The week-long event included a massive exposition, a huge water fair, and day-long talks featuring 12 to 14 plenary sessions at a time, plus numerous special events.

UA was the only university represented, exhibiting at a combined booth for SAHRA, Sandia Labs, the Water Sustainability Program, WRRC, and Arizona Water Institute. Other U.S. representation in general was modest, consisting only of small booths from USGS and USAID. Many countries (particularly Japan, Spain, Netherlands, and other European nations) were represented by huge displays. Hundreds

UPCOMING EVENTS

May 18-19: SAHRA External Advisory Board meeting, Four Points Sheraton, Tucson

July 9-12: SAHRA-sponsored Scenario Development Workshop, IEMS Biennial Meeting, Burlington, VT. Contact Thorsten Wagener (thorsten@engr.psu.edu) for details.

October 11-13: SAHRA 6th Annual Meeting, DoubleTree Paradise Valley Resort, Scottsdale, AZ – **Save the date!**

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? Anonymous or second-party tips on newsworthy announcements are also gratefully accepted.



Jacobs and Woodard hype Arizona water programs at the WWF.

of multinational corporations and NGOs were represented as well. SAHRA's booth was located between the People's Republic of China and Norway, kitty-corner from the International Red Cross/Red Crescent.

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Some 8,000 people attended, including heads of state, princes (from Japan and Denmark), two Nobel Prize winners, and numerous Chiapas farmers.



Participants demonstrate at the WWF over the high cost of water.

Additional protesters tied up the downtown area, but were unable to get near the sprawling convention center, due to massive security measures and the fact that the center is strategically situated between the Hippodrome and a military facility.

PEOPLE

Students who finished degrees

Be sure to congratulate **Alison Williams** when you see her. She defended her thesis, "Educational Applications of Decision Support Simulations for Water Basins," and will receive her MS in hydrology and water resources from the UA in May. Her primary advisor is Kevin Lansey. Her post-graduation career plans are not yet firm, but in Feb. 2007, Alison plans to wed 2005 M.S. graduate Matt Baillie, who will enter the doctoral program in hydrology at NMT in fall 2006.

Advance kudos to **Jenny Druhan**, who hopes to (and we fully expect will) successfully defend her MS thesis, "Geochemical Analysis of Recharge and Salinization in the Northern Hueco Bolson Aquifer, El Paso, Texas," in April, in time for a May graduation. Jenny plans to go on for her Ph.D. this fall or the next. Her primary advisor is Tom Meixner, but she has also worked closely with and been advised and tormented by James Hogan.

After an illustrious career at SAHRA, **Jesse Roach** will be leaving UA in May, having completed all but his dissertation. Fear not: he will continue to work at Sandia National Laboratories at systems-level modeling of water resources in support of decision-making, a direct continuation of his research, and will have 20% time dedicated to writing the papers that will form his dissertation. He plans to complete the Ph.D. by Dec. 2006 or May 2007. Jesse's primary advisor is Kevin Lansey and he has worked closely with Vince Tidwell during his tenure as a Sandia Fellow.

George Kalli is also on track for a May graduation as the second success story in the M.Eng. program at UA. Later this month he will defend his project report for the Army Corps of Engineers' Anchorage office, "An Assessment of Dissolved Oxygen Levels in Alaska Small Boat Harbors," in lieu of a thesis.

New Staff

Earlier this year, **David Sinclair** joined the staff of the SAHRA Business Office. David is working half-time while pursuing a BA in business at the UA, and plans to continue on for a master's degree in education. He has worked in finance at the UA for over seven years. David serves as the Business Office point-of-contact for day-to-day processing of transactions on all SAHRA accounts. A belated but heartfelt welcome to David!

Bashar Abdul Jawad has been hired as a computer database specialist at UA, and will work on database projects related to the Arizona Hydrological Information System. Bashar received his B.S. from the University of Jordan and will receive an MS from the University of Maine in May 2006; both degrees are in computer science. He is working for SAHRA remotely and part-time from Maine until then, and will join us in the Marshall Building in mid-May. At the University of Maine, Bashar worked part-time as a Java developer for the Climate Change Institute, one of the premier institutes internationally

for Quaternary and climate studies.

