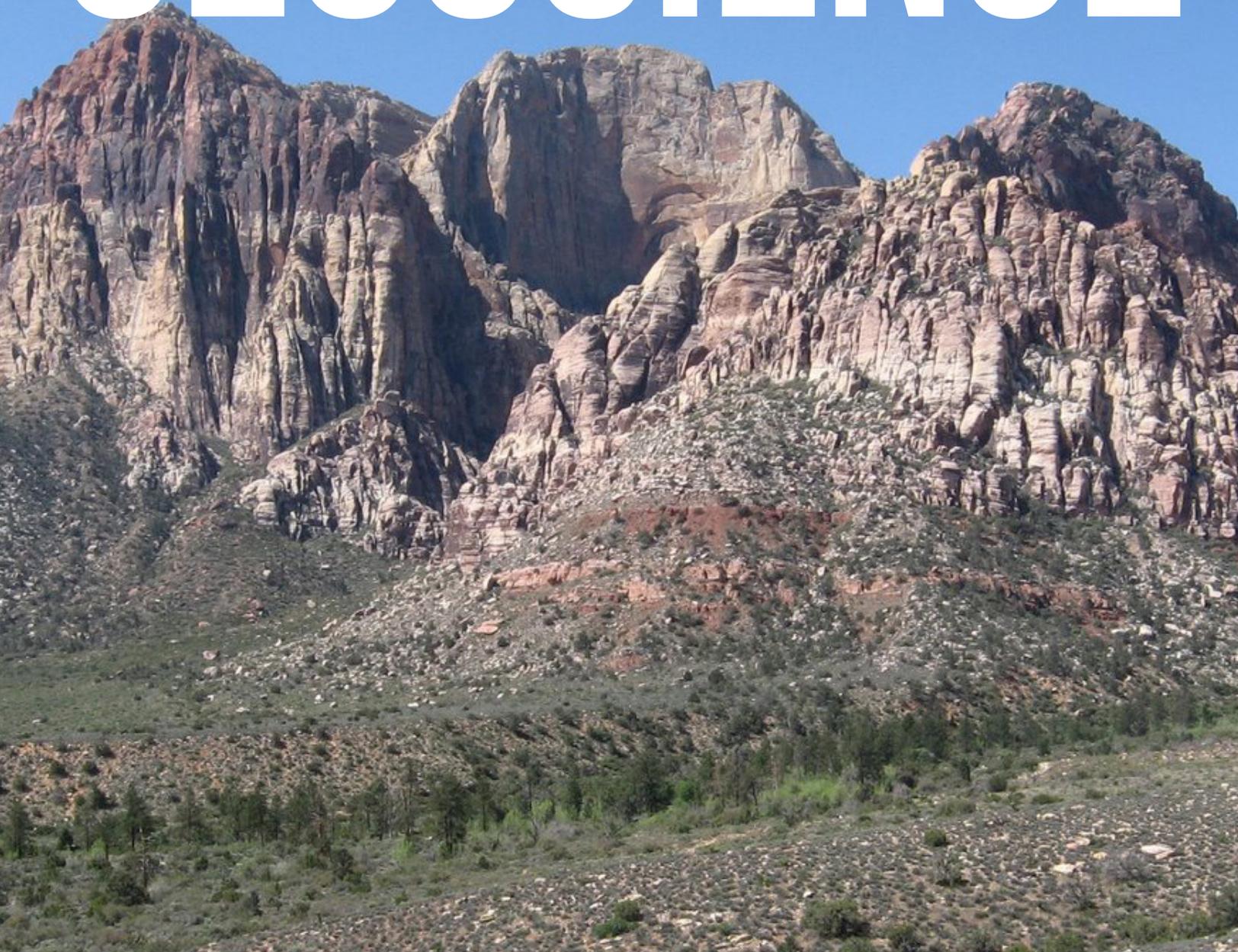


DEPARTMENT OF

GEOSCIENCE



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UNLV DEPARTMENT OF GEOSCIENCE

NEWSLETTER Fall 2013

LETTER FROM THE CHAIR

Hello to all alumni and friends of the UNLV Geoscience Department! I am excited to be the new chair of the Department as of July 1, 2013. I'm taking this position since Michael Wells, who has represented us well over the past 6 years as chair, has stepped down. Many thanks to Michael for his dedicated service to the Department!

