



Aqua Clara

**Dinner Forum at Sagecreek

A Publication of the Graduate Program of Hydrologic Sciences

Volume 17, Issue 1

Fall 2007

University of Nevada, Reno
Statewide • Worldwide



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SAIWI Drills Wells in Africa

By Marcy Kamerath and Andie Gehlhausen

At the end of a 2 day plane pilgrimage, and 3 day jumbling jeep ride a team of 5 graduate students arrived with tired but eager eyes in the remote desert village of Ekwar, on the shores of Lake Turkana in Northern Kenya. The student members of SAIWI (Student Association for International Water Issues), accompanied by American and Kenyan engineers and mission workers had work to do! The mission of the 2007 SAIWI Africa Trip: To manually drill wells that would supply a minimum of 1000 people with a clean, reliable water source. The remoteness of Ekwar, limited manpower, and ferocious heat made working conditions difficult. After

5 days of drilling, the first borehole collapsed as pipe was being set. A second borehole was hastily begun. On the second to last day in Ekwar, 13 hours and 47 feet later, the freshwater aquifer was reached and casing successfully put into place. The development of the borehole and pump installation were not completed during SAIWI's stay but the site awaits a follow up from Neema Scott of Brown University, who was trained in the manual well drilling method from SAIWI and will be working in Kenya for an extended period of time. (Continued on page 10)



Harmony Farnsworth, Andie Gelhausen, Jeremy Rivord, Kathy Fitzgerald (Volunteer Engineer), Breann Westfall, and Marcy Kamerath

In Remembrance:



RON PETERSEN

Ron Petersen, 60, passed away unexpectedly in Reno on October 2 of a pulmonary embolism. Born in Estherville, IA, he earned his first masters degree in geophysics in

Ron Petersen working with SAIWI members in Bolivia

New York and then moved to Reno in 1990, where he earned a second masters degree in hydrogeology at UNR. He combined his skills, a strong faith, and a desire to serve people by helping poor communities in Africa use simple technology to dig wells for clean drinking water. He also co-founded the charitable organization International Development Missions, which built a

medical clinic in Kenya. He was an active member of the Northern Nevada chapter of Cursillo, the Sparks Kiwanis Club and the Sierra Club. Ron remained active in the Hydrologic Sciences Program at UNR, co teaching a geophysics and well drilling class and accompanying students with SAIWI on international projects. He is greatly missed.

Obituary thanks to Reno Gazette Journal

Director(s) Corner



“I can assure everyone that the rewards of serving our outstanding group of students are truly worth the investment!”

Part I

Written by JJ Warwick

Speaking on behalf of Dr. Greg Pohll and myself (Dr. John J. Warwick), it is an honor for us to serve the Graduate Program of Hydrologic Sciences (GPHS) as Associate Director and Interim Director, respectively. For the first time in our program's history, UNR has graciously funded the position of Associate Director at the level of 0.25FTE (a little more than one day per week). My service level is also one day per week which I am spending on UNR's campus (LMR 265) Monday and Wednesday afternoons, plus of course Friday late afternoon for our colloquium series.

Greg and I have developed and are now implementing an "Action Plan" for this year. General aspects of this plan include increasing communications both within our program and outward to the larger UNR academic community. Attendance at our first two faculty meetings this fall has been outstanding. Our students have also "answered the call" for greater involvement! I have now met twice with Chairs of UNR's participating departments and our dialog has proven to be quite helpful.

The GPHS is also considering our future reporting structure, with the option of continuing to report to Dr. Marsha Read (Associate Dean, UNR Graduate School) or changing to Dr. Mike Collopy (Director, UNR Academy for the Environment). Dr. Collopy made a presentation to our faculty and students earlier this fall, outlining the functionality of the Academy and answering a wide range of questions. The GPHS voting faculty (faculty advising one or more students in our program) will

indicate their preferences by the end of this fall semester, with the vote being a recommendation from our program to UNR's Provost.

The Directors' Action Plan also calls for conducting a "transformative dialog" regarding the future of our program. The idea is to consider fundamental changes that might propel the program forward in significantly positive ways despite the current and projected climate of limited resources. The current discussion topic is focused upon the possibility of creating the first Nevada System of Higher Education (NSHE) statewide program in hydrologic sciences. Such a program would take full advantage of resources (e.g., faculty, courses, and laboratories) from DRI, UNLV, and UNR. There is no question that implementation will have many challenges. The real question is whether our faculty and students will decide if such a path is more desirable than others. My goal is to have our program make a general determination of path during the spring semester since this will likely inform the process of considering our next permanent Director.