SAHRA also welcomes **Peter Troch**, a faculty member who came to the UA Dept. of Hydrology and Water Resources in fall 2005. He received his Ph.D. in hydrology from the University of Ghent in 1993 and has been on a fast track to success ever since, serving as an assistant and associate professor at the same university, followed by six years as a full professor at the University of Wageningen. His research aims to improve understanding of catchment-scale hydrological processes through advanced measurement, modeling, and synthesis methods. Troch will supervise the development of the SAHRA Geo-Database (SGD) within the Integrated Modeling macro-theme. He also is a recipient of a WSP grant (see Grants).

Publicity/Honors

More Fellows among Us

Two students engaged in SAHRA research, **Carlos Soto-Lopez** of the UA, and **Alex Rinehart** at NMT recently learned that they have been awarded NSF Graduate Research Fellowships. This highly competitive program supports graduate students in the early stages of graduate study. The awards provide a stipend of \$30,000 per year for up to 3 years, plus tuition and fees, and a one-time \$1,000 international travel allowance. These awards bring distinction to two outstanding students and honor to both of their institutions. Congratulations, Carlos and Alex!

SAHRA News Goes Far and Wide

In the last two years, SAHRA published its first articles in *Science* and *Nature*; now we have made the front page of the *New York Times*! An article in the March 10 issue of the newspaper quotes Associate Director **Gary Woodard** on the drought that has been plaguing Arizona, setting new records for days without recorded rainfall, and resulting in a dearth of water resources for humans, wildlife, and native vegetation. According to Woodard, "People are sort of losing their grip." "No baby quail, no baby bunnies," he later lamented, presumably in a mutter.

RESEARCH & PRODUCTS

Integration Achieved, Scenarios Developed

Twenty-nine researchers and six stakeholders participated in SAHRA's integrated modeling and scenario development workshop March 30 and 31 in Socorro, New Mexico. The event was considered a great success by participants; a full report is available from Yuqiong Liu at yqliu@sahra.arizona.edu.



At the Socorro workshop, SAHRA scientists discuss and resolve their issues in the spirit of lively academic inquiry, aided no doubt by the proximity of a microbrewery. From left: Chris Duffy, Paul Brooks, Everett Springer, Steve "Wolverine" Stewart, Tom Meixner, James Hogan, and Hoshin Gupta.

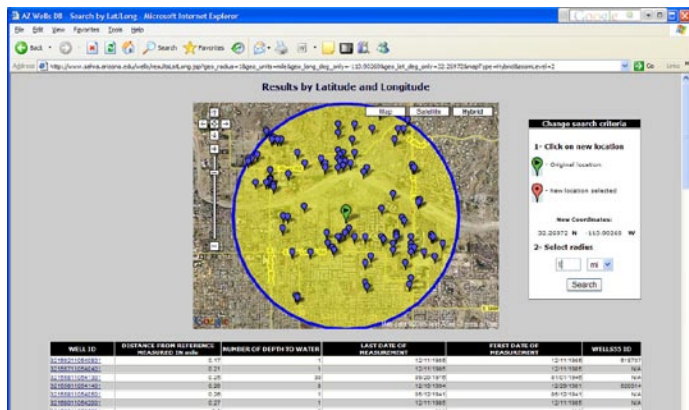
Wells Well Documented

SAHRA and ADWR are proud to announce the unveiling of a new public interface for ADWR's **Ground Water Site Inventory (GWSI)** database, the agency's main repository for statewide groundwater data. GWSI consists of field data that have been collected by personnel from the Hydrology Division or the U.S. Geologic Survey dating as far back as 1914. The information in GWSI is constantly updated by ongoing field investigations and through a statewide network of water level monitoring sites. GWSI data includes past and current well ownership, historic

water levels, water quality information, and some well construction information. The easy-to-use web interface developed by SAHRA Knowledge Transfer staff member **Ramon Vazquez** and graduate student **Guillermo Ponce-Campos**, features a stunningly attractive interactive map that can be searched numerous ways, including: latitude/longitude in decimals; latitude/longitude in degrees/minutes/seconds; well ID number; cadastral, or by clicking on the map. Check it out at www.sahra.arizona.edu/wells.

