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SPECIAL POINTS OF INTEREST:

- 2011 Nevada Water Resource Association Annual Conference- Reno, Nevada
- GPHS Doctoral and Post-graduate student achievements
- SAIWI's 2nd Annual Rock 4 Water Benefit Concert

University of Nevada, Reno

Graduate Program of
Hydrologic Sciences

Aqua clara

March 2011

Volume 20, Issue

Nevada Water Resources Association

This year's annual NWRA conference took place February 1-3 at the Peppermill Resort in Reno. The theme for 2011 was appropriately entitled "Water: A Matter of Perspective." Conference sessions were diverse in topic and scope, working to bridge the gap between public, academic, political, and professional perspectives.

GPHS Spring 2011 Recruitment Weekend

2011 Recruitment Weekend Itinerary

Friday, March 11, 2011

- Students meet at DRI in reception area at main entrance 8:00 am
- DRI tour 8:30-9:30 am
- DRI faculty meeting 9:30-11:45 am
- UNR tour 1:15-2:00 pm
- UNR faculty meetings 2:00-3:45 pm
- GPHS Colloquium 4:00-5:00 pm (Wells Fargo Auditorium)
"Hydrologic Controls on Vegetation Patterning of Meadow in the Sierra Nevada" by Dr. Steve Loheide (University of Wisconsin-Madison)
- After colloquium social 5:00-6:30 pm

Saturday, March 12, 2011

- Sagehen fieldtrip: meet at DRI's upper lot 7:45 am
 - Fieldtrip (snow activities)
 - Visit Truckee
 - Return to Reno 3:00 pm
- Free time 3:00-4:45 pm
- SAIWI dinner presentation 5:00-8:00 pm
 - Event at Dr. Laurel Saito's house



NWRA Student Poster Presentation Winners



From left to right: Jordan Beamer, Arica Crootof, and Jasmine Vittori

Ten students from UNR and UNLV, both undergraduate and graduate, participated in this year's NWRA poster competition. Projects and posters were available for viewing both days of the conference with

the formal Question & Answer poster session being held Wednesday evening.

During this time judges and conference attendees were invited to walk around and learn more about each student's projects. With a great diversity in research areas, several students' work stood out above the rest. All three poster winners were recognized for their research and awarded their monetary prize during Thursday's luncheon. Once again, students from UNR swept the poster competition.

Second runner-up was Jasmine Vittori of ES (Developing a water balance model approach with tree-ring records to reconstruct past streamflow in the Upper Walker River Basin), first runner-up was Arica Crootof of GPHS (Assessing water resources in Khorezm, Uzbekistan for the development of aquaculture), and the first place winner was Jordan Beamer GPHS/DRI (Annual Evapotranspiration estimation from Landsat and flux tower data). Congratulations to all the students who participated in this year's event.

Director's Corner: by Greg Pohll

Welcome to the spring semester! Don't forget that our annual recruitment fair is scheduled for March 11 - 12, and encourage program-wide participation. We have a great set of recruits who are eager to see what the GPHS is all about! On Friday, March 11, the students will be taken on tours of UNR and DRI campuses, and meet with our faculty members. The day will end with students attending the colloquium in which Dr. Steve Loheide, will be speaking on "Hydrologic Controls on Vegetation Patterning of Meadows in the Sierra Nevada" Following the seminar, I encourage all faculty and students to introduce themselves to the prospective students at the social. On Saturday, March 12, the recruits will be attending a snow hydrology workshop at the Sagehen Re-

search Center. We will wrap the day up with an informal dinner and presentation which will be co-hosted by the SAIWI organization. The recruitment fair is an important component of the recruitment process, so please make an effort to interact with the prospective students.

By now most of you have heard about the potential budget cuts to the University System. Although final budgets will not be determined until the State budget is finalized, we are most likely going to incur a 15% cut next year. I have had numerous discussions with UNR and DRI administration regarding our future budget and it is evident that they do not wish to destroy the core mission of the institution or our program. With that said, we have to continue to look for additional cost-saving measures. I

will continue to ensure that GPHS courses are taught and funding for teaching assistants and program officers remains in place. As always, I welcome any ideas you may have on how to make the program more efficient. I am confident that the program will continue to grow and thrive despite these tough times because of its great students and faculty.

