



# AGS NEWSLETTER

ARIZONA GEOLOGICAL SOCIETY, INC., TUCSON, ARIZONA

October 2008

## OCTOBER 7, 2008 DINNER MEETING

Mark Barton, University of Arizona

### *A Cordilleran perspective on iron-oxide(-copper-gold) deposits: Why has this nut been so tough to crack?*

Among the many challenges in dealing with mineral resources is that of adequately understanding the nature and origin of the deposits themselves. For some deposit types, such as porphyry copper deposits, there is a wide consensus about the general features as well as about their origin – porphyry mineralization is intimately related to the emplacement of relatively oxidized, sulfur-bearing hydrous magmas in the upper crust. In contrast, other less tractable families of deposits have resisted consensus, among these are some major types of gold deposits (Carlin-type, mesothermal / orogenic, and Witwatersrand), certain groups of sediment-hosted deposits such as many Cu deposits, and the recently named but long recognized "IOCG" family (= iron-oxide-copper-gold).

Although based on research in the American Cordillera and elsewhere over the last 20 years, this talk is intended not to look in detail at the features of the IOCG family, but rather to consider why this group (and others) has proven resistant to a widely shared interpretation. Several possibilities suggest themselves: The deposits themselves are unusually diverse precluding a "simple" descriptive model. Few deposits and districts are well described, hindering recognition of commonalities and shared origins such as exist. Many of the classic systems occur in Precambrian rocks and suffer from poor exposure and/or superimposed deformation. Most

investigators focus on the ores, rather than the geologic systems. Perhaps there is more than one correct answer. Most important may be the way we often work: investigations are driven to validate a preferred hypothesis rather than objectively testing multiple hypotheses.

### **OCTOBER DINNER MEETING RETURNS TO INNSUITES ON NORTH GRANADA**

**The AGS dinner meetings will return to the InnSuites at 475 North Granada Avenue, Tucson, beginning with the meeting on October 7. Please make a note!**

We will briefly consider alternative genetic models and contrast the predictions that can be made with observations of the class as whole. Selected reference will be made to district-scale studies in the Basin and Range province and in Chile that have led the author through a series of steps over the years from thinking of these deposits as immiscible melts through a model akin to "iron porphyries" into a view (now 15 years old, but still controversial) that these systems can most readily be thought of as igneous-powered red-bed Cu systems or, alternatively, as the high-salinity analog of epithermal (and mesothermal?) systems.

### **Dinner Meeting Information — PLEASE NOTE WE ARE BACK TO OUR USUAL LOCATION InnSuites, 475 North Granada Avenue, 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.**

# AGS NOVEMBER FIELD TRIP

## 11/15-16/2008

AGS is pleased to announce the November Field Trip, led by Dr. Gordon Haxel, USGS (retired), Flagstaff. The field trip, held in conjunction with Dr. Haxel's AGS dinner-meeting talk on November 11, will be a 2-day event near Tucson. The proximity to Tucson will give members the option of returning home for the night or camping. Below is the field-trip schedule:

### First day (Saturday, Nov. 15)

- Meet at Robles Junction (a.k.a. Three Points;  $\approx$  20 miles west of Tucson), 8:30 am.
- Drive 16 miles farther west on AZ 86, to turnoff of AZ 386, the road to Kitt Peak.
- Brief introduction to Jurassic magmatic arc (guidebook, posters); drive up AZ 386 (the road opens at 10 am).
- Main activity for the day: examine excellent exposures of Jurassic Kit Peak Granodiorite (165 Ma) and Pavo Kug Granite (159 Ma) in roadcuts along the highway. Also look at middle Tertiary dioritic intrusions.
- Mid to late afternoon: view regional geology, Jurassic and otherwise, using Kitt Peak (elevation 6900 feet) as an observation point.
- Leave  $\approx$  4 pm, when the Kitt Peak road is closed for the evening.

*Vehicles: cars; all paved roads.*

### Evening options

Camp out (unless it rains) somewhere in the vicinity of Arivaca for those who wish. Others return to Tucson for the night.

### Second day (Sunday, Nov. 16)

- Meet at Arivaca, 9 am (take I-19 35 miles south from Tucson; leave freeway at exit 48 (Arivaca Junction); drive 20 miles southwest to Arivaca).
- Geologic stop 1: interbedded quartz arenite and rhyolite welded tuff, Jurassic, south side of Las Guijas Mountains.
- Geologic stop 2: Jurassic leucogranite, middle Tertiary minette dikes, and Jurassic or middle Tertiary wolframite-bearing quartz veins, Las Guijas tungsten district, north side of Las Guijas Mountains.
- May be other impromptu geologic stops.
- Leave for Tucson shortly before dark.

