

Geospectrum

Quarterly Geoscience Newsletter & E-Zine

Got a Crime to Solve?

Call in the Soil Scientists

Science Legislation

What to Expect from the
113th Congress

Winter Meetings Schedule

Congressional Science Fellowships





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Geospectrum

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Canadian Federation of Earth Sciences
Geological Society of Africa
The Young Earth Scientists Network (YES Network)

AIPG at the 2012 National Conference of State Legislatures



The National Conference of State Legislatures (NCSL) is the bipartisan organization that serves the legislators and staffs of the states commonwealths and territories.

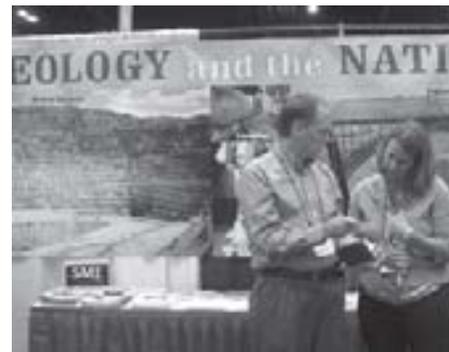
AIPG co-sponsored a booth at the NCSL convention in Chicago on August 6-9, 2012. There were a total of six organizations that comprise the American Geology Consortium, AASG, AEG, AGI, GSA, SME and AIPG. Representatives from each organization volunteered their time to promote geology.

Each summer, NCSL brings thousands of legislators and staff together for its legislative summit. The summit provides more than 150 informative sessions and presents nationally-renowned speakers on the most pressing issues. NCSL's legislative summit offers organizations the premier opportunity to get our message to the right people.

Next year's NCSL summit will be in Atlanta, August 12-15, 2013. More than 5,500 people are expected to attend.



Barney Markunas, AEG, talking Geology with a booth visitor.



John Hayden, SME, talking business with Kasey White, GSA.



Vickie Hill, AIPG, Kasey White, GSA, and Renae Strawbridge, Illinois State Geological Survey pose with the Barnum and Bailey Circus Clown



Don McKay, Illinois State Geologist, talking with a booth visitor.

Abstracts for the AAPG 2013 International Conference and Exhibition (ICE)



Abstracts may now be submitted for the American Association of Petroleum Geologists 2013 International Conference and Exhibition (ICE) — Energy for Integration and Prosperity to be held in Cartagena, Columbia 8-11 September 2013.

AAPG, the AAPG Latin American Region and the Colombian Association of Petroleum Geologists will be hosting ICE; an international event that attracts over 2,000 attendees from 70 different countries. With the Latin America region experiencing an oil industry activity boom it has significantly increased exploration and production activities in

the region making it a perfect place for geoscientists from around the world to actively participate in what promises to be a rich technical program.

Industry professionals and students are invited to submit abstracts that relate to any of the following themes:

- » Theme 1: Latin American Basins and Petroleum Systems
- » Theme 2: Unconventional Resources
- » Theme 3: Challenges in Heavy Oil
- » Theme 4: Mature Fields
- » Theme 5: Deep Water Exploration and Production
- » Theme 6: Environmental Geology
- » Special Session: History of Petroleum Geology (oral only)

You can submit abstracts online at <http://aapg2013ice.abstractcentral.com> through 18 January 2013. Sessions and formats (oral or poster) will be determined by the actual submittals. Acceptance notifications will go out in March 2013. For guidelines and more information please go to <http://www.aapg.org/cartagena2013/guidelines.cfm>

NGWA Groundwater Summit set for April 28-May 2, 2013



The National Groundwater Association Summit, a national and international conference on groundwater, will be held April 28 through May 2 in San Antonio, Texas.

The call for abstracts closed November 23, and abstracts are currently being reviewed. When the program is finalized, it can be reviewed [online](#). The keynote speaker will be Charles Fishman, New York Times bestselling author of *The Big Thirst*.

