

Geological Society of Nevada Southern Nevada Chapter Newsletter

March 2010

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Mineralogy, geochronology and genesis of the Mormon Mesa petrocalcic soil, NV: Challenges and frontiers of soil science and Quaternary geology

SPEAKER: Dr. Colin Robins

DATE: Thursday, March 25th, 2009

LOCATION: LFG Rm. 105

University of Nevada - Las Vegas

TIME: Social half-hour at 6:45 pm

Meeting business at 7:15 pm

Talk at 7:30

DONOR: Needed

Greetings GSNer's! Spring has most definitely sprung here in the Las Vegas valley, and with a new season brings another GSN meeting! This month's speaker is Dr. Colin Robins, a soils geomorphologist who finished up his PhD research here at UNLV this fall. Dr. Robins will be sharing with us a brief overview of his dissertation research, let's give him a warm welcome!

This month's newsletter includes the third installment of "Get to know your fellow GSN members" and this month we get to hear from the chapter's president, Swapan Sahoo! The newsletter also contains information about the UNLV Geoscience Department's GeoSymposium (April 16-17th) as well as the GSN Symposium (May 14-22), please see below for more details.

As you can see above, we are in need of a donor for this month's talk, any and all donations are greatly appreciated! I hope the Spring season will treat everyone well and that you will have time to enjoy the great weather!

-Laura Eaton, Newsletter Editor

Geological Society of Nevada Southern Nevada Chapter

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Mineralogy, geochronology and genesis of the Mormon Mesa petrocalcic soil, NV: Challenges and frontiers of soil science and Quaternary geology

Speaker: Dr. Colin Robins

This week's talk:

Arid landscapes, including carbonate-cemented (calic and petrocalcic) soil horizons, foster a diversity of authigenic minerals that raises exciting possibilities for new applications of isotopic dating techniques to soils and paleosols. Nevertheless, obtaining accurate isotope ages for arid soils remains one of the largest scientific hurdles in geomorphology and sedimentology, largely due to the difficulty of extracting intact, mineralogically pure, pedogenic crystals from cemented samples.



As part of my doctoral research, I tested a procedure to extract high-Mg fibrous phyllosilicate clays (palygorskite and sepiolite) from the 3-5 Ma Mormon Mesa, NV, petrocalcic soil, and to date these clays using vacuum-encapsulated $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology. I employed x-ray diffraction (XRD), scanning electron microscopy coupled with energy dispersive spectrometry (SEM-EDS), inductively coupled plasma spectrometry (ICP), and gas-chromatograph mass spectrometry (GC/MS) to (1) to evaluate the suitability of extracted palygorskite and sepiolite phases for dating and (2) develop models of mineral genesis for the Mormon Mesa soil.

Results indicated that the minerals and the extraction procedures were viable for dating, however, GC/MS results reveal that hydrocarbon compounds adsorbed to the phyllosilicates caused catastrophic errors in the $^{40}\text{Ar}/^{39}\text{Ar}$ data. Future research will attempt to resolve this contaminant problem, and to explore dating of additional mineral phases. Micromorphological, mineralogical, and geochemical data from this study also advance our understanding of the complex mineralogical and morphological evolution of the Mormon Mesa soil profile during numerous climate change episodes

Dr. Robins Background:

Dr. Robins earned his BA from Macalester College, majoring in both geology and Spanish and went on to get his MS in soil science at Oregon State University. Dr. Robins then earned his PhD in soil science at UNLV and is now doing a post-doctoral project here at UNLV.

Get to know your fellow GSNER's

This year we're starting a new GSN newsletter tradition, thus we present the "Get to know your fellow GSNER's" section. This month's member is GSN Southern Nevada Chapter President, Swapan Sahoo.

Tell us a little about your background as a geologist

I am currently a PhD student at UNLV. I finished my undergraduate and Masters at University of Calcutta, India specializing on Structural Geology. I came to New Orleans, LA, to work on basin analysis and neo-tectonics on the Atchafalaya Basin. However, hurricane Katrina forced me to move out from New Orleans and move to Chicago as a hurricane refugee. I started working on Neoproterozoic glacial events and the isotopic changes associated with these global glaciations. But to better understand the paleoceanography of the Neoproterozoic time period, I wanted to focus more on field work based research which motivated me to come to Las Vegas where I have a natural laboratory to work with. I am currently working on the redox evolution of the terminal Proterozoic time period.



