
New Waves

Texas Water Resources Institute's E-Newsletter

Breaking news about water resources research and education at Texas universities

May 29, 2009

Graduate students receive water research grants

Texas Water Resources Institute (TWRI) recently funded 10 water-related research projects for graduate students from Texas A&M University, Rice University, Texas Tech University, and The University of Texas at El Paso.

The students were awarded up to \$5,000 to begin, expand or extend water-related research projects. The institute funds the graduate student projects with funds provided by the U.S. Geological Survey (USGS) as part of the [National Institutes for Water Research](#) annual research program. TWRI will publish articles and reports about the progress of each project. Graduate students funded and their projects are:

- **Thomas Abia** (advisor: **Dr. Yongheng Huang**), Texas A&M University—In Situ Groundwater Arsenic Removal using Iron Oxide Coated Sand;
- **Joy Archuleta-Truesdale** (advisor: **Dr. George Di Giovanni**), University of Texas at El Paso—Sources and Risks of Waterborne Pathogens in the El Paso del Norte Region;
- **Deborah Carr** (advisor: **Dr. Todd A. Anderson**), Texas Tech University—Biotransformation of Pharmaceuticals and Personal Care Products (PPCPs) at an Effluent Land Application Site;
- **Dex Dean** (advisor: **Dr. Bradford Wilcox**), Texas A&M University—Ecohydrology of Forested Wetlands on the Texas Gulf Coast;
- **Takele Dinka** (advisor: **Dr. Cristine Morgan**), Texas A&M University—Influence of Land Use and Terrain on Surface Hydrology in Shrink-Swell Soils;
- **Adcharee Karnjanapiboonwong** (advisor: **Dr. Todd A. Anderson**), Texas Tech University—Occurrence of Pharmaceuticals and Personal Care Products (PPCPs) at an Effluent-dominated Wastewater Application Site: Estrogens, Triclosan and Caffeine;
- **Andrew Leidner** (advisors: **Dr. M. Edward Rister** and **Dr. Ronald Lacewell**), Texas A&M University—Economic Analysis of Proposed Seawater Desalination Facility in Brownsville, TX;
- **Israel Parker** (advisor: **Dr. Roel R. Lopez**), Texas A&M University—Role of Free-ranging Wildlife in the Deposition of *Escherichia coli* into a Texas River Floodplain;
- **Aarin Teague** (advisor: **Dr. Phil Bedient**), Rice University—Lake Houston Watershed Water Quality Prediction System;
- **Yujin Wen** (advisor: **Dr. Joe T. Cothren**), Texas A&M University—Regulated Deficit Irrigation Application and Cotton Production in SW Texas.

For more information about the grant program and students' projects, go to <http://twri.tamu.edu/usgs.php>.

Graduate students invited to apply for Mills Scholarship

Texas Water Resources Institute (TWRI) announces the request for applications for Mills Scholarships. The scholarships, funded by the W.G. Mills Endowment, fund Texas A&M University graduate students with demonstrated interest in fields of study that have the potential to help Texas solve future water problems. The permanent endowment was established by Mills Cox, former chair of the Texas Water Development Board.

The deadline for applications is **June 18**. The one-year \$1,500 scholarships are payable at the beginning of the 2009-10 academic year.

For more information on the applications, visit <http://twri.tamu.edu/mills-rfp.php> or contact **Cecilia Wagner** at 979.458.1138 or cecilia@tamu.edu.

TWRI project manager authors *Ecohydrology* report

Lucas Gregory, a project manager at Texas Water Resources Institute (TWRI) and former student in the [Water Management and Hydrological Sciences](#) program at Texas A&M University, recently published the report, "Large-scale rainfall simulation over shallow caves on karst shrublands."

The report, published in *Ecohydrology*, reveals results of research on recharge dynamics in the karst Edwards Aquifer Recharge Zone. Karst areas are typified by sedimentary rocks exhibiting solutionally enlarged openings, such as caves and sinkholes, and have the ability to rapidly transmit water from the surface to underlying aquifers.

Because recharge rates in karst regions may be affected by vegetation cover, Gregory and a team of researchers, sought to understand the interactions between recharge and vegetation in the karst landscape north of San Antonio.

The report presents the results of a set of hillslope-scale rainfall simulation experiments conducted within a juniper-oak woodland over a shallow cave instrumented for drip-rate monitoring.

The findings of this study provide insights into the importance of canopy interception during runoff-producing events, the nature and relative magnitude of rapid recharge, and the interplay between recharge and surface runoff.

