

UNIVERSITY OF NEVADA, LAS VEGAS

Department of Geoscience

SPRING, 2006 Geoscience Newsletter Committee: *Jean Cline, Brenda Buck, Ganqing Jiang, and Catherine Snelson*

Remarks from the Chair

This, our second newsletter of recent years, presents a great opportunity to tell you about our recent, highly successful 1st Annual GeoSINposium and to reacquaint you with the Department of Geoscience laboratories. I want to first congratulate our students on their overwhelmingly successful GeoSINposium. This student-organized and student-run day of oral and poster presentations provided both undergraduate and graduate students with the opportunity to present their research in a professional setting, interact with professionals from the community and department alumni, and receive awards of cash or microprobe/SEM time for presentation excellence. Generous donations from alumni, corporate sponsors, the community, and the department's electron micro-imaging laboratory covered meeting and award costs, and will fund continued student research. I especially want to thank all of our donors for their enthusiastic support of our students.

It amazes me when I think that when I started at UNLV in 1991 we had nine faculty, two undergraduate degree programs (Geology and Earth Science), the M.S. program, and one analytical laboratory (XRF / XRD). Since then we have added 10 faculty; awarded three Professor Emeritus positions to Anne Wyman, Fred Bachhuber, and Dave Weide; added the Environmental Geology B.S. degree program; developed the



GeoSINposium committee, from left to right, Joseph Kula, Nate Suurmeyer, Ernesto Moran, William Rittase Wendy Barrow (GeoSINposium Chair), Michael Howell, April Azouz, Todd Arrowood, Denise Honn, Lora Griffin, and Robyn Howley

1st Annual Geoscience Department GeoSINposium



Lora Griffin

The UNLV Geoscience Department held the 1st Annual GeoSINposium on April 21-22, 2006, coinciding with Earth Day. This student-organized and student-run symposium provided UNLV geology graduate and undergraduate students with an opportunity to present original research and receive feedback from industry, civic, government, and academic professionals.

Generous donations from local individuals, alumni, professional organizations and businesses contributed to the symposium's success. This valuable support covered symposium costs, provided 8 students with awards of cash or microprobe time, and will fund future student research.

The event, which was held in the Marjorie Barrick Museum, was officially kicked-off with a welcome from Geoscience Department Chair, Wanda Taylor. Oral presentations were scheduled for the morning, and most of the afternoon was devoted to poster presentations in the museum lobby. Coffee breaks provided students with opportunities to network with visiting professionals interested in the future of UNLV geology students. More than forty students participated in the event including 24 graduate students and 7 undergraduate students who presented research.



Department chair Wanda Taylor "talks geology" with GeoSINposium guests on the Forever Earth houseboat

continued

continued

Ph.D. program; and set up two more analytical labs with two more labs in the building process.

Today the department is supported by three existing labs: EMIL, NIGL, XXL and two up and coming labs: LVIS lab and AGC. These labs are all capable of performing work for users from outside of the department.

EMIL (Electron Microanalysis and Imaging Laboratory) houses a microprobe and scanning electron microscope. The microprobe performs non-destructive chemical analyses on the submicron scale and is capable of producing images in conjunction with x-ray mapping which aids in describing the sample. The scanning electron microscope images submicron scale topography, producing spectacular photograph-like pictures, and can perform qualitative analyses, pseudo-quantitative analyses, and x-ray mapping. This lab is maintained and operated by Dr. Rob Fairhurst.

NIGL (Nevada Isotope Geochronology Laboratory) houses two rare gas mass spectrometers that are used to determine the ages of rocks and minerals. NIGL, under the direction of Dr. Terry Spell and operated by Kathy Zanetti, has been routinely performing $^{40}\text{Ar}/^{39}\text{Ar}$ analyses since July of 1999. Spell and Zanetti plan to expand the capabilities of NIGL to include the ^{21}Ne and ^3He surface exposure dating methods in the near future.

XXL (XRF and XRD Lab) is managed by Dr. Clay Crow. This lab has a new XRF and a new XRD. The XRF is used for whole rock major and trace quantitative element analysis. The XRD spectrometer is used for mineral identification, and crystallographic and Reitveld analysis.

The two up-and-coming labs have equipment in place or on order. LVIS (Las Vegas stable Isotope Science) lab has on order a stable isotope ratio mass spectrometer that will perform automated analyses of $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ in carbonates, and $\delta^{18}\text{O}$ and δD in waters and an elemental analyzer for determinations of C, N, H, O in organic matter, both of which are important in studies of paleoclimate and carbonate rocks. This equipment purchase is funded by the Major Research Instrumentation program of NSF through a grant to Matt Lachniet and Ganqing Jiang.

The AGC (Applied Geophysics Center) is a product of a collaboration of Cathy Snelson, and Barbara Luke from UNLV's Department of Civil and Environmental Engineering. Among other pieces of equipment, this lab houses and operates a minivibe, a seismic source used to collect seismic reflection and refraction data, and a ground penetrating radar system used to locate and identify items and features in the shallow subsurface. The equipment is in place and functioning and the official title of "center" was awarded just this Spring semester.

In addition to our fantastic faculty and lovely labs, we have superb students and awesome alumni. Our students do an excellent job of balancing classes, research and service, including recent tours for school children. They consistently win awards from professional societies and UNLV. Yeah!! Our alumni work in all aspects of geology: oil & gas, environmental fields, engineering geology, mining, government, and academia. We really enjoy hearing from our alumni and friends and visiting with you when you stop by. Please be sure to keep us up to date on your contact information by using the enclosed form or emailing the department at geodept@unlv.edu. I hope that you enjoy reading more about our students, alumni and the department in the following pages.

