



Arizona Geological Society Newsletter

ARIZONA GEOLOGICAL SOCIETY, INC., TUCSON, AZ

APRIL 2011

April 5, 2011 DINNER MEETING

Dr. Peter Smith, Professor at University of Arizona's Lunar and Planetary Laboratory will be our featured speaker. See abstract below.

Where: Sheraton Four Points Hotel, Wild Cat Room, 1900 E. Speedway Blvd. in Tucson

When: Cash Bar at 6 pm—Dinner at 7 pm—Talk at 8 pm

Cost: With reservation, members \$24, guests \$27, Students \$10.

Without a reservation, a \$3 surcharge will be added (if the hotel is able to accommodate you).

RESERVATIONS: CALL 520.663.5295 by 5 p.m. on February 25, 2011.

Please indicate low-salt, vegetarian, or vegan meal preferences. A coffee/salad/roll/dessert option is also available for \$18.

Please cancel if you are unable to attend. The hotel cannot guarantee that meals will be available without a timely reservation.

ABSTRACT

The Search for Extraterrestrial Life

Peter Smith, Ph.D.

With each mission, scientists seem to be getting closer to finding evidence for extra-terrestrial life. Mars is a prime candidate, but the signatures are well hidden and tantalizingly just out of reach. The next mission, the Mars Science Laboratory, has a good chance of finding important clues as to whether life every could have developed in early Mars history. While the outer planets are not habitable, their satellites (like Europa) harbor surface ice and probably buried seas that may have the minerals needed to support an ecosystem. Titan is cold but intriguing with a chemical laboratory of organic molecules and cryovolcanoes. But without doubt the best chance is the plethora of planets just now being located within our galaxy and the exciting possibility of finding Earthlike planets with surface water and atmospheres. The numbers are so large that it is only a matter of time until we have a good list of candidates. This talk will review the various possibilities for locating other biospheres.

Dr. Peter Smith, professor at Arizona's Lunar and Planetary Laboratory, was named the first Thomas R. Brown Distinguished Chair in Integrative Science. He was recently awarded the American Geographical Society's prestigious Cullum Geographical Medal and NASA's Exceptional Scientific Achievement Medal.

A member of the laboratory since 1978, he has participated in many of NASA's space missions, beginning with the Pioneer Venus mission and later the Pioneer Saturn project, which studied outer-planet atmospheres, particularly for Jupiter and Titan. In the early 90's he helped design and manage the development of a camera system that landed on the surface of Titan in January 2005 as part of the CASSINI mission. His association with Mars began in 1993 when NASA accepted his camera proposal for the Pathfinder mission. In 1997 the camera returned images from the Martian surface and monitored the forays of the Sojourner Rover. More recently he was principal investigator of the Phoenix mission, which landed a spacecraft on Mars in the spring of 2008 and whose cameras have relayed more than 25,000 pictures. During the five months of operations, the probe conducted science experiments as part of NASA's search for life in the solar system. The major results have been published in *Science* as four articles; more than 20 additional articles have been published in the *Journal of Geophysical Research—Planets*.

Smith has given lectures on these missions to audiences around the world and is currently teaching courses on Mars and Astrobiology at the University of Arizona.

April Member Spotlight—John G. Bolm

John G. Bolm was born in Buffalo, NY on the day after V-J Day. (“My father, serving in the Navy at the time, went to heroic lengths to end war before my arrival”, John says.) He grew up in the Chicago area, and attended Augustana College in Rock Island, Illinois, where he met his wife, Karen, at a dance during freshman orientation. After receiving his bachelors degree in geology in 1967, he went directly to graduate school at the School of Mines at the University of Idaho in Moscow. He and Karen were married shortly thereafter.

John’s graduate studies were interrupted from 1970 to 1972 while he served in the Coast Guard, completing officer candidate school during the winter of 1970 and then serving two years as assistant operations officer and then operations officer in USCGC CITRUS, a 180-ft seagoing buoy tender stationed in Kodiak, Alaska. His Coast Guard adventures included seizing a Soviet side trawler in the Bering Sea and bringing it back to Kodiak and blowing up a railroad tank car containing 33,000 gallons of liquid propane that had fallen off a barge and floated around in the Gulf of Alaska for about six weeks.