As you may have read about in last year's newsletter, the university and the Department have weathered several years of budget cuts and economic uncertainties, along with a number of departments and degree programs being eliminated. In 2013 most of these uncertainties appear to be behind us now as we enter what we hope to be a period of more stable fiscal and academic outlook.

Despite the trying times we have been through, I am happy to report that the Geoscience Department has not only survived, but is flourishing. Our distance education classes continue to be a great success. Our undergraduate program has seen significant increases in majors and in course enrollments, with many classes filling, being increased in capacity and filling again, and many classes have needed extra laboratory sections to accommodate demand. Our graduate students remain very active in research all over the world, and in presenting results at professional meetings. The 8th annual Geosymposium in April 2013 was a great success again, attracting numerous industry representatives

and sponsorship, and plans are already underway for the 9th Geosymposium this April.

There are some changes among our faculty, with the retirement of Gene Smith (who will remain active in the Department as Emeritus Professor), the resignation of Adam Simon, and Andrew Hanson taking on a 3 year assignment as Associate Dean of the Honors College. We are currently working on searches to replace Adam and Gene. Melissa Giovanni has joined us from the University of Calgary as a visiting assistant professor to fill in for Andrew, and Gabe Judkins has taken a position as the Department's second Faculty In Residence.

We are always happy to hear from alumni and friends, so please stay in touch with the Department. You can update your contact information by using the enclosed form, emailing the department at geodept@unlv.edu, or submitting the new online contact form found on our website at <http://geoscience.unlv.edu/AlumniContactForm3.html>. We would be delighted to see you at an upcoming professional meeting, and please consider attending our next Geosymposium in April 2014.

Best Wishes,

Terry L. Spell
Geoscience Department Chair

CONGRATULATIONS JOHN



From the Green Mountain College website:

John Van Hoesen, associate professor of geology and environmental studies at Green Mountain College, has received the 2013 Biggs Award for Excellence in Earth Science Teaching. The award, presented annually to one person by the Geological Society of America, recognizes innovative and effective teaching of earth science among early career faculty. Van Hoesen holds a Ph.D. in geoscience from University of Nevada, Las Vegas."

RESEARCH GRANT NEWS:

THREE GRADUATE STUDENTS IN GEOSCIENCE — ALISON LACY, FREDERICK FREUDENBERGER, AND SWAPAN SAHOO — RECEIVED GSA RESEARCH GRANTS THIS YEAR.



Alison
Lacy

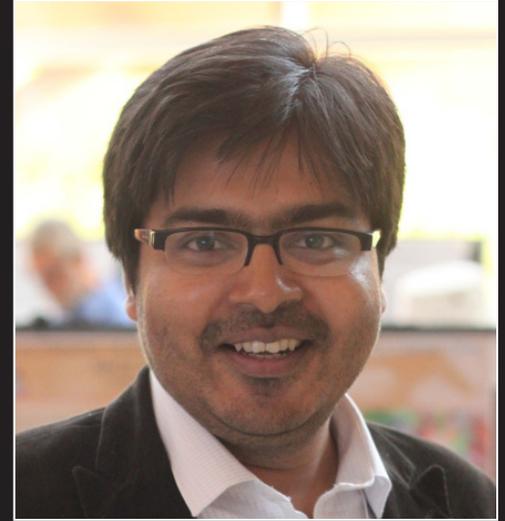
Thesis Title: Garnet dating, pressure-temperature time paths and kinematic analysis of the schist of Upper Narrows, Raft River Mountains, Northwestern Utah: Tectonic implications of pressure-temperature-time-deformation paths.

I received GSA funding for the work I am doing on garnet bearing pelitic schist from the Upper Narrows region of the Raft River Mountains. The Upper Narrows is part of a metamorphic core complex in the hinterland of the Sevier orogen. My research will focus on the timing of the transition from contraction to extension in the hinterland as it is not well constrained. Garnets from the schist of Upper Narrows have been dated using Lu-Hf geochronology. These garnets display growth zoning and contain sigmoidal inclusion trails which may be used to determine shear sense. Thermodynamic modeling will be conducted to determine changing pressure-temperature conditions during garnet growth. GSA funding will be used to produce thin sections for kinematic analysis that will help to determine shear sense and the axis of rotation of the garnets. Funding was also used for microprobe analysis necessary for thermodynamic modeling.