How did you become involved in geology?

From childhood on, I have been fascinated by the beauty of nature - lofty mountains, flowing rivers and green meadows. My first interest in Geology dates back to my high school years when I accomplished a project entitled "Earth Travels From Time To Time," about the origin and evolution of our dynamic planet. This sparked my interest in earth sciences and thus prompted me to take up geology as my major for undergraduate courses. The interest grew with the completion of my Masters degree, and now I look forward to continuing my research work and completing a PhD degree.

Could you share a story about a field or geology-related experience that stands out as particularly memorable?

I was working in central India, and before I even realized, I was stalked by a group of local crazy dacoits (secular rural bandit, specifically a member of an armed outlaw gang). It was interesting when I was kind of captured by them and I had to find a way out. Eventually they realized that graduate students are actually poor, irrespective of their age. Anyway, finally they treated me very well by offering a ridiculously spicy pepper soup which was a delicacy to them, I guess. I had to take a group photo of the entire dacoit family and when they can see the picture instantly on the viewfinder of my digital camera they almost thought I am some kind to super powerful human being and I have access to all these tools. Anyway, I finally got a ride back to my field work and never been abducted again.

What is your favorite rock/geological feature?

Although I am a sedimentologist and mainly work on carbonates, my favorite rock is any crystal, nice and pretty crystals. However, the top list is taken by banded 'tigers eye' and jasper. Some other favorites are golden colored fossiliferous limestone from Rajasthan, India. Very nice banded siderite, quartz tourmaline crystals. I think that the list will not end, so I better stop here.

What is your favorite place related to geology you've ever been?

One of the coolest places I have been to was in Namibia, where we camped on a river bed in the middle of nowhere. There was a bunch on leopards grazing near our tents in a full moon night. It was a very hard to focus on geology when there was a universe of fauna and flora around me and it was absolutely beautiful. I would love to go back to the wildness. I also visited northern India and Nepal a couple of years ago and it was just perfect. In USA, my favorite place is Oregon in the summer. I was mapping faults near Bend and Burns, and the lakes, streams were just beautiful.



Announcements

Volunteer to Share your experiences!

Share your field experiences with other GSN SNV chapter members through a story and/or photos in an upcoming newsletter.



Interested? Contact Laura Eaton

Calling all speakers and sponsors!

GSN is looking for sponsors and speakers for our 2009-2010 year! If you are interested or have ideas, please contact Swapan Sahoo or Josh Bonde.

Thank you!

Silent Auction Items

GSN is always looking for specimens and silent auction items for our monthly meetings. The well-being of GSN is made possible by your generous donations. If you have a specimen or silent auction item, please contact Swapan Sahoo or Josh Bonde, or just bring it to the next meeting.

Thank you!

Have an announcement you would like to share in the next newsletter? Contact Laura Eaton at eatonl4@unlv.nevada.edu

The 5th Annual UNLV GeoSymposium

April 16th and 17th, 2010



The UNLV Geoscience Department will host its 5th Annual Geoscience Student Symposium at the Blasco Event Wing in the Foundation Building, on the UNLV campus. The symposium is student-run and designed to provide graduate and undergraduate students with an opportunity to present their original research and receive feedback from industry, civic, and government professionals, as well as academic experts.

UNLV Geoscience students are planning a two-day event including presentations on Friday, April 16th, and a field trip on Saturday, April 17th. Oral presentations will be offered, which will include time for discussion with audience members, and student poster sessions will be presented on the 16th. A review panel will award prizes for the best oral presentations and posters. The day will conclude with a post-symposium gathering of all students, faculty, and invited guests at a reception with food and refreshments, and a silent auction of rock and mineral specimens. An exact schedule is still being determined.

This year's field trip will be to Red Rock Canyon National Conservation Area, approximately 15 miles west of Las Vegas. The field trip will depart from the Lilly Fong Geoscience building (LFG) parking lot at 8:30am on April 17th, and is expected to return to campus by 5:00pm. Lunch will be provided for all participants. Just bring along some water and a camera to take pictures of the spectacular red sandstone peaks and walls that this destination is known for!