At the conclusion of the poster session, attendees headed back into the auditorium for the awards ceremony. All presenters were awarded one hour of microanalytical time, courtesy of the Electron Microanalysis and Imaging Laboratory (EMIL). Awards were presented for the best oral and poster presentations as follows: *First and second place cash prize for oral presentations*: Nathan R. Suurmeyer, Basin Analysis of the central Grand Wash Trough, NW Arizona: New insights into a Miocene extensional basin; and Shelley A. Zaragoza, Imaging the southern trace of the Black Hills fault, Clark County, Nevada: preliminary results; *First and second place EMIL prize for oral presentations*: Peter Druschke, The Sheep Pass Formation, Nevada: A Cretaceous to Eocene basin within the Sevier hinterland; and Joseph Kula, The Sisters Shear Zone: Thermochronologic constraints on the separation of New Zealand and West Antarctica; *First and second place cash prize for poster presentation*: April Azouz, Late Holocene variability of rainfall and the El Niño southern oscillation from a Costa Rican speleothem; and Joshua Boxell, The effect of Bromus Tectorum (cheatgrass) invasion on infiltration and saturated conductivity; *First and second place EMIL prize for poster presentations*: Tonia Arriola, Vorticity analysis and strain rate determination of orogen-parallel flow, Grouse Creek Mountains, Utah; and Amy Brock, Diapir derived evaporate paleosols in the Eocene Carroza formation of the LaPapa Basin, Mexico, and their implications for syndepositional exposure of diapiric evaporite. Judges of the presentations included Geoscience Department post doctoral fellows Haroldo Lledo and Brett McLaurin, Desert Research Institute geoscientists David Shafer, Steve Mizell and Chuck Russell, Geoscience Department alumnus Dawn Arnold, and Geoscience faculty Mike Nicholl and Ganqing Jiang.

Following the awards ceremony, the audience was treated to an entertaining slide presentation of images, provided by students and faculty, that highlighted many activities of the previous year. Friday concluded with a reception for all participants. On Saturday, interested students, faculty, and guests relaxed and investigated the geology of the Lake Mead area on the Forever Earth houseboat.

The UNLV Geoscience Department, GeoSINposium committees, and faculty advisors for this event (Brenda Buck, Jean Cline, Ganqing Jiang, Catherine Snelson, and Wanda Taylor) extend their sincere thanks to all of the volunteers and sponsors who supported this new effort, and whose generous contributions of time and funds made this first symposium an overwhelming success. We look forward to your participation in next year's 2nd Annual GeoSINposium.

Symposium Chair - Wendy Barrow Committees, Chairs (*), and Members

Correspondence and Fundraising

Willy Ritasse*, April Azouz, Katie Wooten, Denise Honn,
Lael Vetter and Shelley Zaragoza

Abstracts and Programs

Denise Honn*, Robyn Howley, Lora Griffin, Nuvia Quinonez,
and Samantha San Diego

GeoSINposium *continued from page 2*

Web Page

Mike Howell*, Joshua Boxell and Mike Gianetti

Post Symposium Party

April Azouz*, Denise Honn, Yuyu Lin, Joe Kula,
and Alex Baron

Lake Mead Fieldtrips

Willy Rittase*, Risa Madoff and Nate Suurmeyer

Symposium

Wendy Barrow*, Lael Vetter, Alex Roy, Peter Druschke,
Ernesto Moran and Todd Arrowood

GeoSINposium Donors

Diamond (≥\$1000)

EMiL (Geoscience Department Electron Microanalysis
& Imaging Laboratory)

Maureen Wruck Planning Consultants, LLC
Pahrump Engineering, Inc. (David DuPont)

Corundum (≥\$200)

Kleinfelder (Lisa Warren) SAIC (Dawn Arnold)

Topaz (<\$200)

Dawn Arnold	Walter Slack
Cris Bosselman	Southern Nevada Chapter of
Willard Lacy	GSN (Robyn Howley)
Wende Lestelle	Michael Stojanoff

Alumni

Jennifer Coe, BS 2004: I recently got married and I am now living in Winston-Salem North Carolina where I am teaching Earth Science and Physical Science at West Stokes High School as a lateral entry teacher, while working towards my license and Masters degree. I really enjoyed the staff and my time at UNLV. Thank you for your support.

Tammy Diaz, MS

2004: I am currently employed with the New Mexico Environment Department, Hazardous Waste Bureau. I am working on the Fort Wingate Army Depot Activity Project. I moved back to New Mexico shortly after completing my MS degree. My thesis topic was related to the chemical composition of rock varnish and



paleoclimate changes. I have three dogs and currently reside in Santa Fe, New Mexico.

Lindsay R. Burt, MS 2005: For the last year I have been working for the USGS as a hydrologist (Student Hydrologist until recently). I am currently working in Henderson, but I have requested a transfer up to Carson City, which should happen in May. I'll be doing the same job up there, which is primarily keeping track of surface water volume and groundwater levels all over Nevada. I thoroughly enjoy the field work involved, and I feel it is worthwhile as water is so important to this state. I have attached a photo which demonstrates how hard I've been working. Through this job I have had the opportunity to see most of NV up close via land, sea (Lake Mead), and air. Living in Las Vegas, I hadn't realized the geologic and ecologic diversity of NV. Anyway, I fell in love with the Carson/Tahoe area, and my wife (Cindy) and I decided that would be a good place to raise our two little boys (Justice and Tristan).



