



AGS NEWSLETTER

ARIZONA GEOLOGICAL SOCIETY, INC., TUCSON, ARIZONA

May 2009

MAY 5, 2009 DINNER MEETING

Hydrothermal metals and minerals in the Salton Trough

Michael McKibbon

Associate Professor, University of California, Riverside

ABSTRACT—The Salton Trough rift in southern California and northern Baja California is a unique plate tectonic triple point where a fragmented oceanic spreading center transitions into a strike-slip transform fault system. Deposition of the Colorado River delta within the rift and evolution of an overlying saline lake environment have led to a coincidence of geologic factors that generate large volumes of hot subsurface brine containing over 100 million metric tons of dissolved Fe-Mn-Zn-Pb-Cu. These tonnages are comparable to the largest massive sulfide ore bodies ever mined from ancient sediment-hosted rift settings.

The geological history of the rift will be summarized, along with an overview of the various styles of active and fossil hydrothermal mineralization found within the Trough. Recent and ongoing efforts to commercially extract zinc and lithium from the geothermal brines will be described.

The “Holey” Tour: Craters and Volcanoes for Planetary Geology

Field Trip No. 4, Annual AAPG Conference, Sponsored by
AAPG Astrogeology Committee and Arizona Geological Society

Dates: Friday, 5 June, 7:00 a.m.– Saturday, 6 June, 7:30 p.m.

Departs: Twin Palms Hotel, Tempe **Returns:** Phoenix Sky Harbor Airport

Fee: Professionals \$240; Students \$120 (Note: Student slots sold out)

Leaders: Ronald Greely (ASU) and Doug Shakel (AGS)

Includes: Ground transportation, lodging based on double occupancy for night of 5 June in Flagstaff, AZ, two box lunches, group dinner on 5 June, admissions to Meteor Crater and Sunset Crater, and a guidebook.

Limit: 30 people

For information: www.aapg.org/denver/fieldtrips.cfm

(Conference registration is not necessary for field trip attendance.)

FIELD TRIP DESCRIPTION—Craters and volcanoes are common features on most planets and satellites of geologic interest. This trip visits nearly the full variety of these features, including a karst sinkhole, basalt pit crater, maar crater, volcano-tectonic depression, Meteor (impact) Crater, and simulated lunar crater field used for Apollo astronaut training, along with shield, cinder, composite, and dome volcanoes. The morphologies, formational processes and remote sensing aspects of the features will be discussed as related to different planetary environments (e.g., gravity, atmospheric effects).

Dr. McKibbon to talk Tuesday, May 5, 12:00 PM at the USGS, Rm 353, Environment and Natural Resources Building (Corner of Park Avenue and 6th Street)

Mining active hydrothermal systems: examples from land and sea

ABSTRACT—Prior to the global economic meltdown, increasing world demand and prices for many metals had reawakened interest in extracting these commodities from less conventional resources: active metalliferous hydrothermal systems found in both continental and seafloor rift settings. Lack of significant overburden and higher grades are the main draw to such resources. Although such extreme efforts may now seem less immediately enticing, long-term interest in metals extraction from modern hydrothermal systems is continuing and significant capital is still being invested for exploration and anticipated future attempts.

Recent attempts to extract Zn and current plans to extract Li from the land-based Salton Sea geothermal brines will be examined, emphasizing the importance of fully understanding brine geochemistry and behavior prior to process design.

Exploration is also underway for exploitable seafloor massive sulfide deposits actively forming at mid-ocean ridges and oceanic back-arc rifts. A current exploration program and mining design for such deposits off the coast of Papua New Guinea will be examined. The natural long-term oxidation rates of sulfide minerals in seafloor deposits can be exacerbated by plans to pulverize these deposits in situ and slurry the ore to the surface for processing. Unfortunately there is a paucity of data on the rates at which such sulfide mineral oxidation reactions occur under highly advective, oxic marine conditions. Experimental techniques being used to assess such rates are presented, along with likely implications of such processes for the environmental consequences of seafloor sulfide mining.

May Dinner Meeting — Sheraton Four Points, 1900 E. Speedway Blvd.

RESERVATIONS ARE REQUIRED.

AGS CAN NO LONGER GUARANTEE DINNER SEATING WITHOUT AN ADVANCED RESERVATION.

PLEASE CALL 520-663-5295 BEFORE MAY 1, 2009.

Cash Bar @ 6 pm

Dinner @ 7 pm

Talk @ 8 pm

Cost: Members \$24, Guests \$27, Students \$10

ANNOUNCEMENTS

MANY HANDS CLEAN UP THE AGS STORAGE LOCKER

Well... actually it wasn't that many hands. But six members of AGS got together on March 22 and organized the AGS storage locker in anticipation of taking delivery of Digest 22. The hard-work, heavy-lifting folks were Lee Allison, Coleen Brown, Bob Kamilli, Cori Hoag, Kevin Horstman, and Claudia Stone.

Older books were moved to the back of the storeroom, like books were consolidated and readied for inventory, new pallets were installed, and some old stuff was selected for student give-aways at the recent U of A GeoDaze symposium.

Shown below moving boxes and checking books are Bob Kamilli and Kevin Horstman (left) and Cori Hoag (right).



Bob Kamilli and Kevin Horstman

Cori Hoag



AGS Welcomes New Members

AGS is pleased to welcome the following new members who joined in the past month:

Donald Applebee, Geologist
Sarah Baxter
Dan Lajack, Altar Drilling
Joyashish Thakurta, Freeport McMoran

AGS MEMBERSHIP

As of April 16, 2009 the AGS membership totaled 329 people, with another 41 who have not yet renewed.