As I final note, I would like to say how proud I am for our Program. Our faculty and students are amongst the best hydrologists in the world. Let's continue to strive for greatness and work hard on making the program the best it can be.



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AquaClara

Welcome! GPHS Spring 2011 New Student

Name: Kerensa Kruse
Where are you from? Mission Hills, California
Previous university and/or career? Sonoma State University, BSc Geology. Intern at Lahontan Regional Water Quality Control Board, South Lake Tahoe



GPHS: Hydrology or Hydrogeology? Hydrogeology
Research advisor and topic (BRIEF description)? Dr. Laurel Saito, EPSCoR Project: Climate change in Nevada and its effects on surface runoff
Hobbies/Interests? Personal: cooking, yoga, tai chi, skiing, climbing, biking, and nutrition. Academic: surface and vadose zone hydrology, climate change and Earth science education. Career: Tribal water rights

"The thing I'm most looking forward to this year is..." Field work!

GPHS Student Highlights

I am currently a snow hydrologist intern at the Swiss Institute for Snow and Avalanche Research, SLF (Institut für Schnee- und Lawinenforschung). The institute is situated within the canton of Graubünden and the town of Davos Dorf in eastern Switzerland. It is surrounded by high alpine topography within a snow dominated hydrologic regime, making it a perfect place to study and work in the field of snow hydrology. While my job description seems to grow each week, I am principally tasked with the establishment and maintenance of a bi-weekly snow survey in the neighboring Dischma valley. We take snow depth and snow water equivalent measurements within each layer of the snow pack at varying elevations and topographic shade regimes in the valley. This database will eventually be comprised of six years worth of data to act as a verification database for a high resolution physically based snowmelt model (Alpine 3D). This has been a great learning experience thus far and has allowed me to continue my research that began at UNR and to also have the opportunity to participate in other snow hydrology projects throughout the Swiss Alps. By: David Moeser (M.S., GPHS '10)



Student Highlights (cont.)



The year of two summers...

In October I defended my dissertation, and after several weeks of tying up loose ends, visiting family, and a final trip up into the Sierras with a pack on my back, it was time to leave Reno. Since December, I

have been a postdoctoral researcher at the National Center for Groundwater Research and Training housed at Flinders University in Adelaide, Australia. The center has been funded as a joint venture between the Australian Research Council and the National Water Commission since 2009, as part of a \$105 million National Groundwater Action Plan. I work with an international team of postdocs, PhD students, and researchers working on various projects centered around surface water/groundwater interactions. So far, I have been working on modeling disconnected streams, will also be using isotopes and various tracers to measure

infiltration in Western Australia in an area influenced by mining and cyclonic activity, and studying an ephemeral stream system in the center of the country. This has been already been a great opportunity for expanding my experience in hydrogeology and seeing remote parts of Australia.

So far, Adelaide has been a wonderful place to live (summer again!), with options to ride my bike through endless hills dotted with orchards and vineyards or along the coast, hang out on the beach, go wine tasting, enjoy the many festivals, or sip espresso at a café. Life is definitely not bad at all here- I highly recommend a visit!

By: Margaret Shanafield (Ph.D, GPHS '10)

The Student Association for International Water Issues (SAIWI)

