



# Arizona Geological Society Newsletter

---

MAY 2013

## MAY 7, 2013 DINNER MEETING

**Who:** Jon Spencer will be our featured speaker. See abstract below.

**Where:** Sheraton Tucson Hotel and Suites, 5151 East Grant Road, at the intersection of Grant and Rosemont on the North side of Grant in the *Pima Room*. The Pima room is located on the second floor in the northwest corner of the hotel.

**When:** Cash Bar at 6 p.m.—Dinner at 7 p.m.—Talk at 8 p.m.

**Cost:** Members \$27, Guests \$30, Students are free with an online dinner reservation (\$10 without).

**RESERVATIONS are REQUIRED: CALL 520-663-5295 by 11 a.m. Thursday, May 2 or reserve on the AGS website ([www.arizonageologicalsoc.org](http://www.arizonageologicalsoc.org)).** Please indicate regular (Chinese Chicken Stir Fry), vegetarian, or cobb salad meal preference. Please cancel by Thursday May 2 at 11 a.m. if you are unable to attend—no shows and late cancellations will be invoiced.

AGS would like to thank GEOTEMPS, Inc.  
for their sponsorship of the student poster dinner  
and helping to offset dinner meeting costs.

Go to [www.geotemps.com](http://www.geotemps.com) to learn more about how Geotemps can help provide staffing solutions for mining and earth science companies.



---

## ABSTRACT - Federal lands and mineral resources: Colorado Plateau uranium deposits and the Sonoran Desert Heritage proposal

**Jon Spencer, Senior Geologist, Arizona Geological Survey**

Many times during Arizona's 100-year history, federal lands have been reclassified in ways that prevent further mineral exploration and mining. This AGS talk will outline mining and mineral-resource issues associated with a recent federal-land reclassification intended to stop uranium mining in three areas in northern Arizona, and a reclassification that is under consideration that would prevent mining in parts of western Arizona.

A 2012 decision by former U.S. Interior Secretary Ken Salazar to remove a million acres of federal land in northern Arizona from new mining claims for 20 years was based significantly on concerns about contamination of Colorado River water by runoff from areas of uranium mining (none of this land is within the Grand Canyon, which is already protected). More than a thousand circular features on the Colorado Plateau in northwestern Arizona have been mapped as breccia pipes or possible breccia pipes. Some breccia

Continued on Page 2

**ABSTRACT—Continued from Page 1**

pipes are known to contain economic uranium deposits. Total current and historic production is approaching 15,000 tons of  $U_3O_8$  from about ten pipes. The deposits are typically small, deep, dry, and high grade. The deposits are mined underground and the ore is trucked to Utah for milling. Post-mining restoration involves filling the mine shafts with rubble and restoring the land to its approximate original form. Concerns about contamination of the Colorado River are overblown. Trucks hauling 30 tons of 1% uranium ore (0.3 tons  $U_3O_8$ ), even if they poured their entire load directly into the river and all the ore dissolved, would add trivially to the natural dissolved-uranium river load of approximately 60 tons per year.

A proposal to withdraw ~750,000 acres (~1170 square miles) of western Arizona federal land from drilling and mining, as currently envisioned in the “Sonoran Desert Heritage” plan, is being prepared for consideration by Congress without evaluation of mineral-resource potential. (The 2001 creation of the 496,400-acre Sonoran Desert National Monument under the Antiquities Act was done without Congressional consent and without an assessment of mineral-resource potential, as was the 2000 creation of Ironwood Forest National Monument which includes 128,700 acres of federal land). The geology of almost all of the land within the Sonoran Desert Heritage proposal area was mapped by geologists at the Arizona Geological Survey during the past 30 years. An evaluation of mineral resource potential based on mapping and related studies, as well as past mining activity, indicates that the Harquahala – Big Horn Mountains area has high potential for future base and precious metal mineralization, high quality aggregates, and manganese.

**About The May Dinner Meeting Speaker**

**Jon Spencer** received his Ph.D. in Geology from M.I.T. in 1981. He has been at the Arizona Geological Survey in Tucson for the past 30 years and has been Senior Geologist for the past 13 years. His research has focused on geologic mapping in the Basin and Range province, extensional tectonics, structural aspects of mineralization, evolution of the Colorado River, and a variety of other topics that reflect diverse issues addressed by a small State Geological Survey in a big and geologically complex state.