Student Clubs

The **UNLV American Association of Petroleum Geologists (AAPG) Student Chapter** is now three years old and has expanded to approximately 25 graduate and undergraduate members. Continuing on last year's success, the student chapter secured the AAPG Weeks Grant for the second consecutive year. The Weeks Grant provides funding for undergraduate research and matching funds for chapter activities. This year's awardee is Racheal Johnson, and funds will support her undergraduate research project on the geology and geochemistry of the Eldorado Valley Breccia with Dr. Gene Smith. Another upcoming event that will hopefully become a yearly tradition is the AAPG spring semester field trip. This year the chapter will join Dr. Tim Lawton and New Mexico State University for field trip through the national parks of Utah from May 15-22. Last year's field trip was during UNLV's spring break and featured the Ridge basin, Santa Maria basin, and Montana de Oro State Park of south-central California, and the Carrizo Plain National Monument. The AAPG Student Chapter is also working out the details of a possible fall semester field trip to Railroad Valley Nevada with members of our sponsoring organization, the Nevada Petroleum Society.

The **UNLV Society of Exploration Geophysicists (SEG) Student Chapter** has been dormant this year due to its overachieving members. But don't worry; the candy and button sales are leading up to a spectacular field trip next year! Also, great looking calendars were made entitled

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Student Clubs continued from page 3

“Geology around the World” and sold to the faculty and students. Plans are still in the works for the display cases in the library. Look for those next year.

The **UNLV Geology Club** has continued the tradition of an annual Colorado float trip, and will be looking to increase student participation through a number of weekend or day outings to some of the great locations near Las Vegas, such as Mojave National Preserve, Red Rocks, and Zion N.P. Last October the UNLV Geology Club organized a day trip to the Mojave National Preserve to tour the spectacular Mitchell Caverns and hike the Kelso Dunes. The annual float trip was run this March as a two-day canoe trip down the Colorado River through Topock Gorge and the Havasu National Wildlife Refuge from Needles California to Lake Havasu Arizona. Highlights of the trip were views of the craggy Needles Peaks, paddling through reed-lined marshes and back-bays, Mohave and Chemehuevi petroglyphs, ocotillos, palo verde, beaver lodges, otter tracks, and sightings of great blue herons, coots, hawks and wild burros. At night we were serenaded by a pack of coyotes who apparently mistook participant Marty Erwin for road kill. This year the paddle was complete with pirate themed hats, music, and ambushes! The Desert Olympic champion award went to Jonathan Carter for his 5 km Captain Morgan crawl. The UNLV Geology Club will soon be considering destinations for a fall weekend trip, possibly Zion N.P., as well as the idea of making our annual paddle trip a bi-annual event with a fall paddle through Black Canyon.

The **UNLV Association of Engineering and Environmental Geologists (AEG) Student Chapter** was an active participant in the 2005 AEG Annual Meeting, held in September at the Flamingo Hotel. Volunteers from the UNLV Chapter included Tonia Arriola, Todd Arrowood, Tricia Evans, Melissa Hicks, Joe Kula, Willy Rittase, Sandra Saldaña, Jennifer Wright, and Shelley Zaragoza. Brett McLaurin and Shelley Zaragoza were both recipients of the 2005 Platinum Award for their abstracts, which they presented in the Geophysics technical session at the meeting. The Las Vegas Chapter hosted its second annual Student Presentation Night during the monthly meeting on February 7 at McCormick & Schmick’s Restaurant, where participants presented their original research projects. The host for the evening was Nevada State Geologist Dr. Jonathan Price. The winners were April Azouz, first place, Sandra Saldana, second place, and Todd Arrowood, third place. On Wednesday April 12, the Student Chapter hosted a luncheon for Seminar Speaker and AEG President Darrel Schmitz. Dr. Schmitz is a hydrogeologist and professor of geology at Mississippi State. His seminar topic was, “Katrina: Geologic, Disaster, and Personal Perspectives.” The Chapter is still selling “Doing a dam good job...” Hoover Dam t-shirts in the Geoscience main office. These shirts were designed by recent graduate Darlene McEwan.



In Step with Peg Rees

Geoscientist Peg Rees is living the once-in-a-lifetime opportunity where personal, educational, and professional dots are connected. “I’m not sure if it’s the perfect storm or harmonic convergence,” Peg joked. Perhaps it depends on the day or the time of day.

Growing up in California’s Central Valley, Peg’s addiction to wide open spaces began at the age of 8. It was cultivated from summer camp in the Sierra Nevada Mountains through scientific research in Antarctica to the classrooms of UNLV as a professor of Geoscience. Peg’s way of life became *the way to life* – appreciating and understanding the balanced use of public lands with the protection of the natural environment. “I experienced the need for balance first hand early on in my career,” she said. “During the week, I worked as an exploration geologist in Wyoming and saw how the extractive industries changed the open space forever. Then on the weekend, I’d escape to the highest peaks in the Wind River Mountain wilderness and Yellowstone National Park. This inherent conflict between use and protection was a real-life struggle for me.”

Peg is now the executive director of the Public Lands Institute, an idea she developed. Peg believes UNLV is the perfect home for this initiative. While UNLV is a major urban university, it resides within a county that spans 7,880 square miles, the majority of which is managed by federal agencies. The Bureau of Land Management administers approximately 55.6%; the U.S. Fish and Wildlife Service manages 9.8%, mainly in the Desert National Wildlife Range; the National Park Service oversees the 454,300-acre Lake Mead National Recreation Area, which is 8.9% of Clark County; and the U.S. Forest Service watches over 5.4% of county lands, including the Spring Mountains National Recreation Area of the Humboldt-Toiyabe National Forests.

The mission of the Public Lands Institute is to strengthen the national fabric that is essential for the protection, conservation, and management of public lands. The institute specializes in education, research, and community engagement projects related to public land management and stewardship. “We work closely with federal, state, and non-profit partners across the nation, and soon around the world, to deliver projects in a high quality, timely, and cost-effective manner,” Peg explained.

The Public Lands Institute celebrated its second anniversary in January 2006. It still may be a new institute for UNLV, but not for Peg. She sees it as a new initiative that is helping change the Southern Nevada landscape with a balanced point of view.