SAIWI'S 2nd Annual Rock 4 Water Benefit Concert

Following the success of SAIWI's 1st Annual Rock 4 Water Concert last year, students of the UNR organization have reaped the benefits of an outstanding second benefit concert. SAIWI's 2nd Annual Rock 4 Water Concert was held on Saturday, January 22nd at Spread Peace Café (now Urban Beets) in downtown Reno located beautifully along the Truckee River. This year's fundraising event showcased the talent of two amazing bands. Jelly Bread, with soul-tapping rhythms, opened up the evening's musical madness and transitioned perfectly into the funk-reggae sounds by the Mark Sexton Band. The night offered great music, food, drinks, and raffle prizes from local businesses. Over 100 guests were in attendance to help support SAIWI, with proceeds from the concert going directly toward upcoming water development projects. This summer, students will be returning to Kenya to teach manual well-drilling workshops. The first workshop will be held in the Mua Hills and students will install a groundwater well that will provide clean water for a community of over 500 people. The second workshop will be at an orphanage outside of Kisumu. These workshops are designed to provide the community with the knowledge to replicate and maintain their wells. The success of SAIWI's fundraising concert is not only monetary in which the group raised over \$900 but it is also about bringing the community together and shedding light on the current water issues from around the world. Thank you to all of the students, faculty, and staff who came out to support the cause!

UNR Chapter-American Water Resources Association (AWRA)



Students enjoying AWRA ski weekend!

The hours of selling beer in the cold paid off! AWRA students had a fun-filled weekend in Tahoe with lots of laughter and stylish skiing. Thanks to all who participated! AWRA will need two new co-presidents for next year, if interested please contact Arica (acrootof@gmail.com) or Lucas (lwilliamson15@gmail.com).



SAIWI members from left to right:
Front Row: Arica Crotoof, Lise Comartin, Annie Lassaline, Lisa Perryman
Back Row: Scott Fennema, Kayla Berry, Casandra Woodward, Claire Johnson, Oliver X (event MC), Dan Pasteris, Ben Beal, Stephen Maples

GPHS Alumni: Where Are They Now?

GPHS Alumnus: John Rupp

Degree received and year of completion: Humboldt State University BS Environmental Resources Engineering 1999; UNR MS Hydrogeology 2001; State of Nevada Professional Engineer (Civil-Water Resources) 2009

What have been your work experiences post-graduation? 2001-2004 Project Hydrogeologist, Geomega, Boulder Colorado; 2005-Present Senior Hydrogeologist/Project Manager, Water Management Consultants/Schlumberger Water Services

Company that you currently work for: Schlumberger Water Services

What are your current responsibilities and/or project work?: I am living in Santiago Chile with my wife and two kids. My current job is to manage and direct hydrogeology projects for water resources clients in North and South America, with active projects in Canada, Nevada, Alaska, Peru, and Chile. Traveling in my job has taken me to some of the most incredible places in the world, from the Atacama desert to the Cook Inlet in Alaska. My current 3-year assignment to South America has been a great opportunity to learn Spanish, live in a different culture, and travel to places like Patagonia and Peru. Consulting also has its benefits in terms of meeting interesting clients for great conversation at great restaurants with good food, wine and beer-a nice benefit.



Schlumberger Water Services specializes in providing consulting services to industrial clients in mining, the power industry, and all type of water supply projects. Recent project experience has been focused on five major areas: 1) Basin and local-scale groundwater investigations of potential water quantity and quality impacts for permitting purposes, usually environmental impact statements and assessments. This work has been a combination of hydrogeologic systems conceptualization and numerical groundwater modeling. 2) Pore pressure analysis, conceptualization, and numerical modeling for mine dewatering studies, either pre-feasibility, feasibility, or operational considerations. Generally this work is spreadsheet and water balance based, with some 2- or 3-D pore pressure modeling. 3) Water supply investigations for optimization/replacement of existing water-supply well-

fields. This work is usually a combination of analytical pumping test and operational data with some sort of numerical flow model. This work typically includes some sort of water quality constraints and estimation of potential drawdown impacts, to comply with existing permits. 4) Model-based vadose zone simulations of rapid infiltration basins, heap leach pads, tailings impoundments, or waste rock dumps. This work is almost always model-based. 5) Groundwater engineering including well design, pipe line design, pump sizing, booster stations etc.

