



# AGS NEWSLETTER

ARIZONA GEOLOGICAL SOCIETY, INC., TUCSON, ARIZONA

September 2008

## SEPTEMBER 2, 2008 DINNER MEETING

**Alyson Thibodeau, University of Arizona**

### **From Chaco Canyon to Coronado: Using geochemistry to trace the history of mining, minerals, and metals in the American Southwest**

**ABSTRACT**—The American Southwest and its surrounding regions are rich in mineral resources that have been exploited by societies for thousands of years. There is abundant archaeological evidence of mining throughout the Southwest and Mesoamerica, but knowledge regarding the past long-distance transport and trade of minerals (such as turquoise) and metals (such as copper) in these regions is limited. We show how the application of lead, strontium, and copper isotopic geochemistry to stone and metallic artifacts can identify the geologic source of the raw materials used to construct these objects. This information can dramatically increase knowledge of both ancient and historic trade routes and be used to track the movement of people across the landscape.

In the American Southwest, we apply these geochemical techniques to problems in both prehistoric and historic archaeology. First, we show that lead and strontium isotopes can distinguish between turquoise deposits and thus be used to identify the source of turquoise found at archaeological sites. This method has the potential to answer questions regarding the source of turquoise found at sites such as Chaco Canyon and to assess whether or not turquoise was extensively traded from the Greater Southwest into Mesoamerica. We then show that these same techniques can also be applied to early Spanish colonial sites and used to track movements of the Vázquez de Coronado

expedition. Currently, the expedition's route across the Southwest U.S. (1540-1542) remains largely unknown. By applying high precision geochemical analyses to archaeological artifacts, we can trace the objects from site to source and provide both archaeologists and historians with new information about how past societies mined, utilized, and traded their mineral resources.

## 2008—09 CALENDAR OF EVENTS

- |          |  |
|----------|--|
| 10/7/08  | <b>Mark Barton</b> , UA: <i>Iron oxide copper gold deposits: A Cordilleran perspective</i>         |
| 11/11/08 | <b>Gordon Haxel</b> , USGS: <i>Utilization of the chemical elements</i>                            |
| 12/2/08  | <b>Jonathan T. Overpeck</b> , UA: <i>Global climate change and why it matters in the Southwest</i> |
| 01/6/09  | <b>Richard Reynolds</b> , USGS: <i>Dust in western North America</i>                               |
| 02/3/09  | <b>Vince Matthews</b> : <i>China and India's Ravenous Appetite for Natural Resources</i>           |

### **Dinner Meeting Information — PLEASE NOTE ALTERNATE LOCATION Best Western InnSuites, 6201 North Oracle Road, Tucson**

To reserve your place for dinner, call 520-663-5295 before 5 pm, Thursday, August 29, 2008.

Cost: Members \$24, Guests \$27 Students \$10 (+\$3 for late registration)

Cash Bar @ 6 pm

Dinner @ 7 pm

Talk @ 8 pm

For dinner selection, indicate if a low-salt or vegetarian meal is required. Please cancel if you are unable to attend.

**AGS CAN NO LONGER GUARANTEE DINNER SEATING FOR THOSE WHO SHOW UP WITHOUT A RESERVATION.**

## ACTIONS OF THE EXECUTIVE BOARD 8/2007-7/2008

The following Actions were authorized by unanimous vote by the AGS Executive Committee between August 2007 and July 2008 on behalf of the AGS membership. (Actions were not necessarily passed at each monthly meeting.) Members shall vote to approve or reject these Actions of the Executive Committee by absentee ballot, which is available on the AGS web site, or in person at the AGS dinner meeting on September 2.

### October 2007:

- Accept the 2008 AGS Budget.
- Add \$1,000 to the Courtright Scholarship Fund.
- Raised membership dues to \$20 for 1 year, \$35 for 2 years, and \$50 for 3 years – beginning in 2008.

### January 2008:

- Provide a \$1,500 fund to help out-of-town speakers with travel expenses.
- Provide \$1,000 to support the UofA GeoDaze event.
- Honor Walt Heinrich with a free Honorary Life Membership and present him with an award of recognition as a 50-year AGS member who has made substantial contributions to Arizona, to geology, and to the AGS.
- Grant free membership to all 50-year members.
- Hold the next AGS symposium in honor of Spence Titley.
- Charge late members and guests the same dinner fee of \$27.

### March 2008:

- Recognize all 50-year AGS members with a certificate, the privileges of full membership, and release from annual dues.
- Present the AGS By-Laws revisions to the membership for their approval.

### April 2008:

- Become a sponsor of the Geological Society of Nevada symposium in May 2010.
- Approve the By-Laws as revised.

### May 2008:

- Purchase Adobe Creative Suites 3 to assist the editors with formatting Digest 22.

### June 2008:

- Accept a new MOA between AGS and AZGS for the sale of AGS materials by AZGS and for their general and mutual cooperation.

## S LATE OF OFFICERS-2009

The following Slate of Officers is put forward by the Nominating Committee to serve on the AGS Executive Committee for 2009. Members shall vote to approve or reject the Slate of Officers by absentee ballot, which is available on the AGS web site, or in person at the AGS dinner meeting on September 2.