The Summit is co-sponsored by the International Association of Hydrogeologists-North American Chapter.

3-D Printing for Soil Science

Caroline Schneider

Originally published in SSSA Soil Horizons



Imagine printing a 3-D object as easily as a typed document. Lose a button? Print one. Need a new coffee cup? Print one. While the reality of printing any object on demand may lie in the future, the technology necessary to do it has been available for decades. And soil scientists are now taking advantage of its possibilities.

In a paper published in the Soil Science Society of America Journal in late November 2012, a team of researchers headed by Philippe Baveye of Rensselaer Polytechnic Institute explored the potential of manufacturing soil science equipment using 3-D printing. They found that the technology, also called “rapid manufacturing” or “stereolithography,” has major benefits over traditional manufacturing methods, and they were able to successfully produce intricate pieces. Also, the ability to easily share the designs used by 3-D printers could allow for better replication of experiments and collaboration among soil scientists.

First developed in the 1980s, the process of 3-D printing begins with a computer-generated model [often a Computer Aided Design (CAD) image] that is “sliced” by a program to create very thin layers of the object. The printer then uses an extruder that lays down a material – frequently a thermal plastic – layer by layer, as defined by the computer program, to create the full 3-D object. This method is currently being used to build a variety of items, such as mobile phones, jewelry, and artificial limbs.

Baveye’s team used the technology to create parts of a permeameter, a device used to measure the hydraulic conductivity of soils. Traditionally, this type of equipment is made using lathes and drills. However, those techniques are painstaking and time-consuming. Also, traditional methods cannot create intricate designs or incorporate certain features such as non-concentric structures. Moreover, once a product is

made, researchers are resistant to making changes even if the piece would work better if modified.

Baveye and his colleagues found that by using a 3-D printer to create their design of the permeameter parts, they were able to avoid several of these problems of traditional equipment manufacturing. Many designs that used to be impossible to make, such as intricate conduits, can now be easily worked into the 3-D printing models. Also, once a piece is designed and even manufactured, changes to the product can be easily made in the computer model and printed anew.

Says Baveye, “Should anyone want permeameter columns with a narrower or larger diameter, designs can be scaled up or down in seconds, and a new piece can be printed without extra human labor.”

By avoiding the painstaking and backbreaking work of traditional methods, 3-D printing has inadvertently leveled the playing field. While in the past few students and researchers were willing to use the drills and lathes, many more now look forward to the opportunity to create and print CAD drawings. This technology has opened doors to aspiring soil scientists who may have otherwise passed on the opportunity to create designs and equipment for their research.

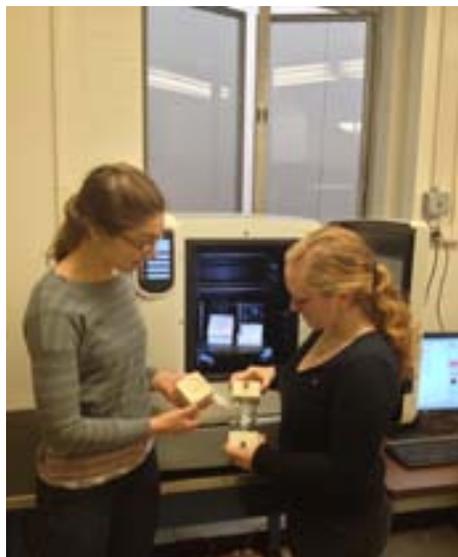
An additional benefit of using 3-D printing, and one that Baveye believes could greatly impact soil science, is the

ease with which designs can be shared among researchers. When equipment is made using traditional methods, detailed procedures and even blueprints have to be provided for replication of the experiment. Even then, there are often details that make it difficult for others to produce the same design. 3-D printing eliminates this hurdle.

“CAD files can be easily sent by email to colleagues anywhere in the world,” explains Baveye. “That means experiments can be replicated easily, even if they involve complicated pieces of equipment.”