Frederick
Freudenberger

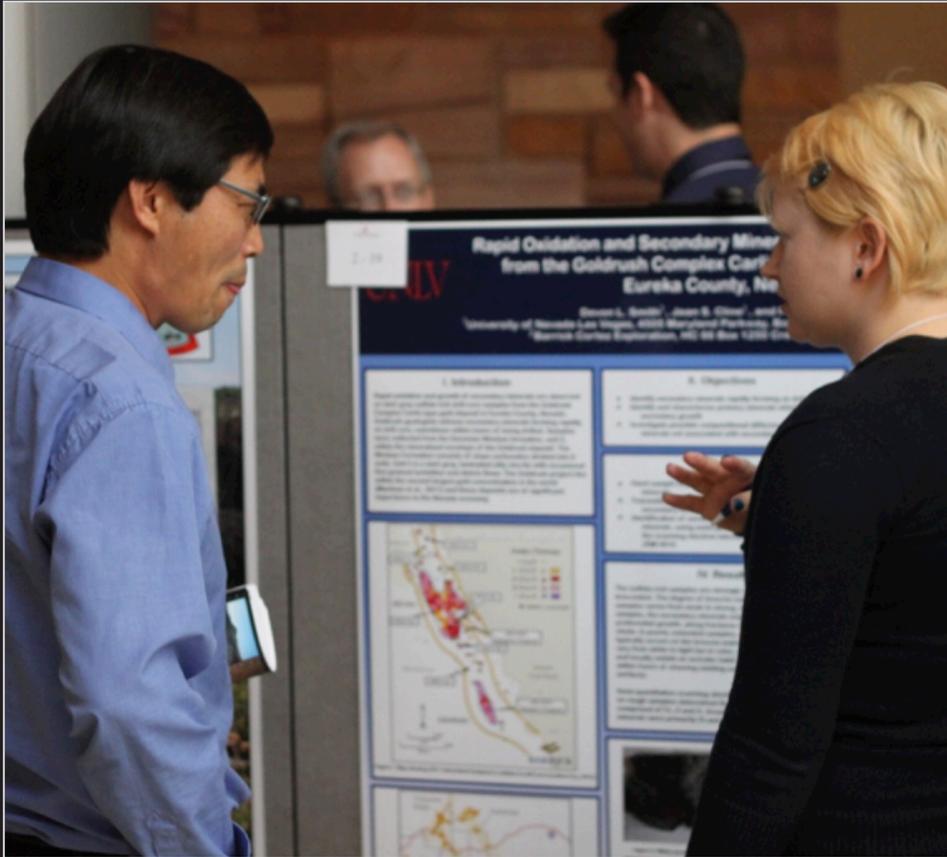
My project is aimed at characterizing amphibole particles as they weather throughout different geomorphic surfaces. The majority of my summer was spent collecting data on amphibole particles using the Scanning Electron Microprobe and Electron Dispersive Spectroscopy. Soil samples from different areas and ages along an alluvial fan in Clark County were analyzed to count and measure amphibole particles within them. Around 250 particles per sample area were counted and their chemistry was verified using EDS. These particles will also be measured to determine length and width so that their dimensions can be compared across time and distance. In addition to the SEM/EDS work, the spectral signature of source rock for these minerals was analyzed at Arizona State University. This was done to determine if they possess unique spectral characteristics that can be identified using multispectral remote sensing imagery. The preliminary data for this research will be presented at the annual GSA meeting in Denver at the end of October.



Swapan
Sahoo

I am pleased to report that I received three grants this year from three different agencies to continue my dissertation project. My Geological Society of America project title is "Constraining the Evolution of Biospheric Oxygenation in Middle Proterozoic to Early Neo-Proterozoic Ocean through Metal-Iron-Sulfur Geochemistry in the Vindhyan Basin". The funds awarded are being used in an integrated field and lab work to better understand the earth's early biospheric evolution. Sigma Xi is an international research society whose programs and activities promote the health of scientific process and honor scientific achievement around the world. I am proud to have been awarded a highly competitive research award to analyze sulfur isotopes from Mesoproterozoic shales of the Proterozoic Vindhyan Basin in Central India. Finally, SEPM the Society for Sedimentary Petrology also funded me for doing field work in the Vindhyan Basin.

