Dr. Mark Stewart retired in May 2014, after co-teaching the Hydrogeology and Ecohydrology Field School sessions since Summer 2004. Congratulations Mark! Your contributions to USF students and to our department are immeasurable!

In the Spotlight: Changes in the 2015 Hydrogeology Session

The 2015 Hydrogeology and Ecohydrology Field Camp was a year of transition and growth. From Summer 2004–Summer 2013, the course had been taught by Drs. Mark Stewart and Mark Rains, the new Chair of the School of Geosciences. Duties were equally split, with Dr. Stewart focusing on hydrogeology and Dr. Rains focusing on ecohydrology. The students greatly benefited from this division of duties, especially from Dr. Stewart’s vast knowledge and experience on the hydrogeology and, to a lesser but nevertheless important extent, the ecohydrology of Florida.

Dr. Stewart’s retirement left a huge gap, one that simply could not possibly be filled. Therefore, Dr. Rains and colleagues decided not to fill that gap but, rather, to change the course to reflect new strengths and new dimensions. These changes also reflect changing demands on our graduates! Beginning in Summer 2015, the course is now being taught by Drs. Mark Rains and Kai Rains. Duties will still be equally split, but Dr. M. Rains will now focus on hydrogeology and ecohydrology and Dr. K. Rains will now focus on hydrology, soils, and vegetation, especially in regards to wetland environments. This subtle shift requires that material be streamlined, a process that began in Summer 2015 and that will continue in the years to come.

Dr. Mark Rains, new Chair of the School of Geosciences, demonstrates how to install a temporary drive-point piezometer for measuring hydraulic head and collecting groundwater samples.

These new dimensions challenge students. In Florida, most hydrogeology has a surface-water
and/or surficial aquifer dimension, which means that hydrogeology has important implications for the natural environment. Students are not altogether prepared for that, with little coursework in the biological sciences. They are somewhat surprised in Hydrogeology and Ecohydrology Field Camp when exercises connect hydrogeology concepts (e.g., groundwater flows) to ecology concepts (e.g., groundwater support of wetland environments).

Increasingly, hydrogeology and ecohydrology are done by acquiring and analyzing data through web portals. Precipitation, evapotranspiration, streamflow, lake water levels, and groundwater levels are all variously available for download and use. The Field Session is adding these types of analyses to existing exercises, such as the hydrogeologic investigation of the USF GeoPark. Towards those ends, the USF Water Institute is a useful resource, because students can access many of these data for this region through their Water Atlas clearinghouse web portal.

This Field School session benefits from an incredible amount of support from alumni and other friends of the School of Geosciences. From an organizational standpoint, participation comes from the U.S. Geological Survey, the National Park Service, the U.S. Fish and Wildlife Service, the Department of Environmental Protection, the Southwest Florida Water Management District, the South Florida Water Management District, and the Crystal Springs Reserve, to name a few. Many of these are recurring – for example, Jason Bellino, a double alumnus with a B.S. in Environmental Science and Policy and an M.S. in Geology, now works for the U.S. Geological Survey and enjoys returning every year to teach streamflow measurement. Others are periodic or in alternate years, as we keep the course changing to meet the changing times. Regardless, the students benefit from these interactions because they get an opportunity to see and sometimes help solve real-world problems, the very types of problems they’ll likely be paid to solve upon their graduation.

Field School Updates:

- Five sessions were offered in 2015. This will be expanded to 8 sessions in 2016 to offer more flexibility to more students
- The Geoalumni and faculty have proposed to begin raising funds for construction of a USF field station in the western US. They have prepared a proposal and are awaiting approval to get started from the USF Board of Trustees.
- Dr. Kai Rains joined the Hydrogeology Field School Faculty for the first time in 2015. Welcome Kai!
- Danny Lindsay and Chuck Connor created a laser-plane table exercise in the volcano mapping session, allowing students to map geology and topography simultaneously using a TruPulse laser with range of ~500 m. For those who remember plane table and alidade, laser-plane table is similar – with no need for a rodman since the laser light reflects off almost any natural feature.

With the USF School of Geosciences Field Station fast becoming a very real possibility, Dr. Rains has begun to anticipate moving the Hydrogeology and Ecohydrology Field Camp out west. “If we have the opportunity to take our students west, then we could add yet another dimension, because there are excellent opportunities in the west to teach fluvial geomorphology, including sediment transport and deposition and associated channel morphology. This would require that we once again streamline the existing material to create time for the new material, but doing so would greatly benefit the stu-
udents by adding a new dimension to their Field Camp experience”, says Dr. Rains.

Dr. Rains is reflective on his time co-teaching the field school with Dr. Stewart. “He was the best mentor I ever had, the best mentor I could ever imagine. He has an incredibly deep understanding of the hydrogeology of Florida, and yet also a surprisingly broad of understanding of so much more, from climate change, to forest ecology, to corvid behavior, and more. There almost isn’t a topic about which he doesn’t know something, and about which he couldn’t hold an interesting conversation. Our students were truly fortunate to have had the opportunity to grow and work alongside him all day and every day for a period of two weeks. Many have returned to express their appreciation for that experience.”