While the benefits of 3-D printing are obvious, there are some limitations. The object design must consist of contiguous solid material, and the smallest features must be larger than the minimum resolution of the printer being used. Even with these constraints, however, 3-D printing offers a promising alternative to older manufacturing methods, and Baveye and his colleagues have no doubt that the technology will become a mainstream method.

“We expect that the evolution of 3-D printing will follow that of laser printers,” says Baveye. “As the price of 3-D printers continues to fall, we expect that they are going to be more and more widely used in soil science laboratories and in many other disciplines.”



Kathryn Farris (left) and Claire Superak (right), members of Baveye’s team, look over pieces printed on the 3-D printer behind them.

A Look at the Society for Mining, Metallurgy and Exploration (SME)



The Society for Mining, Metallurgy, and Exploration (SME) is a professional society (nonprofit 501(c)(3) corporation) whose nearly 15,000 membership represents all professionals serving the minerals industry in more than 85 countries. SME members are engineers, geologists, metallurgists, educators, students and researchers. SME advances the worldwide minerals community through information

exchange and professional development.

A member society of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME), SME's roots date back to 1871 when a handful of coal mining engineers founded AIME. Since its inception, SME has continued to evolve over the years to stay abreast of industry changes and to reflect the ever-broadening interests of its members.

SME is organized into eight distinct divisions - coal & energy, environmental, industrial minerals & aggregates, mineral and metallurgical processing, mining and exploration, underground construction association (UCA), International Marine Minerals Society (IMMS) and WAAIME - the woman's auxiliary to the AIME. These divisions reflect the rich diversity of the SME membership and serve as a framework for SME's committee structure.

Professional development and information exchange have been watchwords at SME from the beginning. Nowhere is this commitment more evident than in the range of programs and services available to SME members. Publications, professional registration, peer-review of technical papers, college accreditation programs, meetings and exhibits, public education, and SME short courses are just a few examples.

Local and international involvement are also distinguishing features in the structure and character of SME as a professional society. More than 60 SME sections located in North America, South America, Asia, and Europe facilitate the exchange of information and increase grassroots participation in SME programs and services.

SME offers the following products and services to benefit our Members including: OneMine.org - the largest online library in the Mineral's industry with over 100,000+ books and documents to search and download free; Mining Engineering magazine, a monthly publication free to members, featuring the latest news and trends in the Minerals' Industry and around the world; the quarterly publications Tunneling & Underground Construction (T&UC) magazine and the Minerals and Metallurgical Processing Journal (MMPJ); the SME Bookstore offering 135 titles covering a wide array

of topics in Mining, Minerals and Geology with special pricing for members; the 2013 SME Annual Meeting, February 24 – 27th in Denver, Colorado, offering attendees short courses, 50+ technical sessions, over 700 exhibits, dinners, awards, and 6,000 fellow colleagues with whom to interact and network; the SME Foundation – a cornerstone in the Minerals' industry that provides scholarships and minerals education and outreach to the public; and lastly SME offers opportunities to professionals in the industry to serve on committees that shape the direction of the Society as well as the industry. For more information please go to www.smenet.org and see what SME can do for you!

Creating a Global Digital Soil Map

Madeline Fisher

Originally published in the October 2012 issue of CSA News magazine



On the wall of Alfred Hartemink's office at the University of Wisconsin-Madison hangs a framed picture from 1960. The World Congress of Soil Science was in town that year, and a large group of soil scientists posed for a photo along the campus shoreline of Lake Mendota—the same lake Hartemink now sees every day from his office window.

The historical connection clearly pleases the Dutch soil scientist and SSSA member, who came to UW-Madison just last year after living and working all over the world—most recently at ISRIC-World Soil Information in Wageningen, the Netherlands. But the real significance of the 1960 meeting wasn't in the setting, but in what the group, known as the International Society of Soil Science (ISSS), decided to do.