John and Karen Sue Bolm, 2009

After his stint in the Coast Guard, John and Karen returned to Moscow, Idaho. He received his PhD in the spring of 1975 after completing a dissertation on the structure and petrography of migmatites in the Shuswap Terrane of British Columbia. John went to work for the Conservation Division of the USGS in Anchorage, working on oil and gas evaluations on the outer continental shelf. Karen landed a job at the USGS also, in the Public Inquiries Office. In the early 1980s, the Conservation Division became part of the Minerals Management Service when that agency was started, and in 1987 John left the Survey to go to law school at the University of Arizona.

Karen had enjoyed her work at the USGS in Alaska, and she was frustrated because she couldn’t find a job in Tucson that she enjoyed as much. Fortunately, she had the opportunity to re-join the Tucson office of the USGS about a year later. Through work, she learned of AGS, she became involved in the Society, and she got John involved too! John served as AGS President in 1995 and as Treasurer in 1997, and served continuously on the AGS Executive Committee from 1993 through 2001. Sadly, Karen Sue Bolm passed away in 2009. . . a huge loss for John, not to mention the USGS and AGS.

John is a modern renaissance man, with an infectious enthusiasm for his work as a criminal defense attorney and geology. He lives and practices law as a sole practitioner in Green Valley. If you are fortunate to sit near him at an AGS dinner meeting, be assured that the conversation will be interesting.

How did you first become interested in geology? Although I started as an English major at Augustana College, I had to take a science course for graduation. Karen suggested geography because she had taken the course and had liked the professor. I liked him, too, and I changed my major.

What was your first job? Back in the ‘50s I went door to door passing out flyers for a heating company in Des Plaines. Fifty cents an hour. I spent my first pay on a kit to build an HO-gauge model steam locomotive.

What was your first job as a geologist? My first paying job as a geologist was with the USGS in Anchorage. In the beginning I participated in field projects gathering geologic information onshore for use in evaluating the potential of rocks in adjacent offshore basins, and later I became supervisor of a tract evaluation unit that prepared structure maps in the basins. Throughout my time with USGS I was involved in providing numbers or statistical distributions of numbers for use in the Monte Carlo program we used to determine fair market value of the tracts offered in the Alaskan outer continental shelf lease sales.



John, right, birdwatching in Alaska, 2006.

John Bolm—Member Spotlight (continued from page 2)

What is your most memorable field experience? One summer while working from the Research Vessel Don J. Miller, I became acquainted with another geologist, a paleontologist of Russian ancestry. He was interested in things Russian, and knew a lot about the history of Russian America. At first it was interesting to hear him talk about the local history. Our work took us to Three Saints Bay, a small bay in the southeast part of Kodiak Island. The “capital” of Russian America had been there briefly in the 18th century until it was destroyed by a tsunami. Then it was reestablished at Kodiak for a much longer period before finally moving to Sitka. It’s a beautiful little bay, but there is no road to it and there is nothing there or anywhere nearby.

The Russophile geologist decided it would be a good place to put a monument commemorating Shelikov and that the monument, which would be good for glasnost, should be built right away to be in time for the 200th anniversary of the Russian America Company. It was all he talked about for several days, and all of us except one other geologist avoided him as much as possible. The one geologist who didn’t avoid him actually worked with him on shore and would put a question to him from time to time to keep him going when he would run out of ideas.

Finally during breakfast on the ship one morning the Russophile was designing the monument. During a pause, the other geologist who had not avoided him suggested that a pile of dead sea lions and Aleuts might be an appropriate monument to Shelikov. There was no more talk of glasnost.

What do you consider your greatest professional achievement? Our USGS office in Anchorage did a good job of evaluating resources, as is shown by the fact that our determination of fair market value for any tract was generally very close to the second and third highest bids on the tract. I’m proud that my input to the evaluation contributed to this success.

How about your greatest achievement EVER? We defense attorneys have to get used to losing trials because many of the folks we represent committed the crime and the prosecutor has the evidence to prove it. Over the years, however, I have won several hard-fought trials for people who were falsely accused and had not committed any crime. I am proud of this.

What are your hobbies? In Idaho and Alaska I used to hunt and fish. I started bird watching while in Alaska, and I still do that. I like to sail and I like to travel. And I like to read about the things I like to do.

Water, Whiskey or Wine? Water for thirst and wine for enjoyment. There used to be a framed writing in the Club Paris, the best steakhouse in Anchorage. It went something like this: “We were four days out of Kabul when one of the camels fell into a gorge along a very narrow stretch of trail. We lost our corkscrew, and for the next three weeks we had to subsist on nothing but food and water.”

Thanks, John!

Do you know an AGS member who would be an interesting subject for the Member Spotlight column? Please contact Alison Jones at ajones@clearcreekassociates.com with your suggestion.

