



AGS NEWSLETTER

ARIZONA GEOLOGICAL SOCIETY, INC. MAY 2006

DINNER MEETING SPEAKER MAY 2, 2006

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JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

ARIZONA FLOOD HAZARDS

ABSTRACT: Floods always seem to catch the media and the public by surprise. Geologists, however, cannot look at the Arizona landscape without seeing the formative affects of floods. We see floods as an expected, normal, and important component of river flow. In the past, failures to recognize and plan for flood hazards has had disastrous consequences for the public. In Arizona, the following four types of flood hazards have had the greatest impacts on the human environment:

1. **Flood Inundation.** Flood inundation occurs where flowing water covers land surfaces. The key aspects of flood inundation are its width (lateral extent), depth (highly correlated to damage), and velocity. Traditional flood hazard management has focused exclusively on flood inundation.
2. **Riverine Erosion.** Riverine, or lateral, erosion occurs as a result of stream pattern evolution, either because disturbance of the watershed or the floodplain, or by normal stream processes. Over time, streams tend to occupy and expand their geologic floodplain through lateral erosion. Mapping of riverine erosion is an emerging field in flood hazard management.
3. **Sedimentation and Scour.** All streams aggrade (net sediment deposition) and/or degrade (scour, net sediment removal) with time. Understanding the rates of change due to sedimentation and scour is paramount for sound flood hazard management. Historically, sedimentation and scour has been the domain of civil engineers, although geologists may be better suited to evaluate these processes.

Alluvial Fan Flooding. The key flood hazard component of alluvial fan flooding is uncertainty regarding the flood flow path location. Identifying alluvial fans, the causes of flow path uncertainty, and the degree of flood hazard is best done by geomorphologists who can recognize landform characteristics indicative of flood hazards. See page 3 for rest of abstract.

Jonathan Fuller can be contacted at jon@jefuller.com or (480) 222-5710.

Dinner Meeting Schedule:

Inn Suites Hotel: 475 N. Granada Ave. in Tucson

Cash Bar @ 6 pm Dinner @ 7 pm Talk @ 8 pm

Cost: With reservation: Members \$20, Guest \$22, Students \$7 Without reservation \$2 additional. Please call (520) 663-5295 by 5 pm before **May 1st**. Indicate if a low-salt or vegetarian meal is required. Please cancel if you are unable to attend.

CALENDAR OF EVENTS:

- *May 24 AGS Symposium Committee Meeting, 5:30, ENRB (USGS Building) on the UA Campus*
- *May 25 AGS Executive Committee Meeting, 5:30 ENRB*
- *June 6 AGS Dinner Meeting, Chris Potter, The Front of the Brooks Range*
- *July 11 AGS Dinner Meeting, Jon Spencer, Cenozoic Extension in Greater Tucson Area*
- *August 1 AGS Dinner Meeting, Douglas Bartlett, Environmental Hydrogeology of Porphyry Copper Mines*
- *Sept. 5 AGS Dinner Meeting, Patrick Leahy, USGS*
- *October 3, AGS Dinner Meeting, Lewis Teal, Newmont Yanacocha Mine*

AGS Symposium News:

The Fundraising Subcommittee and Treasurer now report that donations totaling \$36,570 have been received to date. **Clear Creek Associates** recently made a contribution at the Silver Level and **James Hays and Vernon De Ruyter** contributed at the Molybdenum Level.

AGS 2007 SYMPOSIUM UPDATE



Ores and Orogenesis: Circum-Pacific Tectonics, Geologic Evolution, and Ore Deposits

Hilton Tucson El Conquistador
Golf & Tennis Resort

24-30 September 2007

Plans are shaping up by several committees including the Exhibits, Advertisements, and Field Trips.

Karen Bolm, Exhibits Chair, met with Scarritt Group to work up the rates for exhibitor booths, and prepared a schedule for the Exhibit Hall. **Dean Kleinkopf, Advertising Chair**, is working up the advertising flyer and **Don Ernest, Publicity Chair**, prepared an updated flyer to take to the May 2006 SEG meeting "Wealth Creation in the Mineral Industry", which is hosted by our co-sponsoring organization Society of Economic Geologists. The next round of publicity is focused on the alumni of the Geosciences Department at the University of Arizona.

Bob Cummings, Field Trip Chair, has 19 tentative field trips including one-day and multi-day trips in Arizona, Nevada, Sonora and Chihuahua, and

California.

Three potential overseas trips include Ore deposits and tectonics of Kyushu, Japan, Tectonics & metallogeny of the Ordovician Lachlan fold belts, and Porphyry copper systems of northern Chile.

Meanwhile, updated symposium information and sponsorship brochures were printed so that **Co-Chair Susan Beck** could take them with her on her annual visit to the oil companies in Houston.

Thanks to new Co-Chairs **Keith and Laurel Rodgers** for stepping forward to lead the Spouses Activities Committee. There is still room for you to get involved. The future scheduled meetings of the AGS Symposium Committee are on Wednesday evenings, **24 May 2006** at 5:30 pm at 353 ENRB (USGS Building) on the U of A campus. Please visit www.agssymposium.org for additional information.

MEMBER NEWS

Welcome to new members **David McAlpin**, Student and **Steven Semken**, Associate Prof. both of Arizona State University, **Rich Brown** and **Phillip Bredfeldt** of Clear Creek Associates, **Norman Tenbrink**, (Emeritus Prof.-Grand Valley State University), Green Valley, and **Brent Harril**, Student, Tucson. Congratulations to AGS Vice Secretary **Bret Canale** and wife Ronda on the birth of



their daughter Brenda on March 21st. Best wishes to **Jen Pepe** and **Tom Wythes** who recently moved to Silver City, New Mexico to set up a new office for Golder Associates.