New Courses

Addressing Science and Society

“Science in American Culture”

by Steve Rowland

The Department of Geoscience has added a new general education course that explores the relationship between science and other aspects of American culture. The course was an outgrowth of my involvement in the revamping of UNLV’s general education requirements, together with my research on the evolving place of science in the writings of Mark Twain and my interest in the role of science (or not) in American public policy decisions today. Even though the course examines the broad spectrum of science, I think it will be a good vehicle with which to expose lower-division students to the pleasures of geology, and perhaps to recruit a few majors.

An important objective of the course is for students to develop “scientific literacy,” which includes not only fundamental concepts of science, but also an understanding of how science is done and the role of science in modern society. Most introductory science courses are packed with content, but rarely do the students develop a very clear picture of how science really works.

Last fall I was able to teach the class as an undergraduate seminar, with the content being based on three books. First we read and discussed *The Manhattan Project—big science and the atomic bomb* by Jeff Hughes. That book allowed us to examine the powerful impact of physics on our culture, especially in the first half of the twentieth century. This was followed by David Raup’s book *The Nemesis Affair—a story of the death of dinosaurs and the ways of science*. Raup uses the K-T extinction as a case study of the scientific process, including peer-review, disagreements among scientists, and the role of the press in publicizing scientific advances. And we finished the semester by reading *Rocks of Ages—science and religion in the fullness of life* by Stephen Jay Gould. The Gould book gave us a historical framework within which to examine the current conflict about intelligent design and Darwinian evolution.

Along the way, we also explored similarities and differences between science and art. For many of the students, the high point of the course was an assignment to find an American artist whose work is inspired by science. Subjects ranged from singer/lyricist Greg Graffin to composer John Adams. Graffin, who has a Ph.D. in philosophy of science from Cornell, is the lead singer of the punk band Bad Religion. His lyrics often include scientific themes. John Adams wrote the opera *Doctor Atomic*, which is based on the Manhattan Project. My own presentation was about the work of the early nineteenth-century American landscape painter Thomas Cole, who frequently included erratic boulders in his paintings. We now know that these erratics were dropped by Pleistocene glaciers, but in Cole’s day they were widely interpreted to have been deposited by the waning waters of the Flood of Noah. Continental glaciation was an unknown concept at the time. In Cole’s paintings the erratics represent the impotence of humanity in the shadow of God’s omnipotence. They don’t carry the same meaning today—to artists or geologists—which is a measure of change within the culture.

Perhaps the most important component of the course concerns science in American public policy today. Many prominent scientists have accused the Bush administration of assiduously eschewing unvarnished scientific analysis, preferring instead to make decisions that are driven by entrenched ideological or religious views. Global warming and research on stem cells are two high-profile examples. By offering a general education course in which students explore what science is, and how scientists work and think, I’m hopeful that some members of the next generation of voters will make more informed decisions than they would have made without this class.

“Conversations with the Earth”

by Adam Simon

The Geoscience Department will offer a new course entitled “Conversations with the Earth” beginning in Fall 2006. The course is open to all students; however, it is aimed at non-science majors. For these students, college serves as the last time that they will be exposed to a formal learning environment in which scientific literacy can be gained. However, most liberal-arts students fear taking college-level science courses because the perception is that these courses will be too jargon laden and technical. Many students in introductory science courses spend their time cramming and memorizing material to pass the course. They do not emerge with a big-picture appreciation of science. In an attempt to develop an appreciation for science, the department has designed the new course to introduce students to their natural environment in a way that familiarizes students with the big picture so that they do not get turned off and bogged down in the minutia of technical details.

The course will be taught by a different faculty member each week that is charged with discussing her/his research, its applications and its benefit and importance to society. Subject matter in the course includes: Yucca Mountain, catastrophic floods, evolution and extinction of life, climate change, global warming, volcanism, mountain building, ice ages, Nevada geology, ore deposits, and groundwater, among others. Students will attend two classes each week. These will not be traditional lecture classes where the professor talks and the students simply take notes and listen. Rather the format will be open and inviting and designed to actively engage students in discussing the material. The first lecture involves a faculty member presenting her/his science in such an open style to stimulate faculty-student dialogue. Students will be given either individual or group projects that must be completed and submitted at the beginning of the second lecture. The second lecture allows time for further presentation of the research topic by the faculty member and group discussion of the assigned problem set. Such a schedule will promote active and progressive learning about relevant scientific issues throughout the semester. We hope that by introducing students to a wide variety of current geoscience issues without the technical requirements of traditional introductory courses that they will gain a greater understanding and appreciation of the geosciences.



DEPARTMENT AWARDS AND HONORS

Undergraduate Student Awards 2005 – 2006

Lora Griffin: UNLV Southern Nevada Gem and Mineral Society Scholarship

Rachael Johnson: UNLV AAPG Weeks Grant, UNLV Natural Science Scholarship

Rae-Anne Mckinley: UNLV Southern Nevada Gem and Mineral Society Scholarship, UNLV Bernada E. French Scholarship in Geology

Jennifer Mercadante: UNLV Bernada E. French Scholarship in Geology, UNLV Natural Science Scholarship

Garrett Speeter: UNLV Bernada E. French Scholarship in Geology

Jennifer Wright: UNLV Bernada E. French Scholarship in Geology

Graduate Student Awards 2005 – 2006

Tonia Arriola: UNLV Death Valley Scholarship, UNLV Bernada E. French Scholarship in Geology

Todd Arrowood: AEG Southwest Chapter Student Presentation Night – Third Place, UNLV Bernada E. French Scholarship in Geology

April Azouz: AEG Southwest Chapter Student Presentation Night – First Place, UNLV Bernada E. French Scholarship in Geology