The report is also co-authored by **Dr. Bradford Wilcox**, **Bev Shade**, **Dr. Clyde Munster**, **Dr. Keith Owens**, and **George Veni**.

Complete text of the report can be found online at <http://www3.interscience.wiley.com/journal/121641233/abstract>.

AgriLife Extension wins environmental excellence award

Members of the Rio Grande Valley Nutrient Management Education project recently received the [Texas Environmental Excellence Award](#) (TEEA) in Agriculture for their soil testing campaign in the Rio Grande Valley.

Dr. Mark McFarland, [Texas AgriLife Extension Service](#) soil fertility specialist and professor in Texas A&M University's [Department of Soil and Crop Sciences](#); **Dennis Coker**, AgriLife Extension program specialist; AgriLife Extension county agents **Brad Cowan**, **Omar Montemayor**, and **Dr. Enrique Perez**; and **Dr.**

Tony Provin, AgriLife Extension soil chemist and associate professor in the Soil and Crop Sciences Department, were honored for the project, which included a soil testing campaign that has reduced the use of nitrogen by more than 2 million pounds and cut phosphorus use by 3 million pounds.

Recommended by a Blue Ribbon Committee of environmental experts from public and private industry, a TEEA honors individuals, businesses, or organizations that have created successful programs that conserve natural resources, reduce waste, and prevent pollution. Created by the Texas Legislature in 1993, the awards program reflects the goals of the [Texas Commission on Environmental Quality](#): to protect Texas human and natural resources and ensure clean air, clean water, and the safe management of waste.

TCEQ and TSSWCB release annual report on water quality in Texas

The [Texas Commission on Environmental Quality](#) (TCEQ) and the [Texas State Soil and Water Conservation Board](#) (TSSWCB) recently released their annual report on Texas water quality, "Managing Nonpoint Source Pollution in Texas–2008." The report summarizes the state's activities to collect data, assess water quality, implement projects that reduce or prevent nonpoint source (NPS) pollution, and educate and involve the public in maintaining the quality of water resources for current and future generations, according to a TCEQ news release.

Highlighted in the report are examples of successful reductions of NPS pollution. An erosion control project used composted manure from dairies in the North Bosque and Leon River watersheds to help reclaim a quarry, reducing the nutrient load downstream and reducing runoff where it was applied by 98 percent over a two year period. The city of Denton developed a watershed protection plan that will reduce sediment into Hickory Creek by an estimated 61 tons per year.

The full report is available on the Web at www.tceq.state.tx.us/compliance/monitoring/nps/mgmt-plan/annual-reports.html. The TCEQ and the TSSWCB jointly administer the federally funded program.

Irrigation study to examine "smart" home irrigation units

New "smart sensor" irrigation technologies hold the promise of preventing over-watering of home lawns, athletic fields and public parks, said a [Texas AgriLife Extension Service](#) expert.

Over-watering not only wastes water, energy and money, it may also encourage several turf diseases and causes nutrient leaching and runoff, said **Dr. Karl Steddom**, AgriLife Extension plant pathologist.

A new study, conducted by Steddom and **Dr. Lloyd Nelson**, ryegrass breeder with [Texas AgriLife Research](#), will compare the effectiveness of different irrigation systems.

Steddom and Nelson are conducting the study at the [Texas AgriLife Research and Extension Center at Overton](#) in East Texas. The East Texas Irrigators Association is cooperating with the study.



Dr. Karl Steddom, Texas AgriLife Extension Service plant pathologist, installs a moisture sensor at an irrigation test plot. (Texas AgriLife Extension Service photo by Robert Burns)

"Water conservation is a big issue in Texas," Steddom said. "Legislation is coming that will require professional turf grass managers – and eventually homeowners too – to install smarter irrigation systems."

Though the study is being done in East Texas, the results should be applicable to much of the state, Steddom said.

"Turf irrigation demands in East Texas are highly variable," he said. "Our sandy soils and intermittent rainfall patterns result in frequent fluctuations between periods of low water demand and high water demand. This makes this location an ideal or 'worst case scenario' to evaluate these new approaches to irrigation scheduling."

Nelson, who has developed and released several successful turf grass varieties, including Axcella, Axcella 2 and Panterra, said there is a real need for data on water usage by cool-season grasses.

"We (typically) overseed ryegrass in the fall, and it's water-intensive," Nelson said. "We're particularly interested in the moisture requirements of the ryegrass during the colder winter months. We'd like to see how little water we can apply to an overseeded lawn and still maintain a high-quality lawn."

Todd Magatagan, past president of the East Texas Irrigators Association, said professional landscapers and irrigation installers are some of the most important stakeholders in the research. As smart controllers become more widely used, it will be the commercial installers like himself who will need to know which products and technologies prove to be the most reliable for customers.