Dues for 2006 calendar year are due if your mailing label says "05" on it. Membership is currently 382, 306 of whom have renewed for the year. The unpaid members will be deleted this month. Please consider a donation to the Courtright Scholarship Fund or to support the AGS Symposium in 2007 while you are filling out the renewal. Full-time students are free but please update your status and mailing information.

The **2006 Membership Directory** will be compiled in June with the contact information of current members. If you've had a recent change in address, phone, or email, please contact Vice Secretary Bret Canale at twocans@cox.net.

AGS Members **Jackie Seguin** and **Mike Stanley** enjoyed a trip to Tucson earlier this month with their future geologist (?) daughters Danielle and Andrea.

Arizona Flood Hazards Abstract continued from page 1

Geologists' training and skill sets make them uniquely qualified for assessing flood hazards in Arizona. Landform interpretation using surficial characteristics and geomorphic principles is the most cost-effective and reliable method of delineating and predicting the four flood hazard types listed above. Geology provides a regional perspective and context lacking from many traditional engineering analyses. Geomorphic data also provides "ground truth" information used to verify and calibrate engineering analyses.

Factors that prevent geologists from working in the field of flood hazard assessment include: (1) ignorance of basic geologic principles by the public, engineers and planners, (2) misperception by the public about the accuracy and reliability of engineering analyses, (3) use of non-quantified methodologies by geologists, (4) public agency preference for engineers over geologists, and (5) poor communication from geologists to engineers.

SHORT COURSE - ORE DEPOSITS MAPPING AUG. 31 - SEPT. 9, 2006

Course Details:

Mark Barton and **Eric Seedorff** will be leading the extended field trip and mapping course through the Great Basin. It will be an opportunity to see ore deposits of various types and ages, set in the context of the structural and magmatic evolution of the region. The trip is designed for graduate students taking an advanced ore deposits class, but 18 places are available for industry participants.

The trip includes a focused multi-day introduction to "Anaconda-style" detailed mapping in the Yerington district, Nevada. The district contains porphyry copper and skarn mineralization, but the mapping method is adaptable to any type of deposit. As part of this, we highlight how mapping can be used to understand zon-

ing, the time-space evolution of mineralizing systems, and the relationships to the fundamental phase equilibria of hydrothermal alteration. The trip also includes tours of Birch Creek, Calif. [F-Be-W-(Zn) greisen/skarn], Humboldt, Nev. [IOCG occurrences], the Eureka district, Nev., and brief overviews of the Robinson district, Nev. [porphyry Cu-(Mo-Au) and related skarn and distal Au-Ag deposits], Tonopah, Nev. [low-sulfidation epithermal Ag-Au], and Goldfield, Nev. [high-sulfidation epithermal Au]. On the way back to Tucson, we also visit Oatman, Arizona [low-sulfidation, Au], and the extension-related IOCG deposits of the lower Colorado River corridor.

The trip is 9 days round trip from Las Vegas, covering about 2,500 miles in 4WD vehicles. The cost of the trip for non-university participants will be

US\$2,500, which includes ground transportation, lunches in the field, double-occupancy accommodations in motels each night during the trip, course materials, and a copy of the SEG Guidebook Volume 32.

Breakfasts and dinners are the responsibility of participants. Industry participants also will need to provide their own transportation to and from Las Vegas as well as their accommodations the night preceding and following the trip.

For more course information and the tentative schedule, visit <http://econ.geo.arizona.edu/modules>.

Please respond via e-mail to seedorff@geo.arizona.edu or lzurcher@geo.arizona.edu for reservations. Register soon!

JOB ANNOUNCEMENTS

U. S. Forest Service Geologist and Minerals Program Administrator needed. The successful candidate will oversee permitting of the Alpha Calcit Arizona marble mine in the Dragoon Mountains, as well as other projects. Experience working with NEPA (National Environmental Policy Act) would be helpful. Position may continue as a term position after the a 6-month temporary position. Both will be filled at a GS-11 salary grade, with a salary starting at \$51,972. Application deadline is May 2. Information can be found at USA Jobs, Announcement no.

ADS06-R3COR-SO-01DT or by contacting **Beverly Everson** at (520) 388-8428 or beverson@fs.fed.us.

Position available at **ASARCO Silver Bell Mine** for three to six months. Computer skills helpful, especially AutoCAD. Please contact **Don Applebee**, Senior Geologist for details at (520) 682-2420 or dapplebee@asarco.com.



ARIZONA
GEOLOGICAL SOCIETY

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For info on ordering AGS
publications, visit
www.arizona-geological-soc.org.
AGS books & maps are sold at the
dinner meetings and by the
Arizona Geological Survey.

Current membership stands at 382. If you have a "05 Renew" on your address, please renew your 2006 calendar year dues. As always, please keep us up-to-date as you move, change jobs, or email addresses.

2006 AGS MEMBERSHIP APPLICATION OR RENEWAL FORM

Please mail check with membership form to: Arizona Geological Society, P.O. Box 40952, Tucson, 85717

Dues (check box) 1 year: \$15; 2 years: \$30; 3 years: \$40; full-time student (membership is free)

Name: _____ Position: _____

Company: _____

Mailing Address: _____

Street City State Zip Code

Work Phone: _____ Home Phone: _____

Fax Number: _____ Cellular Phone: _____

E-Mail: _____ I wish to receive newsletter by E-mail

If registered geologist/engineer, indicate registration number and State _____

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

Enclosed is a _____ tax-deductible contribution for the 2007 AGS Symposium.