**Welcome New AGS Members**

|                      |                         |                      |                     |
|----------------------|-------------------------|----------------------|---------------------|
| Michelle Aigner, ASU | Rob D’Andrea, NAU       | Sandra Londono, ASU  | Charles Samra, NAU  |
| Brandon Beuttel, NAU | Crystyl Fudge, ASU      | Patrick Maloney, NAU | Jack Simmons, UofA  |
| Wendy Bohon, ASU     | Angel Garcia, Jr., ASU  | Nicole Marin, ASU    | Preston Smith, UofA |
| Shane Brady          | Dominique, Garello, ASU | Alyssa Miller, UA    | Alana Williams, ASU |
| Stephen Castor       | Matthew Jungers, ASU    | Dave Pence, ASU      | Pye Pye Zann, ASU   |

## The Arizona Geological Society Doug Shakel Student Poster Session

The second annual AGS student poster session was a huge success. Eighteen students, including undergraduate and graduate students from Northern Arizona University, Arizona State University, and University of Arizona, presented posters describing their research at an April 18th dinner meeting in Tempe. Students competed for \$850 in prize money. The posters were displayed on the walls of the meeting room, and attendees circulated around the room to view the posters and chat with the students about their research. Later, each student gave a three-minute oral presentation while the poster was projected on a screen at the front of the room. The quality of the work was excellent, and the judges had their work cut out for them.



Matt Jungers (ASU) is awarded the \$500 first place prize for his presentation and poster by AGS President Alison Jones.

Preston Hunter Smith (UofA) won third place with a poster on “The Modern Rio Bermejo Megafan, Central Andean Foreland Basin.” An Honorable Mention award was given to undergraduate student Pye Pye Zaw (ASU) for her poster titled, “Error Analysis of Narrow Angle Camera Digital Elevation Models Relative to Lunar Orbiter Laser Altimeter.” All student presenters received a “Geologic Highway Map of Arizona” in appreciation of the hard work that was put into the presentations.

**Special thanks to our judges James F. Hayes, Bill Greenslade, and Doug Bartlett.**

The first place winner was Matt Jungers (ASU) for his poster titled, “Putting the ‘Basin’ Back in Southeastern Arizona’s Basin and Range Province.” Wendy Bohon (ASU) won second place with “New Thermochronologic Data Reveals Disturbed Cooling Histories Near the Intersection of the Karakoram and Longmu Co Faults, NW India.”



Wendy Bohon giving an oral presentation of her poster.

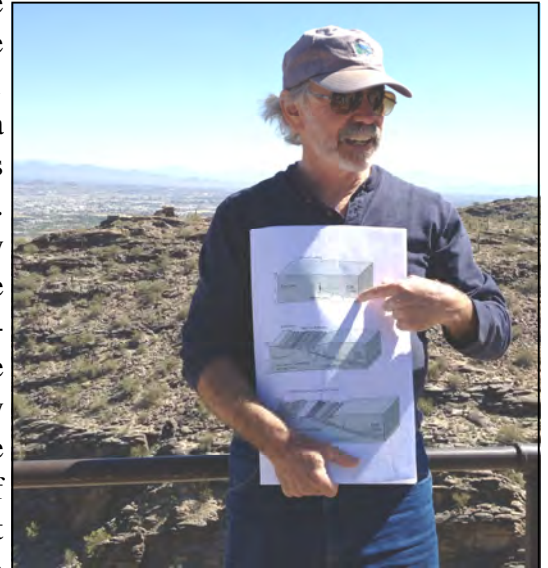


The student presenters at the 2013 Doug Shakel Student Poster Session

## Field Trip Report

By Mike Busby

The morning after the AGS student poster session, Dr. Steve Reynolds of Arizona State University lead an AGS field trip to the South Mountains, located south of downtown Phoenix. The 11 participants were treated to a gorgeous view of the valley on a beautiful spring day. Steve took the small group to several localities to examine the exquisite records of mid-Tertiary crustal extension. Participants saw Proterozoic metamorphic rocks and mid-Tertiary plutonic rocks containing mylonitic fabrics and overprinting brittle structures, including pseudotachylite, that formed in a brittle-ductile shear zone of a northeast dipping detachment fault. Steve explained that the detachment fault is mid-Tertiary in age, probably forming mostly between 20 and 15 Ma. During the ductile to brittle evolution of the gently-dipping normal-sense shear zone, tens of kilometers of movement caused mylonitic rocks, that formed at depth along the shear zone, to be brought up to the surface. As the mylonitic rocks became shallower, they were overprinted by brecciation and other brittle fabrics. Steve also pointed out that Papago Park and Camelback Mountain, located north and northeast of the south Mountains, are rock units above the detachment fault that broke into a series of tilted fault blocks.



At Dobbins Lookout, Steve Reynolds discusses the structural evolution of the of the area, including the evidence for the northeast dipping detachment fault.

Our sincere thanks go to Steve Reynolds for his expertise and willingness to share a Friday with us.



The group examines the contact between the mid-Tertiary Telegraph Pass Granite and the Proterozoic Estrella Gneiss in the South Mountains.

## Updated AGS Website

The AGS is excited to announce we have changed our web hosting service and have updated our website, [www.arizonageologicalsoc.org](http://www.arizonageologicalsoc.org). After many years of faithful service, we have outgrown our old webhost and moved to a new system designed for 501(c)(3) organizations. There are cosmetic changes you will notice, but there are many behind the scenes software changes that help make the tracking of membership, accounting, dinner meetings, and field trips much easier.