Finally, as noted above, our program will need to make a recommendation to Dr. Marsha Read by the end of the spring semester regarding our next permanent Director since my term ends June 30, 2008. Several GPHS faculty have expressed a strong desire to conduct another national search, however current NSHE budgetary constraints have precluded such action at this point in time. We will therefore need to consider perhaps an internal rotational model like that used by other interdisciplinary programs. I am optimistic that several highly qualified and dedicated GPHS faculty will consider such service. I can assure everyone that the rewards of serving our outstanding group of students are truly worth the investment!



Part II
Written by
Greg Pohll

I would like to introduce myself as Associate Director of the Graduate Program of Hydrologic Sciences. I would first like to say how excited I am to serve in this position and what a pleasure it is to have many fine new students with us this year. As an alumnus of the program, I would like to encourage faculty, students, and alumni to become involved and take advantage of the offerings the program has. I can honestly say that my involvement in the program as a student, and my continued participation as a faculty member have provided me with both success and satisfaction.

I would also like to share with you a brief description of my background. The primary concentration of my research has been in the area of numerical simulation of hydrologic systems. I have focused on the evaluation of complex hydrologic systems which require tools from the traditionally fragmented fields of surface water hydrology, groundwater hydrogeology, and statistics. I am specifically interested in the development and application of numerical models that allow the end users to better understand the system and to make decisions within an uncertain environment. I try to incorporate the knowledge gained from my research endeavors into the classroom. This year I am teaching Groundwater Hydrology with Dr. David Prudic and the Hydrology seminar with Dr. Laurel Saito. Last year I taught Contaminant Transport and I regularly teach Groundwater Modeling. I also enjoy mentoring graduate students. I am currently advising two Ph.D. students (Margaret

“I encourage the faculty, students, and alumni to stay involved in these discussions so we can remain as a top-ranked program in the nation.”

Shanafield and Justin Huntington) and one M.S. student (Breann Westfall) and look forward to working with other graduate students on their research.

As the Associate Director my duties include organizing DRI teaching assignments, facilitating speakers for the colloquium series and assisting in the management of daily operations of the program. We have already had some great speakers this year and I hope that you all look forward to and attend the future events. It is important to thank our sponsors including HDR, McGinley and Associates, Desert Research Institute, and our Interim Director Dr. John Warwick. As most of you should know by now, the Graduate Program of Hydrologic Sciences has launched its redesigned web site (www.hydro.unr.edu). Please take a moment to visit the site and see the fresh new look and discover how easy it is to use.

This is an exciting time for the Program. Discussions are ongoing about a statewide program in hydrology, whether or not to join Academy for the Environment, and further discussions about a permanent director of the program. I encourage the faculty, students, and alumni to stay involved in these discussions so we can remain as a top-ranked program in the nation.

Finally, I would like to offer my assistance and availability to you in any way that I can. I always have an open-door policy and you can find me in my UNR office (LMR 265) on Tuesdays and Thursdays, and at DRI during the remainder of the week. Please don't hesitate to stop by with questions, comments, suggestions or just to say, "Hello."



AWRA Student Chapter Revives!

By Jeremy Rivord

The UNR student chapter of the American Water Resources Association, or AWRA, has been going through a renaissance this fall semester. After a stint of relative inactivity, AWRA has regrouped and is attempting to unite UNR students who are interested in water resources in a relaxed social setting. Concession sales at UNR football games have helped to raise funds for the group that will finance future AWRA activities. Recently, AWRA organized a field trip to the Truckee Meadows Water Reclamation Facility (TMWRF) with 12 UNR students attending. The microbial processes of water reclamation employed by TMWRF and the technology behind the processes was a fascinating experience. It was encouraging to learn that treated water leaving TMWRF and entering the Truckee River was of a quality better than most treated water in America.



AWRA Student Members on the TMWA field trip.

Future events include one last football game, a potential field trip to the Steamboat geothermal plant, Truckee Meadows Water Authority, and even rock hounding/hot springing later this spring. Also stay tuned for the annual AWRA ski trip that is currently scheduled for February 24, 2008. Those who have so graciously helped work at the football games will receive their payment during this planned skiing field trip.