8TH ANNUAL GEOSYMPOSIUM



Undergraduate student Devon Smith discusses her research with Professor Ganqing Jiang.

UNLV Department of Geoscience hosted the 8th Annual Geosymposium on April 12 and 13, 2013. The first day of the event was filled with student presentations and two keynote addresses by guest speakers, as well as activities at information booths run by UNLV student organizations and industry professionals at the UNLV Science and Engineering Building (SEB). The second day was dedicated to a field trip to visit Nellis Dunes Recreation Area and Mormon Mesa, NV. The symposium was entirely organized by the students and created an opportunity to present their original research to industry professionals and academic experts. Graduate students displayed their research in eight oral presentations and 29 poster presentations, while undergraduates presented their research in nine posters. Professionals from Barrick Gold, ExxonMobil Corporation, ConocoPhillips, Newmont Mining Corporation, Freeport-McMoRan Exploration Corporation, Navarro-INTERA LLC, NOVA Geotechnical, SAIC Energy Environment & Infrastructure, CH2M HILL, Cap'n Dave's Dinosaur Lectures & Shows, Southern



Graduate student Wyatt Bain presents his research to Michael Johnson (Nevada Water Resources Association) and Paul Bowen.

Nevada Water Authority, Nevada Water Resources Association, US Geological Survey and Clark County Department of Air Quality, as well as many independent consultants attended to the event.

The 8th Geosymposium started with opening remarks from the Chair of the Department of Geoscience Dr. Michael Wells, the President of the UNLV Dr. Neal Smatresk, and Geosymposium Coordinator Jeevan Jayakody. After that, Dr. Jeff Randall



Undergraduate student Heather Stoller discusses her research.

(Hydrogeologist, CH2M HILL) delivered the morning keynote address entitled "Solving problems in the Developing World". Dr. Randall shared his experience as a consultant geologist in developing countries and emphasized the importance of finding creative solutions with limitedly available resources to address technical challenges. The morning keynote address was followed by outstanding student presentations in two oral and two poster presentation sessions. These presentations included studies in a wide variety of disciplines such as igneous and

8TH ANNUAL GEOSYMPOSIUM

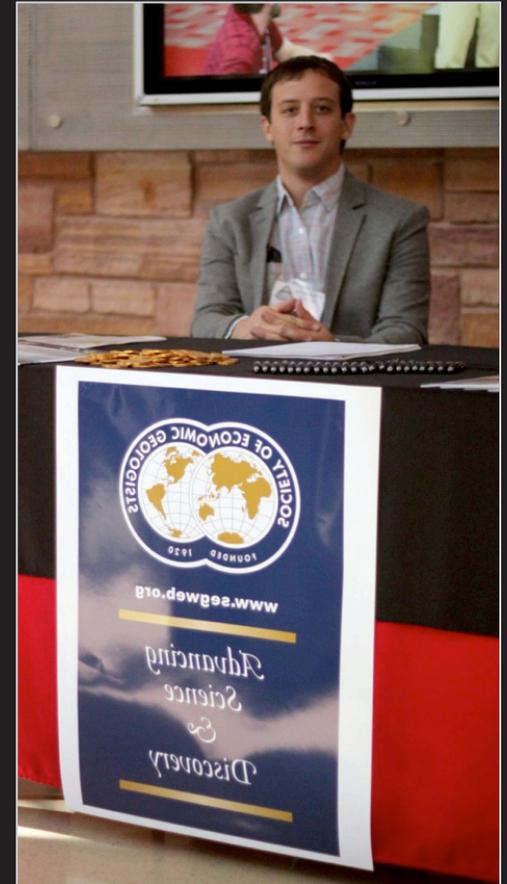


Graduate student Fabian Hardy discusses his research with Michael Ressel (Newmont Mining Corp)