The GWSI project is the first installment of a larger **Arizona Wells Database**,

designed to help homeowners, water professionals and state agencies more easily locate well information. Next up: a web interface for ADWR's **Wells-55 Registry**, which contains information on all registered wells in the state, some 175,000 in number.



Screenshot of the GWSI web application, showing the location of wells in a two-mile radius of central Tucson.

GRANTS/LEVERAGING

New EPA Grant Announced

A team of SAHRA researchers from the UA and ASU recently received the terrific news that their EPA proposal, "Hydrologic Thresholds for Biodiversity in Semiarid Riparian Ecosystems: Importance of Climate Change and Variability," was approved for a three-year funding period, beginning in August 2006. Investigators are Tom Meixner (UA), Mark Dixon (ASU), James Hogan (UA), Sharon Lite (ASU), Kate Baird (UA), and Juliet Stromberg (ASU). This research will examine linkages between climate, hydrologic variability, vegetation structure, and ecosystem services in riparian ecosystems. The work will result in a transferable coupled model of hydrologic-vegetation processes that will support modeling of nonlinear responses to hydrologic change from climate or other causes. The investigators anticipate full funding of nearly \$850,000 for the project.

WSP Whispers "Yes!" to SAHRA

SAHRA researchers and staff at UA also fared well in this year's competition for competitive grants from the Water Sustainability Program (WSP). The following projects were funded:

- **Water Education Exhibits & Discovery Carts** - *Carla Bitter, Kyle Carpenter, SAHRA* – Support for development and construction of two stationary and two mobile water education exhibits at the Phoenix Zoo. (\$45,677)
- **Modeling Outdoor Residential Water Use** - *Bonnie Colby, Agricultural and Resource Economics* – A pilot study in the Tucson metro area to model the drivers of outdoor residential water demand, examining the housing structure, socio-economic, climatic, and environmental factors, such as native vegetation and non-residential vegetation. (\$40,111)
- **Developing a Volunteer Precipitation Monitoring Program for Arizona** - *Michael Crimmins, SWES, and Gary Woodard, SAHRA* – Support for

Grants, continued from previous page

Rainlog.org, a volunteer, citizen-based precipitation monitoring network that will provide observations to help natural resource managers make more informed decisions on water and land resources, while engaging the public as citizen-scientists. (\$34,062)

- **Groundwater Sources, Flowpaths and Residence Times in the Middle Verde River Watershed** - James Hogan, Tom Meixner, SAHRA and HWR - A suite of naturally occurring isotopic tracers will be used to constrain groundwater sources, flowpaths, and residence times in order to improve

the conceptual understanding of basin hydrogeology and better estimate recharge rates within the middle Verde River Watershed. (\$43,721)

- **Estimating Arizona's Water Reserves from Space-borne Gravity Observations** - Peter Troch, HWR - This project will use observations from NASA's Gravity Recovery and Climate Experiment (GRACE) satellites to estimate total water storage dynamics across the state of Arizona and predict water storage change up to 2010. (\$32,825)

ADMIN NOTES

UA Biz Info

SAHRA students, faculty, and staff at the UA will find the mysteries of business office transactions revealed on the SAHRA Intranet. Log in and click on "Administration," then "Business Office Personnel and Procedures." There you will find a listing of the areas of responsibility for the Business Office staff, along with detailed procedures and guidelines covering purchasing, travel, and check requests and reimbursements. Contact Mary Black if you have any problems accessing the information.

R & R

April Madness

Didn't do well in your NCAA office pool? Neither did we. Jesse Roach's girlfriend, a basketball novice and LSU fan, ran off with our loot. Here's a bracket to fill in that may be more relevant to our respective areas of expertise. We'll post the most engaging prediction that is faxed to 520-626-4479 or dropped in Mary's mailbox.