Some of the new features to the casual user are:

- Rolling membership now start from the date you sign up, with automated reminders when your membership is due.
- Events can be added to your Outlook Calendar.
- There are more forms of secure online payment: Visa, MasterCard, AMEX, Discover, and PayPal.
- There will be automated dinner meeting announcements. You will not receive these if you have already signed up. If you have registered for a dinner meeting, you will receive a reminder the night before.



Behind the scenes benefits to the AGS:

- The elimination of manually checking the membership status of 400 plus members and then manually sending reminders.
- Invoicing and finances are fully integrated with a credit card payment system, eliminating separate lists and manual bookkeeping.
- Savings of \$1000 per year.

We hope you enjoy using the new website. As always, you may register for dinner meetings via phone (520-663-5295) and/or pay with cash or check at the door. Please remember, we are an all-volunteer organization and it is easier on us if you register and pay online, but not required.

## Upcoming Field Trip

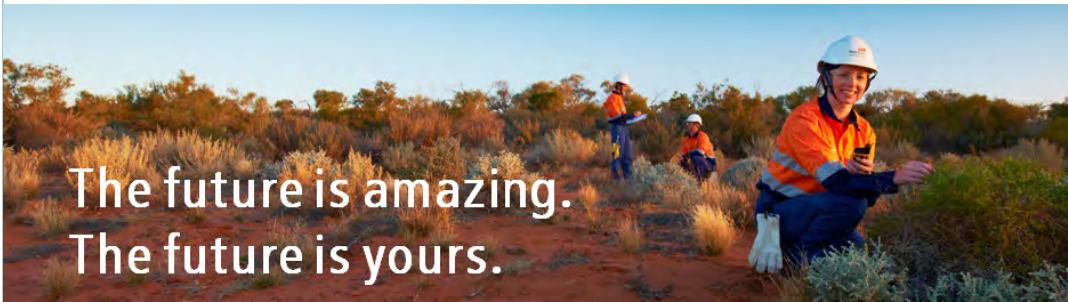
The New Mexico Geological Society and the Arizona Geological Society are jointly hosting a Fall Field Trip Conference, September 25 to 28, 2013. The trip will shadow the historic Route 66, starting in Flagstaff, AZ and ending in Grants, NM. Please visit the AGS website for more information, [www.arizonageologicalsoc.org](http://www.arizonageologicalsoc.org).

## Isabel Fay best overall paper at UofA Geodaze

Arizona Geological Society would like to congratulate Isabel Fay for being awarded the prize for the best overall paper at the 2013 University of Arizona Geodaze symposium on April 12. Isabel is a University of Arizona graduate student and AGS Executive Committee Counselor. The title of her prize-winning paper was "Localized synorogenic remobilization of Cu-Co ores in the Central African copperbelt."



**Attention Student Members:** AGS is pleased to provide free meals for student members with a dinner reservation. Please keep in mind that these meals are paid for with a generous gift from BHP Billiton. If you make a reservation and do not attend, AGS must still pay for the meal. If you are unable to attend, please cancel your reservation by 11 a.m. on the Thursday before the meeting. If the cost of no-shows continue to be a problem, the AGS Executive Committee may consider charging for unclaimed student meals, as we do for regular members.



**AGS is grateful to BHP Billiton for their generous support of our student members!**

**Sustainability**

In BHP Billiton, we achieve Sustainability when everyone builds and maintains meaningful, long-term relationships with internal and external stakeholders.

That is why we are proud to sponsor the student dinners of the Arizona Geological Society.



[Careers.bhpbilliton.com](http://Careers.bhpbilliton.com)

**2013 AGS MEMBERSHIP APPLICATION OR RENEWAL FORM**

Please mail check with membership form to: Arizona Geological Society, PO Box 40952, Tucson, AZ 85717

Dues (check box)  1 year: \$20;  2 years, \$35;  3 years: \$50;  full-time student (membership is free)

NEW MEMBER or RENEWAL (circle one) Date of submittal \_\_\_\_\_

Name: \_\_\_\_\_ Position: \_\_\_\_\_

Company: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Street: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Work Phone: \_\_\_\_\_ Home Phone: \_\_\_\_\_

Fax Number: \_\_\_\_\_ Cellular Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_ Check this box if you do not have an email address

**All newsletters will be sent by email. If you do not have an email address, we will mail a hard copy to you, but we cannot guarantee timeliness.**

If you are a registered geologist/engineer, indicate your registration number and State: \_\_\_\_\_

Enclosed is a \_\_\_\_\_ tax-deductible contribution to the J. Harold Courtright Scholarship Fund.

Enclosed is a \_\_\_\_\_ tax-deductible contribution to the AGS' Greatest Needs Fund.