Joshua Boxell: UNLV Bernada E. French Scholarship in Geology

Amy Brock: Joe B. and Martha J. Dixon Soil Mineralogy Endowment Awarded for Poster at 2005 Soil Science Society of America Annual Meeting, Geological Society of America Graduate Student Research Grant received Honorable Mention to the Farouk El-Baz award, Graduate and Professional Student Association Grant, UNLV Geological Society of Nevada Scholarship

Peter Druschke: UNLV Bernada French Scholarship, AAPG Funkhauser Memorial Grant, SEPM Rocky Mt. Section Donald L. Smith Grant, UNLV Graduate and Professional Student Association Grant, UNLV Great Assistantship, Nevada Petroleum Society Scholarship, 50th Anniversary Eagle Springs Discovery Silver Ingot Award

Tricia Evans: UNLV Bernada E. French Scholarship in Geology

Kati Gibler: UNLV Graduate and Professional Student Association Grant, UNLV Bernada E. French Scholarship in Geology

Aaron Hirsch: UNLV Bernada E. French Scholarship in Geology

Denise Honn: UNLV Bernada E. French Scholarship in Geology

Michael Howell: UNLV Graduate and Professional Student Association Grant, UNLV Bernada E. French Scholarship in Geology

Robyn Howley: Nevada Petroleum Society Graduate Scholarship, Institute for Cambrian Studies Research Grant “*Integrated sequence and chemostratigraphic analysis of the Middle Cambrian succession in eastern Nevada and western Utah*”, UNLV Geological Society of Nevada Scholarship

Joseph Kula: UNLV Graduate and Professional Student Association Travel Grant, UNLV Edwards & Olswang Scholarship, Geological Society of America Graduate Student Research Grant “*Late Cretaceous separation of New Zealand and Antarctica: thermochronologic constraints on continental extension from Stewart Island, New Zealand*”, UNLV Bernada E. French Scholarship in Geology, UNLV Geological Society of Nevada Scholarship

Yuyu Lin: UNLV Bernada E. French Scholarship in Geology

Risa Madoff: UNLV Bernada E. French Scholarship in Geology

Ernesto Moran: UNLV Bernada E. French Scholarship in Geology

Thomas Muntean: UNLV Bernada E. French Scholarship in Geology

Penelope Pademore: UNLV Bernada E. French Scholarship in Geology

Audrey Rager: NASA/Nevada Space Grant, NASA/JPL Planetary Science Summer School, UNLV Graduate and Professional Student Association Grant

William Rittase: UNLV Bernada E. French Scholarship in Geology

Colin Robins: UNLV Bernada E. French Scholarship in Geology

Alex J. Roy: UNLV Graduate and Professional Student Association Grant, UNLV Bernada E. French Scholarship in Geology

Nathan Suurmeyer: UNLV Edwards and Olswang Scholarship

Lael Vetter: Geological Society of America Graduate Student Research Grant, UNLV Graduate and Professional Student Association Grant, UNLV Bernada E. French Scholarship in Geology

Kathleen Wooton: UNLV Desert Space Scholarship, UNLV Bernada E. French Scholarship in Geology

Jun Yin: UNLV Bernada E. French Scholarship in Geology

Maureen Yonovitz: UNLV Bernada E. French Scholarship in Geology

Shelley Zaragoza: AEG 2005 Annual meeting - AEG Platinum Corporate Sponsor Outstanding Student Abstracts, “*Crustal Velocity Model of Watusi Data Integrated with Legacy Data, Southern Nevada*”, UNLV Bernada E. French Scholarship in Geology

DEPARTMENT AWARDS AND HONORS continued

Faculty and Staff Honors/Awards 2005 – 2006

Brenda Buck: USDA-NRI - Co-investigator, Soil physical, chemical, and mineralogical development associated with *Cercocarpus ledifolius* stands on Mt. Charleston, Nevada, UNLV Site Grant - Salt Mineralogy in Arid Soils of the Virgin River Valley, NV, USA., NMSU - Gypsic Paleosols in the Paradox Basin, Institute of Tectonics, USGS - Late Cenozoic Mapping of the Sprint Mountain SE 7.5 min Quadrangle Arizona-Nevada, BLM - Co-investigator, Soil physical, chemical, and mineralogical properties and their effect on *Eriogonum corymbosum* var. and *Arctomecon californica* in North Las Vegas, Private Donation to UNLV Foundation - Genesis of Hyperarid soils in Atacama Desert, Chile

Jean Cline: Invited lead author, Society of Economic Geologist's 100th Anniversary Volume, Carlin-type Gold Deposits in Nevada, USA (2005), Chair, 2005 Gordon Research Conference on Inorganic Geochemistry, USGS - Inorganic Geochemistry Gordon Research Conference, NSF - 2005 Inorganic Geochemistry Gordon Research Conference, USGS - Mineral deposits in southern Nevada, UNLV SITE Grant - Walking Box Ranch: An Opportunity for Interdisciplinary Research, 2005-06, PI (Co-PIs Mark Hoversten, Brett Riddle, Barbara Roth)

Andrew Hanson: U.S. Geological Survey - Additional Funding Minerals Assessment of Clark County, NV

Matthew Lachniet (PI) and Ganqing Jiang (Co-PI): National Science Foundation - Acquisition of a Stable Isotope Ratio Mass Spectrometer for Earth Systems Science Research at the University of Nevada, Las Vegas

Adam Simon: UNLV New Investigator Award “*Using fluid inclusions to track fluid migration in sedimentary basins*”