How do you feel the GPHS has prepared you for your current position? A great benefit of the GPHS program is learning how to think through complex hydrogeologic problems. Anybody can "learn" how to create or run a model or run a Theis analysis from a book or manual, but that doesn't teach you how to think things through. To get the most out of the program listen to the voice of experience that GPHS professors provide. To be successful as a hydrogeologist you must thoroughly understand the basics and know how to apply them correctly. Things like water balances, understanding the concept of safe yield, the subtle nuances of a pumping test analysis. It's the understanding on how to apply basic hydrogeologic principles that is often the most important key to success.

Do you have any advice for graduating students?: If you are going into consulting, learn how to write well, forget much of what you learned from reading journal articles. Clients generally prefer clear, simple, concise writing to the type of writing found in scientific journals. The product sold by consultants is communication of knowledge, in presentations, memos, reports and meetings. The better the product, the more successful you will be. A few good rules to remember:

1. Only introduce one thought per sentence. If you find yourself using the word "and", cut the sentence in half.
2. Write in a way that a layperson can get the gist of what you are trying to say. Break down difficult concepts into list of basic parts that are easier to understand.

GPHS Alumni: Where Are They Now?

3. Transform complicated lists of information into a list of bullets, especially long complicated paragraphs.
4. Don't wait until the end of a presentation or memo to give your client the answer. Tell them briefly right off the bat what the answer is, then tell them how you got it. Clients hate waiting though a 45 minute presentation for the punch line.

Is there any other information you wish to share?: There are substantial opportunities open for hydrogeologist worldwide in the mining industry, both in consulting and in industry itself. The mining industry has taken a hit in the public eye for environmental legacy projects worldwide. In the past decade the mining industry thinking has changed substantially and projects are being run much more responsibly. There is a long way to go though and the only way for that to happen is for smart young hydrogeologists and geochemists to get involved and make a difference. Please feel free to contact me jrupp@slb.com if you want to talk to me about what career opportunities are out there.

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AquaClara

GPHS Alumna: Elizabeth Schwartz

Degree received and year of completion: MS Hydrogeology, 2003

What have been your work experiences post-graduation? After graduating, I became a Peace Corps volunteer in Panama and worked on rural water and sanitation projects. Upon returning to the states in 2005, I started my career in the environmental consulting industry. I worked at a small firm based in Pleasanton, California for about a year and a half and then moved to TRC, where I have worked for the past 3 ½ years.

Company that you currently work for: TRC

What are your current responsibilities and/or project work?: My current title is Project Hydrogeologist. I generally work as a technical advisor on numerous contaminated sites, including a superfund site in Phoenix Arizona, a closed landfill site in Antioch California, and a former aerospace manufacturing site in San Jose, California. I specialize in characterization, fate and transport, and remediation of soil and groundwater impacted with volatile organic compounds (primarily tetrachloroethene and trichloroethene). I also manage a postal service facility site in Encino, California that is impacted with benzene and hydrocarbons. We are currently implementing in situ chemical oxidation to treat impacted groundwater in the vicinity of the post office.



How do you feel the GPHS has prepared you for your current position? I don't think I could have chosen a better degree to prepare me for a career in the environmental consulting industry. Most of my colleagues have degrees in geology or environmental science and haven't had training specific to groundwater or surface water processes. It is not very often that someone can say that they actually use what they learned in graduate school on a daily basis, but I can definitely say that. I also get to work on more technical projects, such as groundwater modeling, because of my background and experience at the GPHS.

Do you have any advice for graduating students?: First, congratulations! The GPHS is a challenging program and all graduates should be proud of their hard work. As far as careers are concerned, it appears that environmental consulting, especially in soil and groundwater remediation, has proven to be somewhat resistant to downturns in the economy. Most of the sites that I work on will not be remediated in decades, and if that isn't job security, I don't know what is! Also, I wish that I had gone for my professional geologist registration and certified Hydrogeologist registration much earlier on. The longer you wait to take the tests, the more difficult they are because you end up forgetting a lot of the information that you learned in college that you don't use on a regular basis.

Recent Publications

All publications cited are authored or co-authored by faculty, students and/or staff of the Program of Hydrologic Sciences. Paper copies can be found at the Mathewson- IGT Knowledge center on campus, or digitally through the university's online e-journal service.

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