### – OFFICERS –

President: Kevin C. Horstman, Independent  
VP Programs: Robert J. Kamilli, U.S. Geological Survey  
VP Field Trips: Doug Shakel, Retired  
VP Marketing: Lukas Zürcher, Lowell Program, Univ. of Arizona  
Treasurer: Kris Hefton VANE Minerals (US) LLC  
V. Treasurer: Coleen Brown, American Red Cross  
Secretary: Claudia Stone, SRK Consulting  
V. Secretary: Greta J. Orris, U.S. Geological Survey  
Past President: M. Lee Allison, Arizona Geological Survey

### – COUNCILORS –

Councilor 1 (08-11): Charles P. Miller, Miller Resources Inc.  
Councilor 1 (08-11): Diana C. Kamilli, Retired  
Councilor 2 (07-10): Mark D. Cocker, U.S. Geological Survey  
Councilor 2 (07-10): Karl L. Sandwell-Weiss, Wildcat Silver  
Councilor 3 (06-09): Robert E. Powell, U.S. Geological Survey  
Councilor 3 (06-09): Corolla K Hoag, SRK Consulting

Please make your dinner-meeting  
reservation BEFORE  
Thursday, August 29, 2008.  
Call 520-663-5295 today!

### ACTIONS (cont)

- Fund up to \$1,000 to a Digest 22 author to prepare his manuscript figures in color.

### July 2008:

- Authorize up to \$750 to purchase a lapel microphone system, mixer, etc. for dinner meeting speakers to improve the sound system and speaker mobility.
- Approved the 2009 slate of officers.

# The President's Column

BY LEE ALLISON

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We are missing a great opportunity.

Next February, 50,000 – 100,000 rockhounds, amateur and professional, will descend on Tucson for the two-week long extravaganza of dozens of gem, mineral, and fossil shows spread across the city, culminating in the iconic Tucson Gem & Mineral Show at the convention center. This series of events is widely recognized as the premier gathering in the world.

From my office in downtown Tucson, I watch tents going up in every parking lot in every direction around us. The Inn Suites hotel, where AGS holds its monthly dinner meetings, is converted into one of the larger and more exciting show venues. As a result, we have to find temporary location for the February AGS meeting.

In addition to the thousands of retail buyers looking to fill their inventories, the shows also attract buyers for most of the major mineral and natural history museums in the nation and many internationally. Private collectors are in town as well, or at least their representatives are, looking for the rare, the unusual, or just the big.

So, here we are, in the midst of the biggest geologic block party of the year and what do we do? We visit a few of the shows around town. We go to the formal TGMS. We may buy something for our own collections or as gifts. But these are all individual activities.

Some government and professional organizations have exhibit booths on the convention center mezzanine of the TGMS. USGS, Forest Service, Arizona Geological Survey, Department of Mines & Mineral Resources, AIPG, and a few others offer educational materials and displays to try to capture show visitors' attention as they pass by on their way in to the main hall. AGS publications are on display at the AZGS booth.

What we don't do is get AGS engaged as an organization to showcase the Society, geology of Arizona, or our profession, nor do we take advantage of the global talent that is in town for these two and a half weeks.

Could we line up some of the visiting experts in town for a series of technical or public talks on rocks, minerals, and fossils? Could we emulate the University of Arizona's successful Science Café series with visiting speakers talking informally about their explorations and discoveries? Could we offer public seminars on how to spot fakes or counterfeits? Could we hold professional forums on a whole range of current topics such as the status of museum collections, collect-



ing on public lands, new mineral location discoveries, etc? Could we offer field trips to show visitors to introduce them to the local geology or to famous mines and collecting locales? Could we work with local teachers so they can benefit more from the resources and talent gathered in town?

This past February, I had dinner with Oleg Medvedev from the Museum of Natural History in Novosibirsk, Russia. Oleg and his colleague were at the show to unveil a complete mammoth skeleton they hoped to sell to underwrite the museum operations. He described their amazing expeditions across Siberia in search of mammoth tusks and bones. It's a story that fascinated all of us at the table and would probably engage AGS members and families as well.

My recollection of first being introduced to geology was reading a book on Roy Chapman Andrews' dinosaur expeditions to the Gobi desert in the 1920s. Those stories engrossed me and made the field of geology something exciting and alluring. Can we provide opportunities during the gem, mineral, and fossil shows for today's kids to hear and see geoscientists and discover that science may be a field for them or at least better understand the role it plays in today's world?

I invite your thoughts on how AGS can contribute to, and capitalize on, having the world's rock, mineral, and fossil experts and resources in our front yard every year.

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## AZGS Announces the Release of Earth Fissure Maps

The Arizona Geological Survey released four maps in early June that comprise the first state-wide compilation of known and reported earth fissures. The 1:250,000 scale maps identify earth fissures in Cochise, Maricopa, Pima, and Pinal counties. On these maps the Survey identified 22 discrete study areas hosting one or more earth fissures that will be mapped at high resolution (perhaps one meter or better) using GPS (global positioning system).



**ARIZONA GEOLOGICAL SOCIETY**

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ABOUT THE  
ARIZONA GEOLOGICAL SOCIETY  
AND UPCOMING EVENTS  
VISIT OUR WEBSITE  
www.arizonageologicalsoc.org

AGS books and maps are sold at the monthly dinner meeting and by the Arizona Geological Survey. Visit the AZGS website www.azgs.state.az.us and click on Non-AZGS Publications



*As always, please keep us up to date as you move, change jobs, or change your e-mail address.*

**2008 AGS MEMBERSHIP APPLICATION OR RENEWAL FORM**

Please mail check with membership form to: Arizona Geological Society, P.O. Box 40952, Tucson, AZ 85717. Dues (circle one): 1 year: \$20; 2 years: \$35; 3 years: \$50. (Full-time students receive free membership. The newsletter is by e-mail only, and a membership application form must be returned to AGS annually to remain on the membership list.)

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

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

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

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

Street

City

State

Zip Code

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

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

E-Mail (business) \_\_\_\_\_ E-Mail (home) \_\_\_\_\_

Please send the newsletter by e-mail only  by regular mail only  by e-mail AND regular mail

If registered geologist or engineer, indicate registration number and state: \_\_\_\_\_

If a member of American Institute of Professional Geologists, indicate registration number: \_\_\_\_\_

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