UNR SAIWI Photo Exhibit

A PICTURE SAYS A THOUSAND MILES....

When: December 2nd - December 31st, 2007

What: Photography of work and travel in Haiti, Panama, Kenya, and more on exhibit and for sale!

Exhibit Event: December 12th, 2007. From 6:00 to 8:00 p.m. (Free wine and appetizers)

Where: La Bussola Art Gallery
252 W 1st St. #40 (b/w Arlington & West St.), Reno, NV 89501.

Part of photo sales at La Bussola will be donated to SAIWI to send students to the world and purchase instruments necessary to improve water resources issues.

Student Association for International Water Issues

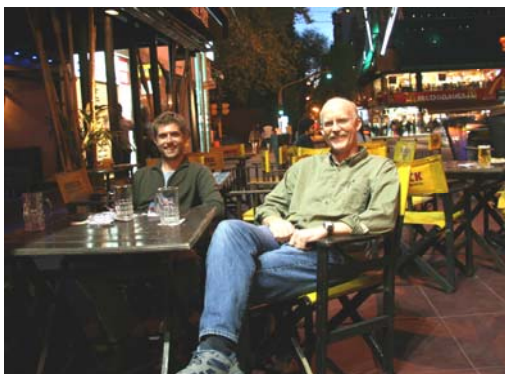
By Harmony Farnsworth

The Student Association for International Water Issues, SAIWI, is an organization unique to the University of Nevada, Reno. SAIWI was founded by students in the Graduate Program of Hydrological Sciences in 2000, and has worked on 12 sustainable water projects in 7 developing countries. SAIWI's most recent accomplishment took place in Kenya and Uganda this last summer, where we manually drilled water wells. In addition to remediation of water issues in other countries, SAIWI also provides a forum for students to discuss and learn more about these international water issues. We encourage students from all disciplines to join and attend our meetings every first and third Thursday on campus in LMR 253 at 5pm.



VISIT www.SAIWI.org for more info!

Hydro Student Travels to Argentina for Patagonian Dust Conference



Dan Pasteris and his adviser Joe McConnell hanging out in Buenos Aires

By Dan Pasteris

After touching down in Buenos Aires, Argentina with my Spanish dictionary in hand, I spent five action packed days in the big city, before flying south to the serene coastal setting of Puerto Madryn for the Multidisciplinary Workshop on Southern South American Dust. Highlights from Buenos Aires were tango, a rousing soccer match, great steak dinners with fine red wine for ~\$10 US, friends at the hostel, and the night life that starts at about midnight (once was enough for me). Puerto Madryn offered a chance to slow down the pace for a few days and see some fantastic wildlife before the conference began. I saw all sorts of interesting animals at very close range, including southern right whales, sea lions, elephant seals, and Adelaide penguins. The conference was attended by about 50 scientists

and students from ten countries who presented their research concerning the generation, transport, deposition, and climatological impacts of dust from the Patagonian desert. The dust is important because it affects the radiation properties and cloud behavior in the atmosphere, and is a source of limiting nutrients to the open ocean. Changes in the flux of limiting nutrients can impact the carbon cycle by affecting how much CO₂ is metabolized and exported to the deep ocean carbon sink.

My adviser and Hydro Program faculty member Dr. Joe McConnell of the Desert Research Institute presented his research regarding dust in an Antarctic ice core. He has demonstrated that the 20th century doubling of the dust concentration in the ice is strongly correlated with temperature and land use for sheep grazing in the Patagonian region. These results indicate that the ~ 1°C rise in southern hemisphere temperature during the 20th century and land use change have led to increased dust deposition in western Antarc

tica and the Southern Ocean, as well as a higher concentration of dust in the atmosphere. Joe points out that that this anthropogenic increase in dust generation has likely affected the productivity of the Southern Ocean and the atmospheric radiation balance of the region.

Aside from talking about dust at the conference, we also talked about dust while drinking cervezas, and while doing some whale watching. U.S. politics was also a popular topic of conversation. We even explored some large dust emitting sand dunes on a quaint sheep ranch nearby. In sum, I had a nice time full of new experiences, expanding both my scientific and cultural horizons. Viva Argentina!