The UNLV Geoscience Student Symposium will showcase a wide range of important graduate and undergraduate research, and provide a forum for participating students to develop presentation skills in a friendly, relaxed environment. Student research projects include such diverse topics as: soils, geomorphology, hydrogeology, paleontology, sedimentology, stratigraphy, geochemistry, volcanology, seismology, structural geology, and economic geology. We hope that you can join us for this event!

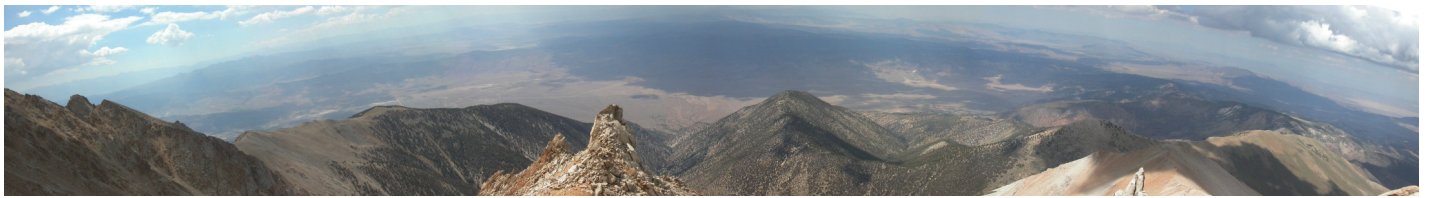
GeoSymposium homepage:

<http://geoscience.unlv.edu/GeoSymposium/GeoSymposium.htm>

To register to attend GeoSymposium, please go to:

<http://geoscience.unlv.edu/GeoSymposium/donation.htm>

Or, contact Vicki Meyers, GeoSymposium coordinator at: meyersv2@unlv.nevada.edu



GSN 2010 SYMPOSIUM

Mark your calendars! May 14-22, 2010

*The Geological Society of Nevada invites you to attend our sixth symposium, **Great Basin Evolution and Metallogeny**. We strive to maintain a tradition of excellence, emphasizing descriptive accounts of ore deposits, new theories on deposit formation and innovative concepts of how to find the next district or deposit.*

Technical Sessions:

- Carlin-Type Deposits I and II
 - Great Basin Metallogeny
 - Nevada Geology and Tectonics
 - Discovery Case Histories
 - New Mine Developments
 - Volcanic-Hosted Epithermal Deposits
 - Young Au-Ag Hydrothermal Systems
 - Styles of Tertiary Magmatism and Metallogeny
 - Intrusion-Related Deposits
 - Geothermal
 - Rumors from the Bush—
- Great Basin Exploration Update
 - Outta the Box—Concepts in Great Basin Geology and Ore Deposits
 - Exploration Remote Sensing
 - Regional Exploratin Roundup
 - World Exploration
 - Exploration Success—America
- Molybdenum Deposits
 - ArcGIS
 - Remote Sensing
 - Sample Collection, Prep and Analysis
 - Isotopes and Exploration

Field Trips

- Carlin Gold Deposits-Three Trips
- Epithermal Deposits-Two Trips
- Porphyry and IOGC Deposits
- Modern Ancient Geothermal Systems
- Industrial Mineral Deposits

Short Courses:

- SEG Workshop—Gold in 2010
- Structural Systematics
- Fundamentals of NI 43-101



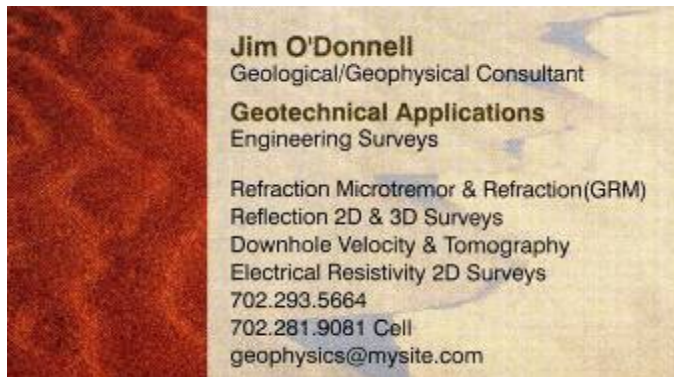
Want to learn more or attend?