Catherine M. Snelson: 2005 IRIS Summer Undergraduate Internship Program, IRIS, LLNL CAREER Award - Imaging Sub-Surface Structures to Understand Focusing Effects into the Las Vegas Basin, UNLV RF – OAT/LLNL/DOE - Yield Estimation Based on Legacy Data and Acquiring Modern Data Sets for Calibration Purposes, PI: Harry Bostick, Co-PIs: Catherine Snelson and Barbara Luke, DOE - Earthquake Hazards and Risks in Southern Nevada – from the Source to the Citizen, PI: Barbara Luke, Co-PIs: Catherine Snelson, Wanda Taylor, and Ron Sack, USGS NEHRP - Quaternary Faulting and Seismic Source Characterization in the Las Vegas Metropolitan Area, PI: Wanda Taylor, Co-PIs: Jim McCalpin (GEO-HAZ), Craig dePolo (NBMG), and Catherine Snelson, Established the Applied Geophysics Center (AGC) - director

Wanda J. Taylor: DOE - Earthquake Hazards and Risks in southern Nevada - from the Source to the Citizen, PI: Barbara Luke, Co-PIs: Wanda Taylor, Catherine Snelson, and Ron Sack, USGS NEHRP - Quaternary Faulting and Seismic Source Characterization in the Las Vegas Metropolitan Area, PI: Wanda Taylor, Co-PIs: Jim McCalpin (GEO-HAZ), Craig dePolo (NBMG), and Catherine Snelson

Geoscience Donors

(July 1, 2005 - April 30, 2006)

Anne Wyman Scholarship Fund

Frederick W. Bachhuber
Ganqing Jiang
Stephen M. Rowland
Jean S. Cline

Andrew Hanson
David Tottori
Maureen Wruck

Graduate Student Fund

Matthew S. Lachniet
Karen C. Cash
Patrick Drohan
Charles Gardner

Others

Mountain Edge Builders Co-Op
Exxon Mobil Corporation
Desert Space Foundation
Southern Nevada Gem & Mineral Society
Geological Society of Nevada (GSN)
Two anonymous donors to the GSN scholarship fund

(Please see page 3 for GeoSINposium donors)

My experiences at UNLV

Melissa Hicks

In 1999, I started my Masters at UNLV, and by 2006 I had traveled from Oregon to China and France, defended both my master's and Ph.D. dissertations, learned a new language, and survived the Graduate College formatting—twice. I taught four different classes, performed CPR on a Chinese woman, learned chemostratigraphy, became a beer goddess, ran a marathon, learned western U.S. geology, and had my appendix removed. I stood on modern dolomite forming on supratidal flats, snorkeled off of Belize and Hawaii, stressed myself out completely, met some of my greatest friends, and learned more about archaeocyaths than should be allowed by law. Despite living in a desert, I often went skiing. I experienced an earthquake, and tasted green chilies for the first time. I survived my comprehensive exams (tectonics, igneous petrology, geomorphology, and paleontology), and visited Death Valley, Grand Canyon, Zion, Great Basin, Chaco Canyon, White Sands, Guadalupe Mountains, Carlsbad, Kings Canyon, Joshua Tree, Canyonlands, Arches, and Sequoia National Parks. I helped hire seven new faculty members in Geoscience, made over 500 thin sections, interpreted seemingly irrelevant data, created more questions than answers, and found my niche. I found the love of my life and met the greatest mentors and professors of my life. I slept under the stars, have seen rattlesnakes, tarantulas, and scorpions in their natural habitats, but have never seen a desert tortoise in its natural habitat. I kayaked, survived 125° heat, saw snow in the Valley—twice, moved four times, saw a 500 pound Elvis impersonator (very good), expanded my horizons, and spent approximately 1248 hours at Mooses (drinking beer). I hiked, camped, backpacked, danced, sang, listened, learned, and lived (on the pathetic stipend), cried, rejoiced, and laughed a lot. I have experienced a great variety while at UNLV—both wonderful and heart wrenching—and I take away with me memories and experiences that shaped my life and will be with me forever.



Anne Wyman

Where were you in September 1966? That was the year Anne Wyman began teaching at UNLV. Herb Wells was School Director and there was no geology department yet. Anne was the first faculty member hired to teach geology and geography. At that time, the Departments of Chemistry, Biology,

Physics and Math as well as any engineering or geology classes were all housed together in what is now the geology building. Faculty members' normal teaching load in those years was four courses per semester. The only graduate programs then were in Biology and Physics. Faculty taught their own labs.

Anne Fenton Wyman was born and raised in Cleveland, Ohio. She lived near Wade Park, the Cleveland Art Museum and Case Western Reserve University (CWRU). She graduated from East High School (the same high school Bob Hope attended). Anne was a "town girl", living at home while earning her way through college by working at Hough Bakeries. She was the first woman to graduate in geology from CWRU (1947).

It was at CWRU she met her future husband Richard Wyman, who had returned from the Navy and was studying engineering and geology. After graduating from CWRU, she went to University of Michigan for her Masters. Richard and Anne were married in 1947, and after Dick's graduation in 1948, attended field camp together in Wyoming. Both received their Masters from University of Michigan in June 1949.

Wyman's first child was born that summer in Ann Arbor and tragically, lived only a week. Needing a change of scenery, the Wymans left Ann Arbor the following year and went to Peru where Dick was hired as a geologist at the large Cerro de Pasco mine. Anne taught the one room school (K-8) for English speaking children. The Wyman's returned from Peru in time for the birth of their next child, William (Bill) who was born in Prescott, Arizona. Anne and Dick eventually moved to Boulder City, NV where Dick was employed in the underground construction at the Nevada Test Site. Anne looked for a teaching job and met Herb Wells at "Nevada Southern", a new fledgling "university" in Las Vegas that became UNLV. Herb Wells offered to hire her, and the UNLV story began.

Anne's first big assignment at UNLV was to create an undergraduate geology curriculum at the bachelor's level. Using the course offerings of the best departments in the U.S. (Berkeley, Michigan, Harvard, etc.), she created a matrix and wrote course descriptions and curricula comparable to the best. UNLV is in an ideal location for field work, so this was to be the main thrust of the B.S. degree program. She wrote and presented two programs, (a B.S. and a B.A.) took them through the University Curriculum Committee to the Regents, where they were approved. The B.S. degree took hold with the first graduate in 1970, and continues today as the basic degree in the department. The B.A. degree graduated one major (Toni Heiner) and was rewritten as the B.S. degree in Earth Sciences.