metamorphic petrology, sedimentology, structural geology, economic geology, petroleum geology, mineral physics, geochemistry, hydrogeology, paleontology, paleoclimate, planetary geology, remote sensing, and water resources management. All students had the opportunity to interact with a diverse group of professionals and receive their feedback on presentations. Furthermore, a panel of judges comprised of academics and professionals evaluated presentations

for awards. Following student presentation sessions, Dr. Gary Gray (ExxonMobil) delivered the evening keynote address entitled "Test of Detrital Zircon Analysis for High-resolution Sequence Stratigraphy". He discussed the use of detrital zircons in sandstones to evaluate age and stratigraphy in Big Horn Basin, WY.

At the conclusion of all presentations, 10 students were awarded with cash prizes for outstanding presentations in three



Graduate student Kevin Meazell at the Society of Economic Geology information booth

categories; oral presentations, graduate poster presentations and undergraduate poster presentations. Valerie Tu, Christopher Adcock and Katrina Sauer received

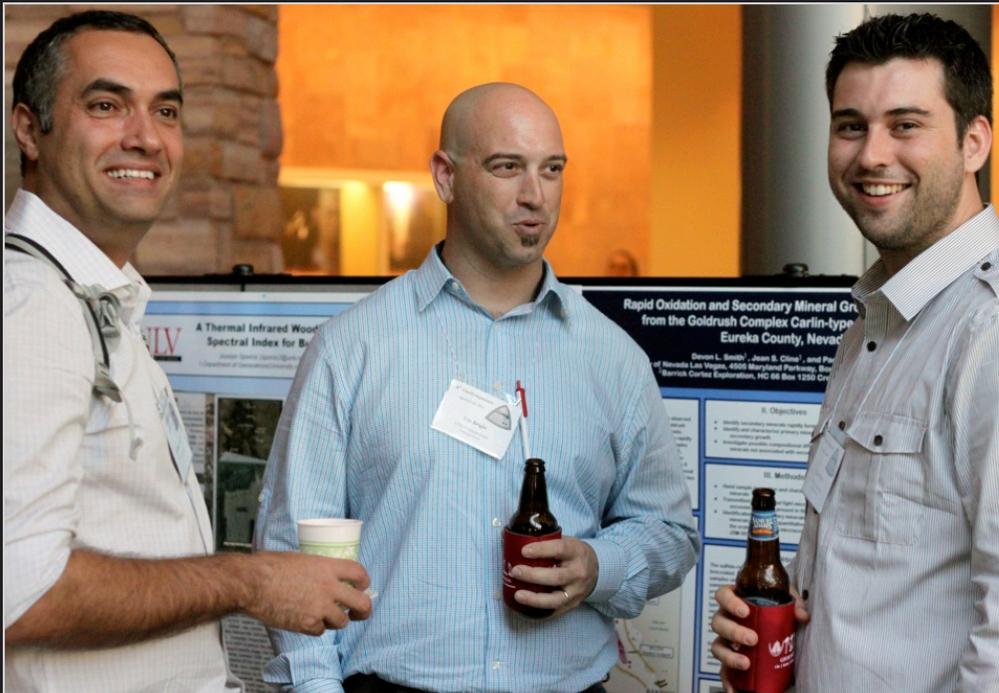


Award winners for outstanding presentations at Geosymposium: Michael Steiner, Katherine Peterson, Sarah Evans, Alison Lacy, Christopher Cline, Katrina Sauer, Christopher Adcock, Valerie Tu, and William Fischer (from left to right)

8TH ANNUAL GEOSYMPIOSIUM



first, second and third places, respectively in oral presentations. William Fischer and Christopher Cline won the first and second places, respectively in graduate poster presentations, while Alison Lacy and Sarah Evans shared the third place. Katherine Peterson, Michael Steiner and Joshua Russell were awarded the first, second and third places, respectively in undergraduate poster presentations. In addition, the department of geoscience recognized six students for their outstanding performances displayed during the academic year. Undergraduate students, Daniel Haber, Sarah Starke and Thomas Price were honored as the outstanding undergraduate, best mineralogist, and best field geology student, respectively. Dawn Reynoso was awarded as the best geology teaching assistant, while Lacy Luscri was awarded as the best geography teaching assistant. Swapan Sahoo received the Academic Achievement Award for publishing a research paper in Nature, an international weekly journal of science.