Announcements

You will notice a new AGS dinner meeting format during the next few months! We are accepting corporate sponsorships to help offset dinner meeting costs and to provide dinners to students. Our April 5 meeting will be sponsored by SRK Consulting. If your company is interested in a sponsorship, please contact Ann Pattison, AGS VP of Marketing.

Please join us in welcoming new AGS members:

- J.M. Hadix, owner, White Oak Energy, Wichita, Kansas
- Richard A. Brittain, retired, Snowflake, AZ
- Les Paul Beard, Senior Geologist, Zonge International, Tucson, AZ
- Alana Stern, Student, Arizona State University
- Joseph Walsh, Student, Arizona State University
- Hall Stewart, Consulting Geologist, Tucson, Arizona

The AGS April dinner meeting will be sponsored by:



SRK and its employees have been enthusiastic supporters of AGS for many years. If you have a chance to speak with any SRK staff at the meeting, please thank them for their contributions!

Geoscientists: Old

The American Geological Institute recently published the results of a study on the demographics of geoscientists in their March 11, 2011 issue of *Geoscience Currents*. The results confirm what members of the AGS Executive Committee have suspected for quite some time: geoscientists are old. The article, depressing as it may be, is available on the web at:

<http://www.agiweb.org/workforce/Currents/Currents-042-2010AgeDemographics.pdf>

The study found that “The majority of geoscientists in the workforce are within 15 years of retirement age, and data from federal sources, professional societies, and industry indicate a growing imbalance in the age of geoscientists in the profession. In 2010, 62% of geologists in the federal workforce were over 50 and 78% of the mining engineers in the federal workforce were over 50.

Unfortunately, reasons were not provided for the apparent lack of interest in the geosciences by young people. It seems likely that those who do study geology now will be in great demand throughout their careers.

NEW USGS Fact Sheet:

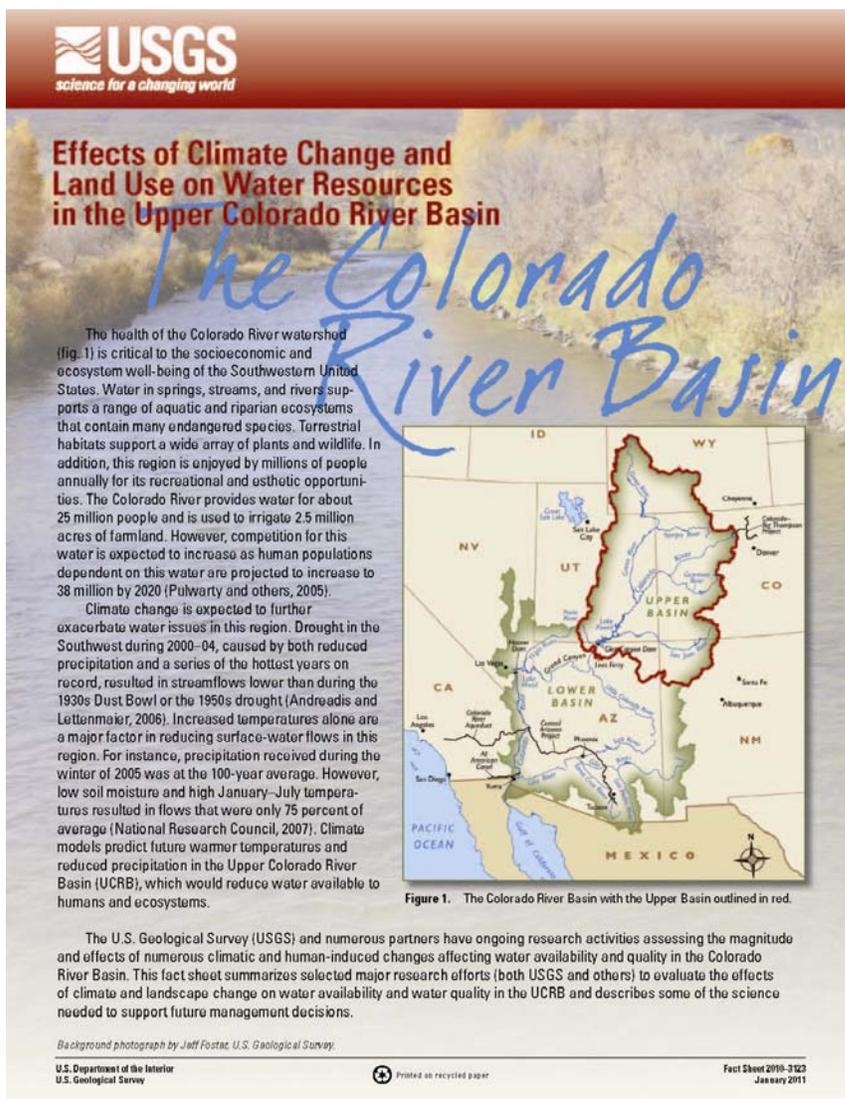
Effects of Climate Change and Land Use on Water Resources in the Upper Colorado River Basin