Despite the rifts created by the Cold War and Suez Crisis at the time, "They said, 'Let's do something bold. Let's make a soil map of the world,'" recalls Hartemink, who is secretary general of the successor organization to ISSS: the IUSS, or International Union of Soil Sciences.

And eventually they did, although it took 25 years.

"That's the FAO-UNESCO soil map of the world," he says. "The only one we have at the moment."

That may be true now, but a second map is on the way. For the past five years, in fact, Hartemink and dozens of other soil scientists worldwide have been working not only on another global soil map, but also a digital one this time round: a fine-resolution spatial repository of data on pH, organic carbon levels, texture, and other soil properties that can be readily and continually updated.

Named GlobalSoilMap.net, the effort is somewhat like going from a 1980s printed road atlas to Google Earth in one giant leap, and there are major scientific and technological hurdles to overcome. Add the challenges of reaching consensus on methods, coordinating dozens of institutions around the globe, and surmounting geopolitical obstacles to data sharing, and "it's quite an endeavor to produce a global digital soil map," says University of Florida soil scientist and ASA and SSSA member Sabine Grunwald, who leads an ASA Community focused on the project.

But the map is also desperately needed. Existing soil maps—like the FAO-UNESCO one—are often years or even decades out of date. More critically, the soil class information they contain can't easily be used by researchers in other fields, making it difficult to fully integrate soil science with hydrology, ecology, agronomy, climate science, economics, and other disciplines. Instead, scientists in these fields often produce their own estimates of soil properties "and that

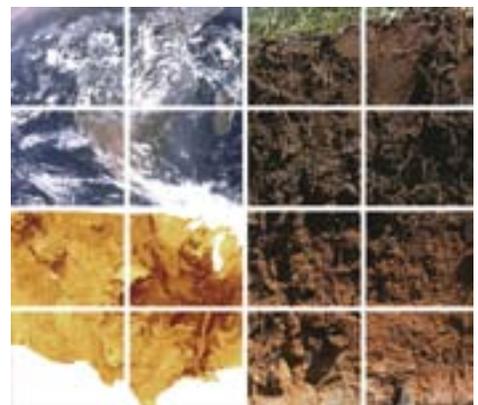


Photo credit: SSSA Article

scares us," says Hartemink, who led GlobalSoilMap.net from the Netherlands until last year.

"So often we see [in studies] that soils are either not treated at all or are treated as a 50-kilometer average across large chunks of space," agrees Alex McBratney, a University of Sydney soil scientist and the project's overall scientific advisor. "But we know that the variability of soils at finer scales is actually important in the behavior of ecosystems."

While this is frustrating, he adds, the real issue is how the lack of digital information hinders our ability to know the impact of soils on global climate change or predict the water-holding capacity—and thus, crop-growing potential—of soils worldwide. In other words, the group isn't making the map merely because it can or to prove to other researchers that soils are important.

"The real aim, and maybe we're being idealistic, is to tackle those larger global issues," McBratney says.

Read more in the October 2012 issue of CSA News magazine.

Now Taking Reservations for the Karst Waters Institute Awards Banquet



The 2013 Karst Waters Institute, Karst Award banquet will be held in Boulder, Colorado, the evening of March 2, 2013.

Festivities start at 6:00 PM at Tangerine (2777 Iris Ave., tangerineboulder.com). This year's honoree, Dr. Norman Pace, will speak on the topic of "The Microbes Below: Caves, Aquifers and Drinking Water Distribution Systems." Other awards will also be given.

Reserve your seat(s) by sending a check for \$60/person to the Karst Waters Institute, PO Box 4142, Leesburg, VA 20177. Dinner includes hors d'oeuvres, dinner with choice of entrees, & wine/beverages.