*Vehicles: 4-wheel drive or high-clearance vans.*

**CHECK THE AGS WEB SITE IN OCTOBER FOR INFORMATION ON POSSIBLE CAR POOLING.**

### How Long Have You Been a Member of AGS?

The Executive Committee continues seeking information from AGS members on when they joined the Society. Members who joined AGS in the past 4 years have had their inauguration date included with their other membership information so they don't need to respond to this request. If you joined AGS prior to 2004, please send the year you joined AGS to the AGS Secretary, Claudia Stone (cstone@srk.com).

# A ANNOUNCEMENTS

## CONGRATULATIONS

AGS offers its congratulations to David and Mary Maher on the birth of their daughter, Grace, on September 9th.

## CONDOLENCES

It is with sorrow that AGS announces the death of Will McCurry on August 26, at his home in Sierra Vista. Will was an AGS member for more than 40 years. In his long career Will worked for Inspiration Consolidated, Anaconda, Anamax Mining, Cyprus Mining, and Equatorial Mining, and as a consultant. He retired in 1998.

## 2008—09 CALENDAR OF EVENTS

- 11/11/08 **Gordon Haxel**, USGS: *Utilization of the chemical elements*
- 12/2/08 **Jonathan T. Overpeck**, UA: *Global climate change and why it matters in the Southwest*
- 01/6/09 **Richard Reynolds**, USGS: *Dust in western North America*
- 02/3/09 **Vince Matthews**: *China and India's Ravenous Appetite for Natural Resources*
- 03/3/09 **Mike Clarke**, Augusta Resource Corp.: *Geology of the Rosemont Cu-Mo-Ag deposit*
- 04/7/09 **Bill Chavez**, New Mexico Tech: *Geochemical controls on the intensity and maturity of development of supergene enrichment profiles*

### GLOBAL URANIUM SYMPOSIUM

May 9–3, 2009  
Keystone, Colorado  
[www.U2009.org](http://www.U2009.org)

### TAILINGS AND MINE WASTE '08

October 19–22, 2008  
Vail, Colorado  
[www.tailingsandminewaste.org](http://www.tailingsandminewaste.org)

Please make your dinner-meeting reservation **BEFORE** Thursday, October 2, 2008. Call 520-663-5295 today!

## AIPG Presents John T. Galey Public Service Award to AGS President Lee Allison

This year's John T. Galey Memorial Public Service Award recipient is Lee Allison, Director of the Arizona Geological Survey and State Geologist, and a member of the AIPG Arizona section. The Public Service Award was established by the AIPG Executive Committee, in 1982, in recognition of one of its primary purposes; service to the public. In 1992, it was renamed the John T. Galey, Sr., Memorial Public Service Award, in posthumous honor of AIPG's fourth President, whose long career was a continuum of service to both the geological and the general public.

Lee will be recognized at the AIPG annual meeting in Flagstaff, at the September 23 reception at the Museum of Northern Arizona.

## AZGS and BLM Announce Opening of EXPLORE ARIZONA Book & Map Store in Phoenix

The new Arizona Geological Survey book/map store and outdoor information center, developed in partnership with the U.S. Bureau of Land Management, opened for business on May 27th in downtown Phoenix. The center is still under construction, but a formal grand opening will be held this summer.

"Explore Arizona" is a one-stop shop for federal and state materials and publications on recreation, natural history, natural resources, and environment, with an emphasis on Arizona's public lands.

The center is on the ground floor of the Phelps-Dodge Tower at One North Central in Phoenix. Validated parking is available in the P-D Tower underground garage. Visit Explore Arizona's web site at [www.explorearizona.org](http://www.explorearizona.org). Book store hours are 9am-6pm M-F.

**October 18, 2008**

### SME Tucson Section's Annual Dinner Dance & Scholarship Fundraiser

#### 2008 EVENING WITH THE STARS

EVENT ATTENDANCE PLEASE CONTACT:  
KALYN GALVEZ, [KGALVEZ@GEOPROS.COM](mailto:KGALVEZ@GEOPROS.COM) or  
520-292-1000

To SPONSOR, PLEASE CONTACT:  
LARRY DYKERS, [LGDYKERS@CS.COM](mailto:LGDYKERS@CS.COM)



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

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