The US Geological Survey recently released Fact Sheet 2010-3123 titled “Effects of Climate Change and Land Use on Water Resources in the Upper Colorado River Basin. You can download the six-page document from the following web address:

<http://pubs.usgs.gov/fs/2010/3123/>

Some of the interesting facts include:

- Paleoclimatic records show that the last 100 years were unusually wet in the upper Colorado River Basin.
- Recent models indicate that climate change could result in a reduction of Colorado River Flow of between 5 and 45 percent, but reductions of 5 to 20 percent are considered most likely.
- Approximately 25 million people now depend on Colorado River water. This number is expected to increase to 38 million by 2020.
- Landscape change, including tree loss due to the mountain pine beetle, is likely the result of increasing air temperatures and drought. The resulting deforestation is expected to decrease water quality and will affect snowmelt rates and timing of runoff.



Kartchner Caverns Field Trip—May 28, 2011

AGS VP of Field Trips, *Doug Shakel*, reports:

Circle the last Saturday in May for the next AGS field trip. This will be a family event — a special “after hours” visit to Kartchner Caverns State Park. The cave visit will be entirely ADA accessible (including wheelchair access, if required), and AGS will provide van transportation, leaving from the southwest corner of the University of Arizona campus. Times are still tentative, but it’s looking like we may leave campus around 2 pm and return at approximately 9 pm.

Our visit is being arranged by the “Friends of Kartchner Caverns State Park” and will include a special program in the Visitor Center, as well as our own tour of the caverns. Following our cavern tour, we will have a catered meal in the picnic area and a private question and answer session with cave experts.

A reservation page will be available soon on the AGS website for trip registration. The cost, which will include transportation and dinner, and time are not firmed up at this time, so check the website (www.arizonageologicalsoc.org) for the latest information and to sign up for this great trip.

Major Discounts on AGS Digests

AGS Digests are being steeply discounted!! It’s not a fire sale, but we do want to clear out our storage space. Now is your opportunity to buy these quality publications at sharply reduced prices.

- Digest 10: Tectonics Digest and map Supplement—reduced from \$14 to \$7.
- Digest 14: Relations of Tectonics to Ore Deposits in the Southern Cordillera—reduced from \$14 to \$7.
- Digest 15: Gold and Silver Deposits of the Basin and Range Province, Western U.S.—reduced from \$14 to \$7.
- Digest 17: Geologic Evolution of Arizona—reduced from \$55 to \$35.
- Digest 18: Mesozoic Rocks of Southern Arizona and Adjacent Areas—reduced from \$5 to \$2.
- Digest 19: Proterozoic Geology and Ore Deposits of Arizona—reduced from \$25 to \$10.
- Digest 20: Porphyry Copper Deposits of the American Cordillera—reduced from \$60 to \$40.
- Digest 21: Desert Heat—Volcanic Fire, The Geologic History of the Tucson Mountains and Southern Arizona—reduced from \$16 to \$10.

These publications are available at our monthly meetings or at the Arizona Geological Survey.

Earth Fissures Maps

The Arizona Geological Survey’s Earth Fissures Map is now available online in an interactive format. Just go to:

<http://services.azgs.az.gov/OnlineMaps/fissures.html>

According to the State Geologist’s blog, *“Over the past three years, Arizona Geological Survey geologists mapped 86 miles of continuous and discontinuous earth fissures in Pinal County. An additional 167 miles of reported fissures were visited and examined but remain unconfirmed either because recent agricultural or construction activities masked their appearance or because they lack some of the physical attributes used to identify earth fissures.*

Nearly 43 miles (50%) of all mapped fissures are exposed on the east side of the Picacho Basin, adjacent to the Picacho Mountains and Picacho Peak. The three newly mapped study areas yielded 5.62 miles of earth fissures, with Santa Rosa Wash accounting for nearly three miles of that. An additional 7.7 miles of previously reported fissures remain unconfirmed. AZGS monitors growth of existing earth fissures and investigates formation of new ones.” AZGS will address mitigation of these features in future phases of work.