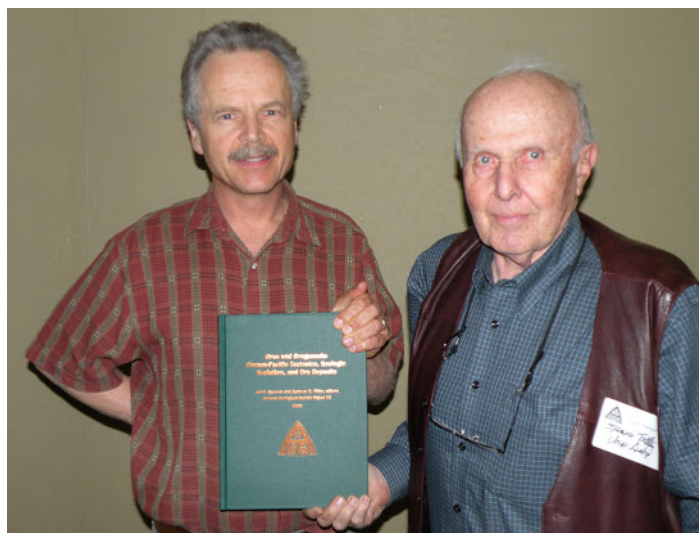
DIGEST 22 IS OUT!

Ores and Orogenesis Symposium Digest 22 is out! The digest went to press on February 23, 2009 and copies were delivered by the printer in time to have them available for sale at the April 7 AGS dinner meeting. Editors Spence Titley and Jon Spencer were at the dinner meeting to sign copies.

There are 44 papers in Digest 22 (618 pages), and it has full-color illustrations throughout. The book is cloth bound in malachite green and has copper-color lettering.

Books preordered at the O&O Symposium were mailed Monday, April 6. In the intervening time between Symposium and mailing, a lot of addresses are no longer current. People who preordered and have not received their volume of Digest 22 are asked to contact Greta Orris at oresandorogenesis@cox.net. Individuals who pre-purchased a book at the Symposium for \$95 will receive a \$20 certificate from AGS toward the purchase of any AGS event or publication(s) over the next 12 months.

The digests will be for sale at AGS dinner meetings for \$70 cash or check, and by mail through the Arizona Geological Survey for \$75 plus shipping. The AZGS is able to take credit card purchases. To obtain your copy of Digest 22, attend the next AGS dinner meeting (May 5), visit the AZGS bookstore at 401 W. Congress Street, Tucson, or the AZGS web site: www.azgs.state.az.us. AZGS also accepts phone (520-770-3500) and fax orders (520-770-3505).



Digest 22 editors, Jon Spencer and Spence Titley holding a copy of Digest 22

Don Hammer Awarded Lifetime AGS Membership

Don Hammer was awarded an honorary lifetime membership in AGS at the April 7 dinner meeting. The award was an enthusiastic and unanimous decision by members of the AGS Executive Committee.

The citation read at the meeting was written and read by Jim Mayor. The citation describes many interesting facets of Don's life and especially of his professional career and achievements. The full citation is available on the AGS web site. In addition to the citation, Don was presented with a framed award by AGS President Kevin Horstman.



President Kevin Horstman (left), Don Hammer (center), and Jim Mayor (right)

2009 EVENTS CALENDAR

06/2/09

Keith Long, USGS, *Petro-realities: How Did Gas Prices Get So High?*

07/07/09

Jon Spencer, AZGS, *Topic to be announced*

08/04/09

Mark Cocker, USGS, *Impacts and their record in the Southeastern Coastal Plain of the United States*

09/01/09

Mike Zientek, *Topic to be announced*

10/06/09

Fleetwood Koutz, *Geology and mineralization of the Hardshell silver, base-metal, manganese oxide deposits, Santa Cruz Co., AZ*

IN MEMORIAM

Karen Sue Bolm

April 22, 1945 – April 4, 2009

Friend and Colleague



Karen Sue Bolm, dear friend and colleague to many AGS and USGS geologists, passed away Saturday, April 4, 2009, in Tucson, after a brief illness. Karen was born in Peoria, Illinois to Martin and Margaret (Heitzman) Rosenbohm. She grew up on a farm near that city and graduated in 1963 from Limestone Community High School, Bartonville, IL. She graduated from Augustana College, Rock Island, IL in 1967, where she majored in Spanish and geography. Karen also studied at Washington State University, the University of Idaho, and the University of Alaska.

Karen was a physical scientist (her official title) with the U.S. Geological Survey and worked as a Technical Information Specialist and Geographic Information Systems Specialist. She had been an English teacher with the Tucson Adult Literacy Volunteers.

Karen was active in the Arizona Geological Society, Old English Sheepdog rescue, and Mission to the Children. She was a member of Holy Cross Lutheran Church at 241 N. Harrison Rd in Tucson, where there was a memorial service for her on Saturday, April 11, 2009.

Karen is survived by her husband, John G. Bolm and her mother, both of Tucson; and by her brother, Henry Rosenbohm and niece, Maggie Rosenbohm, both of Alexandria, Virginia. She was preceded in death by her father.

Memorials may be made to Mission to the Children, P.O. Box 42223, Tucson, AZ 85733.

2009 EVENTS (CONTINUED)

11/03/09

Leslye Obiora, UA Law Professor, former minister of solid minerals in Nigeria: *The challenges of mining and mineral exploration in Africa*

12/01/09

Lawrence Krauss, ASU: *Topic to be announced*



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ABOUT THE
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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.

2009 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: _____

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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 American Institute of Professional Geologists member, indicate registration number: _____

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