Christophe Mornet (ConocoPhillips), undergraduate student Tim Bright and graduate student Brett Perry during the evening reception.

Throughout the day, participants had the opportunity to share information at two booths run by Barrick Gold North America and Nevada Water Resources Association (NWRA), as well as three booths run by students associated with the American Association of Petroleum Geologists (AAPG), Society of Economic Geologists (SEG) and UNLV GeoClub. This inspired students, as they were able to discuss about career prospects in the field of geoscience, scholarships and funding for research. Furthermore, NWRA offered free membership for students during the event. A complimentary breakfast, courtesy of ConocoPhillips, and an Italian buffet lunch, courtesy of ExxonMobil Corporation were also highlights of the day.

The day's event concluded with the evening reception sponsored by Barrick Gold North America, and a silent auction to raise funds for 2014 Geosymposium. This event provided an opportunity for

8TH ANNUAL GEOSYMPIOSIUM



Drs. Brenda Buck and Dirk Goossens present their findings about emission of dust from Nellis Dunes Recreation Area during the field trip.

guests and students to network while enjoying refreshments, as well as bidding on rock and mineral specimens. Dr. Brenda Buck, professor of soil science and geomorphology of desert landscapes and Dr. Dirk Goossens, visiting research scientist at UNLV led this year's Geosymposium field trip that was sponsored by Marathon Oil Corporation. The first stop of the trip, Nellis Dunes Recreation Area (NDRA), has been the only publicly accessible area in southern Nevada for legal off-road driving for the past 40 years, with annual visitors estimated over 300,000. Drs. Buck and Goossens described their research findings regarding the amounts of both natural and anthropogenically-emitted dust from NDRA, chemical and mineral compositions of the emitted dust, as well as potential human health risks due to exposure to different types of dust. Next stop of the trip was the soil at Mormon Mesa, which may be the oldest, continuously forming petrocalcic soil on Earth. The geomorphic surface on which the soil has been forming is ~4-5 million years old. Dr. Buck explained the formation of different stages of petrocalcic soil horizons. She used conceptual models that explain how this soil formed showcasing the effects of climate and landscape changes, and the resulting chemical, biological, and mineral processes that lead to what we see today. On behalf of the organizing committee, I extend a heartfelt thanks to all who contributed to the success of the 8th Annual Geosymposium. Enormous support provided by the Geosymposium faculty adviser, Dr. Brenda Buck, the chair of the department, Dr. Michael Wells, and the department faculty is deeply appreciated. Special thanks to Drs. Jean Cline and Andrew Hanson for their invaluable input for correspondence with industry professionals. Dr. Scott Nowicki and his colleague Chris Capages volunteered their time to design and regularly update Geosymposium website, which allowed the organizing committee to efficiently share information with participants. Continuous support received from the office staff at the Department of Geo-



Dr. Brenda Buck explains formation of petrocalcic soil at Mormon Mesa, NV.

science, Maria Figueroa, Liz Smith, and Kathryn Birgy, as well as student workers Joy Valdivia and Amber Bennett was invaluable. I would like to thank Alaina Cowley from the UNLV Foundation, Eric Knight and Dene Charlet from SEB administrative office for their desire to make the Geosymposium a success. We owe many sponsors and donors a tremendous amount of gratitude for supporting the 8th Geosymposium. This year, approximately \$9000 was raised to defray of costs associated with the event, and grant awards for outstanding presentations. Barrick Gold North America made a Diamond donation, while ExxonMobil Corporation and Marathon Oil Corporation made Topaz donations. ConocoPhillips, Maureen Wruck Development Consultants LLC, Nevada Water Resources Association, Jason Norgan, Robert Klein and Judith Costa made Garnet donations.