Dr. Norman Pace received an A.B. degree from Indiana University and the Ph.D. from the University of Illinois. He has held faculty positions at several institutions, including the National Jewish Hospital and Research Center, the University of Colorado Medical Center, Indiana University, and the University of California, Berkeley. He currently is Distinguished Professor of Molecular, Cellular and Developmental Biology at the University of Colorado, Boulder.

Pace works in two scientific arenas. On one hand he is a molecular biologist, and his laboratory has made substantive contributions to our understanding of nucleic acid structure and processing. Noteworthy recent efforts have involved elucidation of the crystal structure and catalytic mechanism of the RNA moiety of ribonuclease P, an enzyme composed of RNA instead of the usual protein. On the other hand, Pace is a microbial ecologist. His laboratory has led the field in the development and use of molecular tools to study microbial ecosystems. This work has led to the discovery of many novel organisms and an understanding of some unusual symbioses. The results have expanded substantially the known diversity of microbial life in the environment. Current efforts range from high-temperature environments and human disease, to the microbiology of the human-occupied indoor environment.

Pace is a member of the National Academy of Sciences, and he is a Fellow of the American Association for the Advancement of Science, the American Academy of Microbiology, and the American Academy of Arts and Sciences. He has received a number of awards, for instance the 1996 Procter and Gamble Award in Applied and Environmental Microbiology, the 2007 Lifetime Achievement Award from the American Society for Microbiology, the 2008 Lifetime Achievement in Science Award from the RNA Society, the 2008 Tiedje Lifetime Achievement Award in Environmental Microbiology from the International Society for Microbial Ecology, and the 2001 Selman A. Waksman Award for Distinguished Contributions in Microbiology from the National Academy of Sciences. This is the Nation's highest



Photo credit: Dr. Norman Pace



Photo credit: Dr. Norman Pace

award in microbiology. In 2001, he was appointed a Fellow of the John D. and Catherine T. MacArthur Foundation. Pace additionally is an expert in cave exploration. He has led, and participated in, numerous expeditions in this country and internationally. Pace has been elected a Fellow of the National Speleological Society, the Cave Research Foundation, and the Explorers Club. He received the Lewis Bicking Award from the NSS for his contributions to American caving.

Got a Crime to Solve? Call in the Soil Scientists

Mary Makarushka

Originally Published in SSSA Soil Horizons



When Australian police were alerted to the disappearance of two women from their home outside the city of Adelaide in September 2000, they found blood and broken glass in the house, and one of the family cars was gone.

Police discovered the empty vehicle the next day, 100 miles from the women's home; in the trunk were a bloody knife and a shovel caked with dirt. They soon arrested the 22-year-old driver, but he refused to give them any information to help find the women: his mother and grandmother.

With so little to go on and such a large area to search, detectives took the unusual step of contacting a team of soil scientists from CSIRO, the Australian national science agency, for help with the investigation.

To scientist Robert Fitzpatrick and his colleagues at the Land and Water lab outside Adelaide, the material on the shovel spoke volumes. It was smeared and compacted in a way that suggested that it had been used to both excavate and tamp down soil in a wet location, and its pH value showed it to be more acidic than the soils of the peninsula where the vehicle had been found. Under a microscope, it contained particles with an angular shape typical of materials created by a human activity, such as mining. And a mineralogical analysis revealed the presence of talc, a mineral found only in the area's mountains and foothills.

Based on that analysis, his soils team recommended searching in the industrial gravel quarries of the Adelaide Hills, far from the place where the suspect had been arrested. The correct quarry was identified, and the two bodies were ultimately recovered. For the man in custody, Matthew Holding, the case ended in a guilty plea and a sentence of 18 years in prison.

But for the scientists and the police, the case was a powerful demonstration of the ways standard soil science techniques

could aid criminal investigations. This collaboration would lead to the 2003 establishment of the Centre for Australian Forensic Soil Science (CAFSS), with Rob Fitzpatrick as its director and an active advisory board made up of law enforcement and forensic science experts from around the country. To date, CAFSS has advised on more than 100 cases, including violent crimes such as rape and homicide, counterterrorism and other issues of national security, and more esoteric crimes, including dinosaur egg smuggling.

