Directors’ Update

The past few months have been incredibly busy (and successful), as you’ll see in this newsletter. We are most excited to have made some very strong new hires, including two new facility managers. Acquisition of new WyCEHG equipment continues (we have just taken delivery of our ATVs and snow machines), and we are on track for a very busy year of field work. Our new center has attracted notice in the press, including local newspaper coverage and a nice article and interview in the January 2013 issue of UWYO magazine (www.uwyo.edu/uwyo/2013/14-2/taking-the-plunge.html). We’ve also got a new logo, designed by Brendon Orr, which is featured (stretched onto our Keg) above and (unaltered) on the back page.

In this issue of The Keg, you’ll find news about current and upcoming WyCEHG activities, including new team members, meetings attended, undergraduate fellowship awardees, and a glimpse into the science of the “Critical Zone.” As always, feel free to contact either of us if you have questions, comments, or project ideas. Enjoy!

-Steve Holbrook and Scott Miller, Co-Directors

New Facility Managers

A centerpiece of WyCEHG will be our equipment facilities: the Facility for Imaging the Near- and Subsurface Environment (FINSE) and the Surface and Subsurface Hydrology Laboratory (SSHL). We are pleased to announce that our searches for managers for both these facilities were successful. On page 3 of this issue we’ll introduce the new managers, Brad Carr and Elizabeth Traver. Suffice it to say that our new facilities will be in very capable hands.

Strategic Planning

All NSF-EPSCoR Track-1 awardees are required to produce a Strategic Plan within the first few months of their award. The WyCEHG Strategic Plan, an outcome of the September Strategic Planning meeting, was accepted by NSF without revision in December. This plan (available upon request) gives us specific milestones to measure WyCEHG progress over the next five years.

Summer Field Work Ahead

We have a very busy summer of data acquisition planned, including: intensive work in our Laramie Range and Snowy Range field sites, with airborne geophysics, airborne LiDAR, ground-based geophysics, surface hydrology, and isotopes; “geophysics week” in the geology summer field course; a two-week collaborative eco-geo-hydrology field course with students from Jackson State University in Mississippi; field work in three sites chosen by our community college partners (Casper College, Central Wyoming College, and Western Wyoming Community College); and sites selected by our industry partners (Trihydro, Intertech, and Lowham Walsh).
Upcoming Events and Deadlines

January
31: WyCEHG brown bag seminar, Union

February
4: RAS Inc. Hydrogeophysics seminar, Cheyenne
5: Wyoming Water Forum, Cheyenne
14: WyCEHG brown bag seminar, Union
28: WyCEHG brown bag seminar, Union

March
5: Wyoming Water Forum, Cheyenne
8: EPSCoR Summer Research fellowship applications due
14: WyCEHG brown bag seminar, Union
15: Applications for high school summer research program (SRAP) are due
25 -29 (estimated): Jackson State University collaborators will visit UW and WyCEHG
28: WyCEHG brown bag seminar, Union

April
2: Wyoming Water Forum, Cheyenne
11: WyCEHG brown bag seminar, Union
25: WyCEHG brown bag seminar, Union

From the ESPCoR Office

Last month we welcomed Sarah Konrad as the new Associate Project Director for Wyoming EPSCoR. Sarah is familiar to many Keggers because she received her Ph.D. from Geology & Geophysics, and after a stellar athletic career competing in the Olympics, Sarah returned to Laramie to continue research. She is now taking a leadership role in EPSCoR, helping to launch our many Education Outreach and Diversity programs and interfacing with science teams.

We currently have two searches in progress, for a Track-1 EOD Coordinator, to be shared part time with ENR, and for an Accountant. We recently met with our External Evaluator, Kirk Minnick, who will help us keep on track with our Strategic Plan.

This fall we established new collaborations with Jackson State University and the group will visit UW in March for more discussion. We sent a contingent of Wyoming students to annual meetings of the American Indian Science and Engineering Society (AISES) and the Society for the Advancement of Chicano and Native American Students (SACNAS) meeting.

I invite all of you to stop by the EPSCoR office on the 4th floor of Wyo Hall any time to meet the group. I also invite you to visit our website and our blog at http://wyomingepscor.blogspot.com/ where our undergraduate social media coordinator, Kali McCrackin, blogs each week about EPSCoR and WyCEHG.

-Anne Sylvester, Wyoming EPSCoR Program Director

Tracking Water in the Critical Zone

The image to the right shows a core of weathered granite (a.k.a. “saprolite”, to those in the know) extracted from a forested slope in the southern Sierra Nevada, California. The field area is one of a network of Critical Zone Observatories (CZOs) that have been established by NSF to quantify and monitor the coupled physical, hydrological, biological, and geochemical processes that modulate Earth’s near surface environment, in the “critical zone” where we all live.

The CZOs and WyCEHG are engaged in an exciting collaboration, which began with geophysical surveys of subsurface weathering by team members Steve Holbrook and Cliff Riebe. Now, with the core shown in the image, a new focus is isotope geochemistry.