Anne is a member of Phi Kappa Phi Honor Society, serving two years as President of the local Chapter 100. Anne introduced and sponsored the geology honor society Sigma Gamma Epsilon (SGE) at UNLV, which was the active geology club as long as she taught here. She also served two years as Western Field Representative of SGE and inaugurated the new chapter at U of Oregon. She excels in teaching and was the first winner of the Spanos Award for the best teacher in the university (1980). Anne served six years in the UNLV Faculty Senate and two years as Geology Department Chair.

Mrs. Wyman inaugurated and built the mineralogy collection, part of which is on display in the first floor lobby. She created and organized the collection based on the Dana System of mineralogy, using donated materials and money from an NSF grant.

continued

Anne also loves geography and taught Physical Geography 101 for 25 years. In 1976-78 Anne and her husband did a large consulting job in the Andean nations of South America, locating resources and plant sites for pig iron foundries. Mrs. Wyman also served as Corporate Secretary for Intermountain Exploration, the NASDAQ listed company on which her husband presided. She and her husband have traveled the world visiting over 80 countries.

Anne Wyman retired in 1994, after 28 years in the Geology Department. She saw faculty grow from one (herself) to thirteen, plus twelve graduate assistants. She saw the department grow from the programs she introduced, to the present department with Master of Science and Ph.D. programs.

Anne's favorite subject is mineralogy and it was her major as well. Anne and husband Dick donated personal funds to endow the Anne Wyman scholarship fund, begun by the department in Anne's honor after her retirement. This fund, one of two scholarship funds in the department open to donations, provides scholarships for students who excel in mineralogy.

The Wymans are both retired and live in Boulder City. They welcome visits by former students and faculty if you give them a phone call to be sure they are at home (702-293-4178).

Geoscience Faculty and Students are Getting Salty in Mexico!

Starting in 2002, faculty members with diverse areas of expertise, i.e., soil science/paleosols (Dr. Brenda Buck), petroleum geology (Dr. Andrew Hanson), carbon isotopes (Dr. Ganqing Jiang) and fluid inclusions (Dr. Adam Simon) have become actively engaged in research projects that focus on different aspects of La Popa basin in NE Mexico. Last November, these four faculty members traveled to Monterrey MX to attend the annual Institute of Tectonics (NMSU) consortium meeting where scientists involved in La Popa research present their newest findings to supporting petroleum companies. Drs. Hanson and Buck gave presentations and all four UNLV faculty members participated in the 2-day fieldtrip. Prior to the meeting, Drs. Hanson, Buck, and Simon collected field data for their respective research projects. Their field day was full of mishaps, beginning with mix-ups regarding rental vehicles, delayed lunches that were supposed to be provided by the hotel, and when they finally reached the field, the axle to their suburban became high centered and stuck in a very deep and narrow arroyo when Dr. Hanson misjudged his turn-around by a few millimeters. They were able to get themselves unstuck after about an hour of digging and filling in the arroyo with large rocks, and serious harassing of Dr. Hanson. Once the suburban was freed from the arroyo's hold, Dr. Buck took off on a long hike. Later that day, when she met back up with the rest of the group they discovered that the entire backside of her pants had become air-conditioned due to a spectacular fall down the cliff face. These adventures contributed to the evenings enter-

tainment as the participants for the meeting arrived and attended the happy hour.

What draws this diverse set of geoscientists to La Popa? La Popa is one of the very rare places where features known as salt diapirs and welds are exposed at the Earth's surface. In La Popa's case, the salt was deposited about 160 million years ago. Other sediment was subsequently deposited on top of the salt layer. Salt is a very weak rock; consequently when pressure is applied to it (in this case by the overlying layers of younger sediment) the salt starts to move upward. As a result, salt is now exposed at the Earth's surface in two large diapirs (roughly circular exposures of salt at the surface) that are each a couple of kilometers in diameter. Additionally, a 25km long salt weld is exposed in La Popa. A weld forms when salt that is surrounded by sediments eventually evacuates from the site and the sediments that had encased the salt close the hole and are thus "welded" together.

UNLV Geoscientist are interested in salt welds and salt diapirs at La Popa because they are analogues for similar features that are buried beneath the waters of the Gulf of Mexico. The salt diapirs and welds in the subsurface of the Gulf of Mexico play a very important role in where reservoirs containing hydrocarbons are located. These reservoirs are the main site of oil exploration in the United States today and they provide essential energy sources for the U.S. Unfortunately, we can't walk around on, or see what features are associated with, the salt features in the subsurface of the Gulf of Mexico. Because La Popa basin sits in an area with an arid environment, the features of interest at La Popa are beautifully exposed at the surface.

Several UNLV graduate and undergraduate students have been involved in research projects in La Popa. Funding for the research has come from oil companies interested in the research; an American Chemical Society Petroleum Research Fund grant (Brenda Buck), and a UNLV New Investigator Award (Adam Simon).



Faculty member Andrew Hanson trying to get the field vehicle back on the road in Mexico

The Graduate Program-A brief personal perspective*

Eugene Smith

Work began on a proposal for a Master of Science of Geology degree in 1973, the same year the modern Department of Geoscience was established. Our department grew from an amalgamation of faculty organized into a Department of Planetary Sciences and Engineering (1968) and then a Department of Engineering, Geography and Geology (1970). When Steve Rowland and I arrived at UNLV in 1978, the Master of Science program had just been approved (June 1978) but the department held off admitting students. Reasons for delay included the need for additional planning, an increase in the department budget to fund the new program had not been approved, a lack of space in "Science Hall" (now the Lilly Fong Geoscience Building), and worries about the effect of the new graduate program on the excellent undergraduate program. After I returned to UNLV as a full time faculty member in 1980 Fred Bachhuber, then department chair, asked me to coordinate an effort to get the program running. After several years of discussion but without any increase in funding the MS degree program started in the fall of 1982 with the admission of four students. The first class included Clay Crow, now a member of our faculty, Ingrid Myers, Robin Hill and Tom Hurst.