"We're using normal, ordinary pedological tools," says Fitzpatrick, referring to soil color, morphology, chemistry, and other standard means of classification and analysis. "The big challenge for us was to understand the forensic and the police way of doing things and how to operate in court. So we've done training courses on how to deal with a jury and how to communicate with a jury. We've also had to develop a guideline manual as to how we deal with a sample when it comes in."

At the CAFSS labs, each soil sample is bar-coded so that the chain of custody, or the record of each time someone takes possession of it, can be easily and reliably documented. An expert in sample security visits the lab every three months to certify its procedures.

"That is all really new stuff that you don't normally do in soil science," Fitzpatrick says. "And putting these things together, we can play a major role in assisting the police."

It's Elementary, My Dear Watson

Perhaps the earliest documented case of a forensic comparison of soils was in Berlin to solve a crime that took place on a Prussian railroad in April 1856. A barrel containing silver coins had been emptied and refilled with sand during transit. Professor Ehrenberg, a scientist from Berlin, acquired samples of the sandy soil from all the stations along the railway line. Using a light microscope, he then examined features of the sandy soil particles, such as color and shapes,



Photo credit: SSSA Article

to compare them with the soil from the barrel and determine the station from which the sand originated.

Later, in 1891, the Austrian Hans Gross, considered one of the fathers of forensics—the use of scientific expertise to address legal questions—used microscopic analysis of soils recovered from a shoe to link a suspect to a crime. And in their first appearance together, in 1887, Dr. Watson notes of Sherlock Holmes: "Tells at a glance different soils from each other. After walks, has shown me splashes upon his trousers, and told me by their colour and consistence in what part of London he had received them."

In fact, until 15 or 20 years ago, Australian police laboratories large and small typically had a forensic specialist, armed with a light microscope, who would analyze evidence that included soil or plant or geological materials, Fitzpatrick says. But while their work helped solve cases, these specialists were not necessarily trained as geologists, mineralogists, or pedologists.

"So what happened was, if they went to court with soil evidence, they would very often be absolutely hammered by the defense lawyers," who would attack their status as soil or geology experts, Fitzpatrick says.

Meanwhile, as DNA became a household word and juries came to expect highly quantifiable evidence, "people lost interest in soils," Fitzpatrick says, in terms of trying to make a criminal case.

Soils can be a very potent type of trace evidence for linking a suspect to a crime scene, Fitzpatrick says. For one thing, a trace of soil may be so small as

to be almost invisible, causing even a wary wrongdoer to overlook it. There are increasingly good analysis techniques available, and even a very small sample can yield a meaningful result. Soil evidence is relatively easy to collect and can often be analyzed quite rapidly. Soils are highly varied and individualistic, with more than 100,000 types catalogued in the U.S. alone. Clays and sand in particular are likely to cling to someone who's come in contact with them—and criminals may not be as scrupulous about trying to dispose of soil evidence as they would be about blood or DNA.

Soils may also be very durable. "We're now dealing with a lot of cold cases," Fitzpatrick says, including decades-old murders, "because the DNA's not there,



Soil evidence gathered from on one suspect's clothing allowed investigators to tie the suspect to a wetland site where a victim had drowned.

but the soil is."

While DNA evidence may not have been collected in a decades-old case, or may have degraded over the years, an evidence locker may still contain mud-stained clothing or a sandy pair of old boots that can be sent to the CAFSS laboratory for study.

In addition to Fitzpatrick, the Adelaide-based CAFSS lab has three specialist mineralogists and experts in X-ray diffraction (XRD), a technique that identifies crystalline minerals by the patterns their atoms scatter back when X-rays are directed at the sample. Because the atomic structure of crystals is, by definition, regular and predictable, each mineral has a distinct and recognizable profile.