"We're in phase one of this project," Magatagan said. "Phase one creates a baseline, but phase two will run actual products that are on the market and give us an independent testing method where this type of intelligent controller or this one works better."

In commercial systems, the sophistication of off-the-shelf smart controllers ranges from those that try to estimate evapotranspiration to those that actually measure soil moisture, Magatagan said.

"The number of (commercially available) smart controllers is growing every year," Magatagan said. "(At this time) we expect to be testing about a dozen smart-controller systems."

East Texas Irrigators Association completed installation of the test plots at their expense and paid for the maintenance of the scientific weather station that calculates evapotranspiration. A grant from the Texas Turf Research, Extension and Education Endowment paid for the sensors, equipment and water meters. The Texas Nursery and Landscape Association also helped fund the project, Steddom said.

Results from phase one should be available in early 2010; phase two results in late 2010 or early 2011, Steddom said.

Magatagan emphasized that learning which systems work better is not only good business, it makes environmental sense.

"Watering with smart-controller systems can save up to 50 percent of water used," he said.

(Story from AgNews)

New Mexico Water Research Symposium calls for presentation, poster abstracts

Abstracts for presentations and/or posters at the 2009 New Mexico Water Research Symposium, set for **August 11** at New Mexico Tech in Socorro, New Mexico, will be accepted through **July 3**. Abstracts related to any water research and management topics will be considered, but abstracts that exhibit multi-disciplinary work are strongly encouraged. Abstracts must not exceed 250 words and must be submitted online via the New Mexico Water Resources Research Institute's homepage at <http://wrri.nmsu.edu/conf/tc09/symposium.html>.

The symposium registration fee is \$20. The fee will be waived for students presenting an accepted paper or poster. The fee includes lunch, breaks, and a notebook with abstracts. Registration is online via the WRRI website.

This year's conference includes a special symposium devoted to water resources management modeling for New Mexico. The session will include invited presentations as well as presentations volunteered through the call for abstracts.

For more information, please go to WRRI's Web site <http://wrri.nmsu.edu/conf/tc09/symposium.html>.

USGS creates Karst Web site

[The U.S. Geological Survey](http://water.usgs.gov/ogw/karst/) (USGS) has compiled all of its karst-related resources into one extensive Web site. At <http://water.usgs.gov/ogw/karst/>, users can find research publications, data, and key contact information, as well as an interactive map of all the karst aquifers in the country. The site also provides a variety of photographs of karst aquifers, which are a vital groundwater resource across the country.

New Publications/Papers

[Lake Granbury and Bosque River Assessment Final Scientific/Technical Report](#), C.A. Jones, Texas Water Resources Institute Report TR-350, 2008

The "Texas A&M University – Lakes Granbury and Waco, and Bosque River Assessment" project was developed to address two separate water quality issues in Central Texas. Lake Granbury and the Bosque River both serve vital roles in the Brazos River watershed. Lake Granbury is a reservoir constructed on the main stem of the Brazos River in Hood County, Texas, and provides a potable water supply for over 250,000 area residents, cooling water for a natural gas fired and a nuclear power plant, vital flood control for the city of Waco and a critical economic stimulus for surrounding areas. The Bosque River, also in the Brazos River watershed, plays a vital role in Central Texas as well; it feeds Lake Waco and supplies water for 200,000 Central Texans. Each area of the project focused on addressing specific water quality issues in a specific water body, but each will provide valuable information that can be used to correct water quality concerns in other watersheds with similar problems. Ultimately, this project will result in improved water quality for consumptive, recreational, and industrial uses, and will help to sustain the economic stimulus resulting from these water bodies.

TWRI Water Resources Training Courses

<u>WinEPIC Training Workshop</u>	June 2-4, 2009
<u>SWAT for Beginners</u>	June 8-9, 2009

Advanced Data Processing for ArcSWAT	June 10, 2009
SWAT for Advanced Users	June 11-12, 2009

New Waves is an e-mail newsletter of [Texas Water Resources Institute](#), part of [Texas A&M University College of Agriculture and Life Sciences](#), [Texas AgriLife Research](#), and [Texas AgriLife Extension Service](#). **New Waves** publishes timely information about water resources news, results of projects and programs, and new water-related research projects, publications, papers and faculty, at universities in Texas. If you have information for possible inclusion in **New Waves** please e-mail **Leslie Jordan** at lhjordan@ag.tamu.edu, or call 979.862.7139, and include your contact information. All submissions may be edited for grammar and style.

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