Conference attendees exploring a dust source near Puerto Madryn, Argentina. The ranch owner had an incredible collection of hundreds of arrowheads that have been found in desert pavement,

New Students Fall 2007

RAYSA ROQUE

I am from San Juan, Puerto Rico; I just finished my undergraduate B.S. in May 2007 Environmental Sciences from the Universidad de Puerto Rico, Recinto de Rio Piedras. I currently work in the Dendrolab in the Geography Dept. under Dr. Franco Biondi. I am interested in doing my thesis in soil-fire-water interactions. I recently experienced my first snowfall and I am looking forward to my first "white winter" here in the states. I am very excited about my upcoming semesters here at UNR and I look forward to having many more great, brand new experiences in the time to come.



NICHOLE CUTLER

Nicole Cutler was born August 6th 1973 in San Carlos, CA, where she lived the first 20 years of her life. She attended Presentation High School, rode horses competitively and worked as a life-guard. After high school she enrolled in San Jose State University where she swam and studied nutrition. In 1995 she transferred to Colorado State Univ. and majored in chemistry although her ever inquisitive mind lead her to within a few credits of earning a second major in geology, and a teaching certificate. While living in Ft. Collins she discovered the endless recreational potential of the mountains and the desert, climbing (rock and ice), mtn. biking, road biking, backpacking all the while maintaining her career as a NCAA division I swimmer and playing water polo. When Nicole graduated from CSU she was courted by numerous pharmaceutical companies but turned several job offers down to pursue a job with the Zigzag Inter-agency Hotshots fighting wildfires. Nicole spent the next five years working for Hotshot crews but always planned on returning to school to pursue a Master's degree. In her last year working for the USFS Nicole was trained in ArcGIS and compiled a comprehensive history of fires on the Humboldt-Toiyabe NF.

Nicole has traveled throughout Nepal, Southeast Asia and South America and hopes to use an M.S. in hydrology to work/study abroad. She is an accomplished Nordic and Telemark skier, has completed the Elk Mtn. Grand Traverse, (a forty mile endurance ski race) and has skied The Great Race several times. This past summer she worked as an intern for Washoe County's Water Resource Dept. She is married and the mother of three year old Emily Jeanne and one year old twin boys, Rowdy and Sawyer. She is very excited to be a part of the outstanding hydrology program here at UNR.



JON CHEEK

I am Jon Cheek and am a new Masters student in the Hydrology program. I received my B.S. in Environmental Sciences in 2003 from The Evergreen State College in Olympia, WA. Since then, I have worked for a private environmental consulting company based just outside of Portland, OR. I mostly performed stream, fish, water quality, and bio-monitoring surveys within freshwater ecosystems throughout the Pacific Northwest. This work enhanced my appreciation and understanding of land use impacts on aquatic ecosystems and hydrologic processes. Thus, this is why I am very excited to be a new member of the Hydrologic Sciences program here at UNR. I look forward to meeting and working with those associated with the program.

JULIAN SCOTT

Hello y'all, my name is Julian Scott; I have just finished my first semester in the Hydrology Graduate Program here at UNR and I am looking forward to the coming year. I recently completed my B.S. degree at Northland College in Ashland, WI. I love water. What else can I say? This love of water comes from my childhood, growing up in the northern Great Lakes region where the water is clean and plentiful. I am focusing on the hydrology and chemistry of surface waters for my thesis; however, I know that this is just the beginning! Cheers to Aqua Clara!



MEGAN BRADLEY

My name is Megan Bradley and I am a new M.S. student in hydrogeology. I grew up in a small town outside of Albany, NY and I miss the rain. I got my B.S. in Geology and Environmental Sciences from SUNY Cortland. Much of my undergraduate research dealt with flow of surface water and response to storm events in small first order streams in Central NY, as well as extensive field work in geology. I also have gotten to work measuring trace gases in ice cores from Antarctica. My hydro interests include integrating geology and groundwater flow, as well as how water resources might change as climate changes.

MARK HAUSNER

Hi! I'm Mark Hausner, and I'm a new student this year in the Graduate Program of Hydrologic Sciences. It's been a long time since I've been in school, but I'm really happy to be back in a program I'm enjoying.

I grew up (mostly) in Baltimore, Maryland, and got my BS in Civil and Environmental Engineering from Cornell University in 1997. After I finished my undergrad, I went to work for a startup company called Bay-Saver Technologies, in Mount Airy, Maryland. BaySaver manufactures physical separators and media filters to improve the quality of urban storm water runoff. I left BaySaver in 2002, and landed in Reno, where I began a volunteer position through the Nevada conservation Corps working with the Washoe-Storey Conservation District. After the year-long program was finished, I stayed on for another year as District Manager, then returned to the stormwater industry, doing consulting work for a few clients. Aside from working, I've traveled whenever I could and somehow acquired a couple of dogs and a real fondness for northern Nevada.