Quartz donations were made by David Eisenstein, Wende Lestelle, Paul Bowen, Bobby Henry, Michael Ressel, Larry Snedegar, Jean Cline and David Donovan. Las Vegas Gem & Mineral Society, The Home Depot, Rodney Metcalf, Brenda Buck, Andrew Hanson, Matthew Lachniet, Maria Figueroa, Aida Figueroa, Lorraine Oliver and Pamela Zohar generously donated items for the silent auction. A tremendous amount of thanks goes to the Geosymposium organizing committee. Many student volunteers worked so hard to pull together this wonderful event. Without their effort and hard work, this event would not have been possible. I am in debt to Angel Ventrelli, Andrew Miller, Ember Flagg, Heather Stoller, William Fischer, Sarah Evans, Katrina Sauer, Christopher Cline, Kevin Meazell, Dev Maharjan, Mathew Beshears, Seth Gainey, Amber Ciravolo, Swapan Sahoo, Chad Crotty, Melanie Newton, Fritz Freudenberger, Erika Lomeli, Lacey Luscri, Renee Schofield and many other students who volunteered their time and skills. Thank you all for your encouragement and efforts to make this another successful Geosymposium.



MELISSA GIOVANNI HIRED AS VISITING PROFESSOR IN SED/STRAT STARTING IN FALL, 2013.

I am arriving at UNLV after six years as a teaching professor at the University of Calgary. While I have enjoyed teaching in the world-class thrust belt of the Canadian Rockies, I have found snow is not very conducive for field work. I am first and foremost a field geologist - my broad research interests focus on the evolution of mountain belts. I use interdisciplinary approaches to tectonic problems - mainly basin analysis, thermochronology, field mapping, and (eventually) tectonic geomorphology. I have ongoing research projects in the high Peruvian Andes and central Utah.

I grew up in California and Washington State, but after high school I headed for the desert. I opted for the University of Arizona with the intention of becoming an astronomer. After two years, I found myself in the geology department and as soon as I heard about a course called "summer field camp", I was hooked. What other degree requires you to go out camping and hiking?! After earning my BS at Arizona, I headed to UCLA for my Ph.D. I wanted a field-based project and got to spend three summers hiking around the Andes in Peru.

I have taught many courses in the past six years, including sed/strat and global tectonics. My absolute favorite course to teach is field camp. Geologically, I 'grew up' in the desert and cannot wait to get back out there with the students. I am very excited to be joining UNLV Geoscience with their emphasis on field teaching and research."

OUTREACH

The first annual UNLV Geoscience Open House to kickoff the Departments K-12 outreach activities for the year was held on October 16, 2012, during Earth Science Week. Invitees included middle and high school Earth Science teachers and educators. Our goal was to kick start a conversation with this group to form a partnership advancing Earth Science education in southern Nevada. Educators were provided with the opportunity to speak with UNLV faculty and students to explore ways to work together to generate excitement about geoscience and to advance learning in the classroom and the field. The event took place in the lobby of the Science and Engineering Building, drinks and refreshments were provided, and participants were given the opportunity to tour the electron Microanalysis & Imaging Lab (EMiL), Nevada Isotope Geochronology Lab (NIGL), and the Las Vegas Isotope Science Lab (LVIS). The event drew teachers and educators from across Las Vegas and produced a list of interested K-12 contacts and a list of outreach requests including visits to classrooms and talk about research and career possibilities, judging student projects, helping organize fieldtrips, and assisting in creating rock and mineral collections.

Outreach activities since the open house, organized by graduate students Ember Flagg and Dawn Reynoso, have involved numerous visits to middle and high schools by department graduate students, who judged high school Science Fair projects, led a Boy Scouts of America field trip to the Geoscience building where the scouts learned about geology and received their geology badges. Additional visits to schools involved classroom exercises that led students through activities dealing geologic time, global climate change, rivers and associated landforms, and planetary geology and astronomy. Next year's outreach activities will include the second annual open house during Earth week with a goal of expanding our K-12 outreach activities, and connecting with Earth Science instructors at the College of Southern Nevada.

Please Update Your Contact Information

Name (Include Maiden): _____

Year of Graduation: _____ Degree: _____ Advisor: _____

Employer & Job Title: _____

Mailing Address: _____

Phone Number: _____ Email: _____

Any News to Share?

Please submit this form by mail, email the Department at geodept@unlv.edu,
or use the online Contact Form at <http://geoscience.unlv.edu/AlumniContactForm3.html>
We look forward to hearing from you!