Cliff is working with faculty team member Dave Williams and undergraduate student Evan Soderberg on stable isotope analyses of water extracted from both the core and plant material from the surrounding forest. The goal is to unlock the secrets of how water moves through the critical zone. It starts at the surface, where snow collects and melts, moves into the subsurface, and then into plant roots, and eventually back into the atmosphere through transpiration. We need to understand these processes better, because subsurface water provides a crucial buffer for the surrounding ecosystem during seasonal dry periods and drought.

How important are biotic versus abiotic processes in the crucial exchanges of water between the surface and subsurface? What role do the trees play in the exchange? With the help of Dave and the rest of his team at the UW Stable Isotope Facility, we should have some answers soon. In the coming years, we’ll be asking the same kinds of questions here in Wyoming as part of WyCEHG research projects.

-Cliff Riebe, Dept. of Geology and Geophysics

Photo: P. Hartsough
New Hires

Brad Carr, FINSE manager
Our new FINSE facility manager is Dr. Brad Carr, a near-surface geophysicist who is returning to his geophysical roots in Wyoming. Brad completed his PhD here at UW in 1995. For the past 12 years, Brad has been working in the near-surface geophysics industry, with Geophex and, more recently, Advanced Geoscience Inc. Brad has expertise in near-surface seismic, gravity, magnetic and electrical methods. Brad will join the faculty of the Department of Geology and Geophysics as a Research Scientist, starting on January 31.

Elizabeth Traver, SSHL manager
Our new SSHL facility manager is Elizabeth Traver (pron. “Tray-ver”), who goes by “ET.” Like Brad, ET is also a UW alum, having done her MS in Botany here with Brent Ewers. ET, who has broad experience in surface hydrology, ecology, soil geochemistry, and glaciology, came to us from Dartmouth College, where she managed an ecology lab. You can find ET in 2008 Ag building on campus, or email her: traver@uwyo.edu.

Nori Ohara, Asst. Professor
We welcome Dr. Noriaki Ohara to WyCEHG. Nori is a snow hydrologist just hired into the Department of Civil and Architectural Engineering, and who is already leading our Snow Hydrology team. Nori did his PhD at UC-Davis.

Mehrez Elwaseif, Postdoc
Our first official WyCEHG postdoc is Dr. Mehrez Elawseif. Mehrez is a hydrogeophysicist with expertise in electrical resistivity studies of the shallow subsurface. Originally from Egypt, Mehrez recently finished his PhD at Rutgers University, working with Dr. Lee Slater. Mehrez’s office will be in the Earth Science Building — please stop by and welcome him!

EPSCoR Undergraduate Research Fellowships
Wyoming’s EPSCoR office provides some great opportunities for undergraduates to get involved in scientific research, including undergraduate research fellowships. This spring, several undergrads wrote successful proposals for Spring Semester research fellowships ($700) to work on WyCEHG-related science, with WyCEHG faculty as sponsors (noted in parentheses below). Congratulations to:

• Callie Berman, Geology/ENR, “Fate and Transport of Water in a Mountain Environment” (Scott Miller)
• William Chapple, Environment and Natural Resources, “Ecological and Hydrological Separation of Water in the Snowy Range” (Dave Williams)
• Paige Hellbaum, Earth Systems Science, “Nitrogen Cycling in an Open Canopy Mountain Stream” (Bob Hall)
• James Ramsay, Geology, “Critical Zone Composition and Structure Of the Weathered Sherman Granite Visualized by Ground Penetrating Radar” (Steve Holbrook)

Don’t forget to encourage your promising undergraduates to apply for the Summer Fellowships ($3,500). Proposals are due March 8, 2013, at the Wyoming EPSCoR office.
Wyoming Water Association
In October Scott Miller, Steve Holbrook, and Brent Ewers gave presentations at the WWA meeting in Lander. Scott and Steve introduced WyCEHG to the association, and Brent (left) gave a presentation on hydrological impacts of bark beetles. Such outreach to statewide stakeholders is a big part of the WyCEHG mission, and one you’ll be hearing more about in upcoming newsletters.

AGU Booth
In December WyCEHG hosted a booth at the annual American Geophysical Union conference in San Francisco. The week-long AGU conference is one of the largest earth science meetings in the world, bringing together more than 22,000 earth scientists from around the globe. The booth (below), which was staffed by Rick Matlock of the Wyoming EPSCoR office and a host of WyCEHG students and scientists, featured posters and brochures describing the new Center, plus lots of giveaway “swag” (the thumb drive with the WyCEHG logo was especially popular).

Tenure-Track Position
We have initiated a search for a tenure-track professor in hydrogeophysics. This position is a linchpin for WyCEHG, as hydrogeophysics (the application of geophysics to hydrological problems) is a central theme of the Center. Ads are going out and we should be interviewing candidates this spring. The position will be shared between the Department of Geology and Geophysics and the Department of Civil and Architectural Engineering. Future tenure-track hires associated with WyCEHG will include integrated hydrological modeling and rock physics.

Jackson State Univ. Collaboration
One of WyCEHG’s planned collaborations is to establish a joint summer field course involving students from UW and from Jackson State University in Mississippi. Among all HBCUs (Historically Black Colleges and Universities), JSU has distinguished itself for its earth science program. In November, Anne Sylvester and Steve Holbrook travelled to Jackson to meet with JSU colleagues (below) and begin planning this exciting collaboration. The trip was very productive, and we are looking forward to a fun and mutually beneficial collaboration.