At UNR, I'm working with Amy Childress and Scott Tyler on the use salt gradient solar ponds to collect and store energy in order to drive thermal desalination processes. See you around.



RON PARRATT

Well even though I grew up in Reno I am one of the new students in Hydrologic Sciences program here at University of Nevada, Reno. I graduated in 2003 with a bachelor's degree from Purdue University in Philosophy. After this I moved to the Phoenix Arizona area and worked in middle management and as a roughneck

for a drilling company before returning to school to pursue a master's degree. I enjoy skiing, backpacking, camping, pretty much most outdoor activities, and my family.

DAN STUCKY

My name is Dan Stucky and I am a first year master's student in the hydrology program at UNR. I was born and raised in Spokane, Washington. I attended the University of Kansas on a baseball scholarship and graduated with a B.S. in Civil Engineering. After graduation my wife, a Reno native, and I decided to return to her hometown and start our professional careers. For the past year and a half I have worked for CFA, a local multi-disciplinary consulting firm, as a civil designer. Through my work on various civil engineering projects at CFA, I have developed a passion for hydrology and a desire to further my knowledge in this field. After learning of UNR's prestigious Hydrology program, I jumped at the chance to continue my education while continuing to work full-time at CFA. My advisor is Dr. Keith Dennett and my interest is in surface water. I have really enjoyed experiencing all the outdoor activities that Reno has to offer and look forward to meeting more people in the hydro department.



Welcome to ALL our New Students:

ZACH JOHNSON * BRITT BERGER*
MATTHEW MILLER* DAVID RIOS* APRIL
SHACKELFORD



Recent Publications

Biondi, F., T.J. Kozubowski, A.K. Panorska, and L. Saito. A new stochastic model of episode peak and duration for eco-hydro-climatic applications. **Ecological Modelling** in press .2007

Biondi, F., S.D.J. Strachan, S.A. Mensing, and G. Piovesan. Radiocarbon analysis confirms the annual nature of sagebrush growth rings. **Radiocarbon** 49(3): in press. 2007.

Biondi, F., and S. Strachan. Spatial and temporal patterns identified in a *Pinus monophylla* tree-ring network. Abstracts of the 103rd Annual Meeting of the Association of American Geographers, Paper Session on "Dendrochronology II", San Francisco, CA.

Brown S, Saito L, Knightes C, Gustin M. 2007. Calibration and evaluation of a mercury model for a western stream and constructed wetland. *Water, Air, and Soil Pollution* 182(1-4):275-290.

Carroll EM, Miller WW, Johnson DW, Saito L, Qualls RG, Walker RF. 2007. Spatial analysis of an ash/sediment flow following a Sierran wildfire. *Journal of Environmental Quality* 36:1105-1111.

Carroll, R.H., Pohll, G.M., Earman, S. and Hershey, R.L. (2007). Global optimization of a deuterium calibrated, Discrete-State Compartment Model (DSCM): application to the eastern Nevada Test Site. *Journal of Hydrology*. 345(3-4):237-253.

Di Filippo, A., F. Biondi, K. Cufar, M. de Luis, M. Grabner, M. Maugeri, E. Presutti Saba, B. Schirone, and G. Piovesan. Bioclimatology of beech (*Fagus sylvatica* L.) in the Eastern Alps: spatial and altitudinal climatic signals identified through a tree-ring network. **Journal of Biogeography** 34(11): 1873-1892 . 2007.

Lutz, A., Thomas, J., Pohll, G., McKay, A. *2007. Groundwater resource sustainability in the Nabogo Basin of Ghana. *Journal of African Earth Sciences*, 49, (2007), 61-70.

Monnar, R., P. Hartsough, S. Poulson, K. Snyder, and F. Biondi. Diurnal Cycles of Leaf Water Stable Isotopes in Two Pine Species. Abstracts of the 103rd Annual Meeting of the Association of American Geographers, Paper Session on "Dendrochronology II", San Francisco, CA.2007

Saito L, Miller WW, Johnson DW, Qualls RG, Provencher L, Carroll E, Szameitat P. 2007. Fire effects on stable isotopes in a Sierran forested watershed. *Journal of Environmental Quality* 36:91-100.