Volcano mapping students use a laser and plane table to map topography and geology along the Lost River. Thanks to UNAVCO for lending three of the lasers for use by our students!

Sam Upchurch on the Importance of Field Camp

“I don’t think I have ever spoken with a fellow geologist who did not state that field camp was the best experience they had as a geology major. Field camp provides an opportunity to develop the two skills that are virtually unique to our science: three-dimensional thinking and understanding deep time. It is especially important that geology majors in Florida enroll in and actively embrace field camp because the geology of Florida is so limited in terms of the scale and scope of earth science. In order to develop the professional skills necessary to conduct field work and understand three-dimensional concepts and deep time, one must see many different types of rocks in a variety of settings. One must stand on an outcrop and debate its origins and implications. One must collect and describe rocks, and develop the confidence to interpret their origins.

My field camp experience was through on-the-
I started work with the Tennessee Division of Geology as a freshman in college. I was paid $1/hour to wash and archive oil-well test cuttings. Working with several of the geologists at the survey, I learned the rocks of Tennessee. By the time I was a junior in college, I was being paid to accompany a professor at Vanderbilt as his field assistant during the school season and mapping geological quadrangles in the summer. The mapping was delightful. I would drive every road and trail in a quadrangle, climbing hills and noting geological formations and structures off road. One summer, I would park my car in the Cumberland Mountains on Monday and backpack on long treks until Friday. Several of my maps were published by the survey, and I was given credit for field camp for admission to graduate school. Even so, when I got to graduate school, I discovered that my experience was limited and that there were basic skills that I did not know. So, I got my field camp experience as a graduate student. My point is, undergraduates, get your field experience, when you have time to enjoy it and learn in the context of your course work.

USF has a wonderful field camp program that meets the goals I am suggesting, and it is getting better and more comprehensive every year. I am honored to have my name associated with the endowment USF is using to assist undergraduates to attend field camp. I urge everyone to support USF’s plans to expand the field camp experience and assist students to attend. Please contribute to the field camp fund and support USF’s growth plans.”

—Sam Upchurch, Fall, 2015

By the Numbers:

- In 2015, there were 37 students and 101 total seats (some took 1 session, some 2 or more)
- 5 field sessions were taught: Hydrogeology, Coastal Sedimentology, Geophysics, Structure Mapping, Volcano Mapping
- Total field camp expenses were $58,091
- The College of Arts and Sciences contributed $13,000 to defray student expenses
- The Sam Upchurch Fund gave $6,434 per seat, so alumni donations reduced costs for field school students by $193 – thanks to Sam and numerous other donors. Wow!
- $33,485 – the Field School Endowment balance as of Dec. 1, 2015 - thanks to generous donations from Dorien McGee and many other donors. Wow again!

Danny’s logistical planning for the field camps starts immediately after the current summer field camps are complete, and sometimes before. In the preliminary stages, he locates accommodations and makes reservations for up to 50 people at a time. Some of the trips require tent camping (his favorite) and some are in lodge-type facilities. He always searches for affordable facilities with the appropriate amenities for students and great locations for the classes. You can imagine the caravan it takes to move 50 people, all of their clothing, all of their camping gear, field equipment, and enough food to feed the army. He also helps with planning the menus, grocery shopping, and preparing the meals. Long field days produce hefty appetites.

From the Lab Manager

Danny Lindsay says the best part of being the Teaching Laboratory Manager for the School of Geosciences is his role as the Coordinator for the Summer Geology Field Camps. His experience with USF field camps started when he took the classes in 2013. He enjoyed them so much, he decided to stay at USF and take on the role of field school coordinator.
A big part of Danny’s summer is spent traveling with the field camps. While traveling, his main goals are to maintain safety, direct efficient logistics, and assist with teaching duties. His favorite part of the job is traveling with the students and helping them to be successful with their projects while enjoying the magnificent geology around them.

In 2015 Geophysics session surveyed targets along the Borah Peak fault, including using resistivity gear borrowed from Mike Wightman (President of the GAS) and GeoView. Thanks Mike!

“I was completely star struck! I can only hope to emulate them some day soon.” – Myra Santiago, 2015

“I learned so much in our hydrology field camp this past summer. There’s things you have to physically go out and do to fully understand, and geology is one of them.” – Krista Gutierrez, 2015

Nick Bordieri mapping in the rain near Mackay, Idaho, in the August 2015 mapping session.

Support the USF Geology Field School!

Your donations are incredibly important to the USF students. There are three ways to financially contribute to the Geology Field School:

- Contribute to the Sam Upchurch Fund, which directly reduces the annual operating expenses of the field school and reduces costs to students.
- Contribute to the Field School Endowment to ensure the long-term sustainability of our Field School.
- Join us at the 27 Feb, 2016 GAS Banquet and make a donation in support of the Field School.

Donating is easy! Contact Linda Breen (lmbreen@usf.edu) in the College of Arts and Sciences.