The MS program grew quickly and in a few short years nearly 30 graduate students were enrolled. The first MS degrees were awarded to Clay Crow (Spring 1984) and Ingrid Myers (Fall 1984). The program quickly established a national and international reputation for high quality research and excellent students. In fact six of our first 10 MS students obtained Ph.D. degrees at other institutions. Also, five of our first 15 students received the Graduate College Alumni Outstanding Thesis Award and four received the Outstanding Thesis Award (the second highest award for an excellent thesis).

In 1988, Dr. Ernie Duebendorfer and I started preparing a proposal for a Ph.D. program and Fred Bachhuber, Peg Rees and Tim Wallin made important contributions to this proposal. The proposal was completed in 1992 and submitted to the University. The long evaluation period began with the visit of a panel of geologists including Dr. Clark Burchfiel (MIT), Dr. Gary Ernst (Stanford) and Dr. Bill Hinze (Purdue University). The panel gave the proposal a positive review and recommended that the program be started immediately. "Immediately" turned out to be nearly six years, because the program wasn't officially approved by the Board of Regents until June 1998. During this six year period, the proposal was rewritten several times with input from numerous faculty. Another panel of geologists visited campus to provide a review of our faculty and facilities. We received another positive review and finally the department admitted its first Ph.D. student nearly 10 years after the initial proposal was prepared. Our first Ph.D. students arrived in fall 1998 and Leigh Justet and John Van Hoesen graduated with Ph.D. degrees in 2003. In 2006, Ph.D. students make up about 40% of our graduate student population (17 Ph.D. students out of a total of 43 graduate students) with that number hopefully increasing to 50% in the coming years. An important milestone in the evolution of the graduate program occurred in 2005 with the addition of four areas of specialization. Graduate students can now obtain MS and Ph.D. degrees with an emphasis in geology, geophysics, hydrogeology or soil science.

Because of the high quality and reputation of our MS program, our Ph.D. program has been accepted by the academic community without the usual "probationary" period that many new programs go through. Our Ph.D. students have not had trouble finding jobs in industry and in the academic community.

The quality of applications for the Ph.D. program has improved greatly in the last several years and we find ourselves competing with some of the most prestigious universities in the western United States for students. Competition to attract the best Ph.D. students is one of our most important challenges. Some of these universities are offering twice the amount of a UNLV graduate assistantship stipend. UNLV is fighting back with the Nevada Stars program that offers competitive GA salaries, but the number of these awards is very limited and our department must compete with all UNLV departments. We encourage you to contribute to the department and direct all or part of your donation toward supplementing GA stipends and graduate student research support. This support will allow us to successfully compete for the brightest and most enthusiastic students.

** I thank Fred Bachhuber, Andrew Hanson and Clay Crow for providing information that helped me prepare this brief history of the graduate program.*

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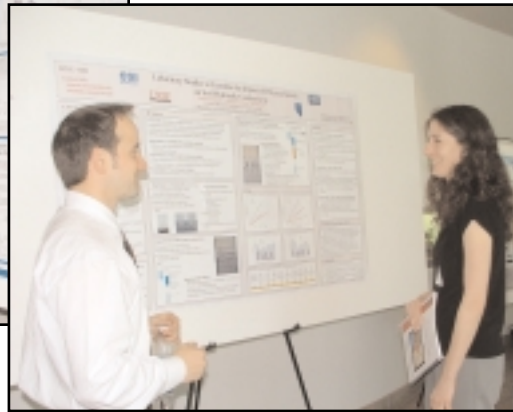
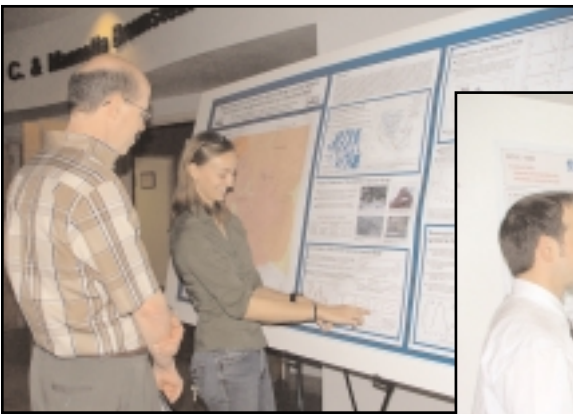
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Oral and poster presenter first and second place winners, from left to right, Joshua Boxell, Tonia Arriola, April Azouz, Nate Suurmeyer, Amy Brock, Joseph Kula, Peter Druschke, Shelley Zaragoza



1st Annual GeoSINposium



Oral and poster presenters at the 1st Annual UNLV GeoSINposium. From left to right: Joshua Boxell, Feng Pan, Ernesto Moran, Joseph Kula, April Azouz, William Rittase, Denise Honn, Aaron Hirsch, Peter Druschke, Penelope Padmore, Michael Howell, Amy Brock, Nate Suurmeyer, Todd Arrowood, Janice Morton, Shelley Zaragoza, Tylor Birthisel, Risa Madoff, Tonia Arriola, Nick Miller, Jennifer Wright, Jaime Harris, Maureen Yonovitz, Jennifer Barth, Shana Goffman Tighi, Garrett Speeter, Sandra Saldaña, Wendy Barrow. Not pictured: Alex Roy

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