Saito L, Redd C, Chandra S, Atwell L, Fritsen CH, Rosen MR. 2007. Quantifying food web interactions with simultaneous linear equations: stable isotope models of the Truckee River, USA. *Journal of the North American Benthological Society* 26 (4):642-662.

Suárez, F., Bachmann, J., Muñoz, J.F., Ortiz, C., Tyler, S.W., Alister, C., Kogan, M., 2007. Transport of simazine in unsaturated sandy soil and predictions of its leaching under hypothetical field conditions. *J. Contam. Hydrol.* 94 (3-4), 166 – 177, doi:10.1016/j.jconhyd.2007.05.009

Awards



Rosemary Carroll: Student presentation at the 23rd Annual International Conference on Soils, Sediments and Water held Oct 14-19 at the University of Massachusetts, Amherst. The paper presented was titled "Evaluating the Impacts of Uncertainty in Geomorphic Channel Changes on Predicting Mercury Transport and Fate in the Carson River System".

Shahnewaz Mohammad Student Paper Award: *Occurrence and Distribution of Naturally Occurring Arsenic in the Humboldt River Basin, Northern Nevada.* Shahnewaz Mohammad and Regina N. Tempel, 2007, Third International Conference on Environmental Science and Technology, August 6-9, 2007, Houston, TX

"Outstanding Student Research Award" GSA (Geological Society of America) meeting in Denver, October 27-31, 2007.

Douglas Paul Rennie Memorial Graduate Scholarship

Francisco Suarez Joan Lambert Scholarship in Hydrologic Sciences

Harmony Farnsworth, Andie Gehlhausen, Peggy Lee Academy for the Environment Grant Fall 2007

Sue Donaldson (1994 Alum) Distinguished Outreach Faculty Award from UNR. She is currently a Water Quality Education Specialist in the College of Cooperative Extension.

Julé Rizzardo, P.E., P.H. (1999 Alum) Promotion to Senior Water Resources Control Engineer at the California State Water Resources Control Board. His unit funds and manages a variety of non-point source pollution control projects.

Congratulations!

Julé Rizzardo, P.E., P.H. (1999 Alum)

Is expecting his first child!

Anna Makowski and Andy Knust (2007 Alums)

were married this October

Kevin Lundmark (2007 Alum)

married Susan DeYoung and moved to Salt Lake City, Utah this year

Greg Wilson married Hannah Schultz this fall

Upcoming Events...

Spring Colloquium Series

Dr. Tom Harmon (UC Merced)

January 25

Dr. Aaron Packman (Northwestern)

Feb. 7

Mike Gooseff (Penn State)

Mar.7

Adrian Bejan (Duke)

Mar. 28

****James E. Deacon (UNLV)**

Apr. 25

****Dinner Forum at Sagecreek Grill**

Cover Story Contd..



(Continued from Page 1)

She will be drilling wells at several locations in Kenya as part of a peace promoting project. Kenyan water officials and villagers practiced pump installation and were supplied with a hand pump for use once development of the borehole is completed.

Departing Ekwar and traveling southwest to Uganda, SAIWI students continued drilling water wells using the manual well drilling method. In Uganda, SAIWI students worked with community members in the small village of Kaioro outside of Tororo, Uganda. After 8 days of slow drilling through hard volcanic rock, the borehole reached 22 feet and a freshwater aquifer. The hole was cased, back-washed, and ready for pump installation when the students

had to leave for the US. A hand pump was ordered from the city and a team of local Ugandans learning the process were left in charge of finishing the well upon the pumps arrival. The community of Kaioro was extremely appreciative of all the hard work. We hope to visit this community again for future projects.

While final completion of these two wells was not achieved during SAIWI's visit, the local people were trained and supplied with all materials necessary to finish the projects on their own. The 2007 Africa Trip continued SAIWI's tradition of offering invaluable experiences and lessons for hydrologic graduate students that reach beyond the classroom environment.

Aqua Clara

Volume 17, Issue 1

The Aqua Clara is written for students, faculty, and alumni of the Graduate Program of Hydrologic Sciences .

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THANKS FOR READING!

PLEASE SEND ANY NEW UPDATES AND IDEAS FOR THE NEXT ISSUE OF AQUA CLARA TO THE EDITOR

Andrea.Gehlhausen@dri.edu