Contact: (775) 846-9766
Secretary@gsnv.org
www.gsnv.org/symposium



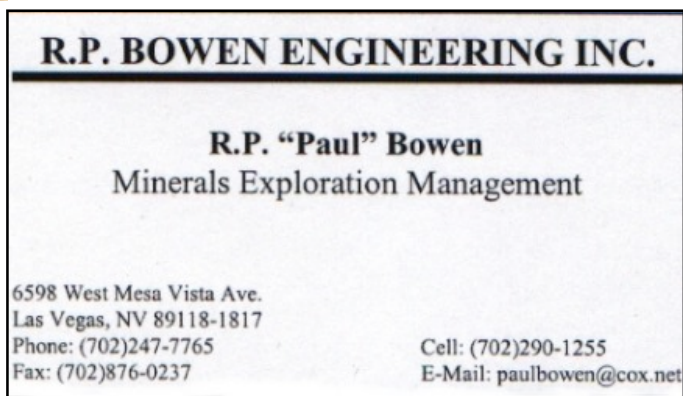
Paid Advertisements

Thank you for your support!

A business card for Jim O'Donnell, Geological/Geophysical Consultant. The card has a dark red textured background on the left and a light tan background on the right. The text is in black.

Jim O'Donnell
Geological/Geophysical Consultant
Geotechnical Applications
Engineering Surveys

Refraction Microtremor & Refraction (GRM)
Reflection 2D & 3D Surveys
Downhole Velocity & Tomography
Electrical Resistivity 2D Surveys
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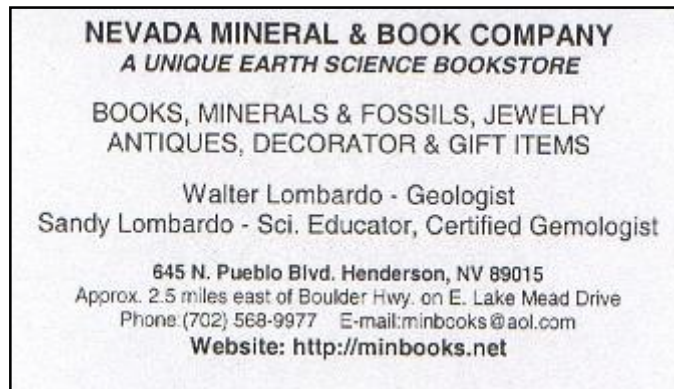
A business card for R.P. Bowen Engineering Inc. The card is white with a black border. The text is in black.

R.P. BOWEN ENGINEERING INC.

R.P. "Paul" Bowen
Minerals Exploration Management

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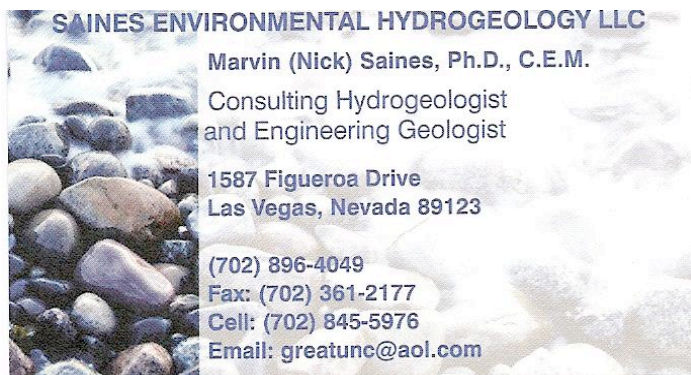
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Sandy Lombardo - Sci. Educator, Certified Gemologist

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Phone: (702) 568-9977 E-mail: minbooks@aol.com
Website: <http://minbooks.net>

A business card for Saines Environmental Hydrogeology LLC. The card has a background image of river rocks. The text is in black.

SAINES ENVIRONMENTAL HYDROGEOLOGY LLC

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