"Our group here is very, very good at quantifying and identifying minerals in just about any sample you can think of," Fitzpatrick says. (Team members Mark Raven and Peter Self won the international Reynolds Cup competition for XRD sample analysis in 2010—an honor Fitzpatrick compares to winning the America's Cup for sailing.)

When Fitzpatrick presents XRD findings to a jury, he uses the analogy of a fingerprint match. Overlaying two profiles from two different samples, he can show the nuanced pattern of peaks and valleys that indicate which minerals are present in each sample and in what quantity. The jury can see for themselves whether the two are a close match as Fitzpatrick describes the likelihood that both came from the same source.

"From experience, we've found that X-ray diffraction is by far the most powerful way to explain our work to the jury," Fitzpatrick says. "While the science might be complicated, it's a lot, lot easier than showing, for example, a whole lot of chemical data in a table."

Counterterrorism and Dinosaur Eggs

CAFSS is administered by Australia's national science agency, the Commonwealth Scientific and Industrial Research Organisation (CSIRO); its criminal investigative work is funded in part by CSIRO and in part by consulting

fees from local law enforcement agencies.

When approached about a possible case, Fitzpatrick works up an estimate of what CAFSS could do to help and what it may cost. At least 20% of the time, he says, police departments decide not to use them for soil evidence consulting, either for budgetary reasons or because they feel it's not absolutely necessary to the case.

The center's work is not limited to Australia, however; about 20% of the caseload has been counterterrorism in both Australia and Afghanistan, according to Fitzpatrick, who received a top-secret security clearance so that he could work on those cases.

For national security cases, Fitzpatrick has been able to use even more sensitive and sophisticated analytical tools, including synchrotron XRD, which is much more powerful than the X-ray diffraction they can do in the lab but costs \$10,000 a day. Using the synchrotron, a subatomic particle accelerator about the size of a football field, they were able to examine poorly crystalline samples, such as minute brick particles and traces of burnt soil, for a case in which a burned-out vehicle was one of the primary sources of evidence.

Another case with international ramifications was the case of the Chinese dinosaur eggs. Under Chinese law, fossilized dinosaur eggs and nests are protected relics, and both their sale and purchase are banned in Australia. Nevertheless, illegal fossil trafficking is a billion-dollar industry.

CAFSS was called in when two Australian collectors were being investigated for possessing suspect nests, which they claimed were not Chinese but



Dinosaur eggs image caption: In a case involving illegal fossil trafficking, Fitzpatrick's team compared the dinosaur nests pictured here against soil samples from the Hunan Province in China where the eggs were believed to originate.

legal American fossils.

Fitzpatrick's team compared the nests against soil samples from the Hunan Province in China where the eggs were believed to originate. "We then compared dinosaur eggs from the U.S., from a museum, and we found totally different mineralogy," he recalls. "And these people were convicted, and the dinosaur eggs were sent back to China."

Staying One Step Ahead of the 'Baddies'

When Fitzpatrick is testifying in court, sitting sometimes just a few yards away from an accused pedophile and murderer while describing how the soils collected from the man's shoes link that person to the crime scene, he's well aware that there's an emotional dimension to this type of work that's significantly different from non-forensic soil science.

"We did a cold case where I revisited the exact site where this girl had been raped and then smothered in a little dam and drowned," he recalls. "And that emotionally for me was bad because I stood right there where she'd been murdered 25 years ago."

And while it's often the police who collect the samples CAFSS analyzes, "In some instances, there would be situations where I'd have to actually sample soil from a victim's hair, bones, or clothing," he says.

CAFSS is also very careful about what



Skull and bones image caption: Skull and bones from a victim that was excavated in a reddish-brown clayey soil from a backyard, which relates to a 20-year-old cold murder case.

information it publicizes about its cases, both out of sensitivity to the victims' families and to keep from providing a master class in soils evidence to Australian criminals. They didn't talk about the details of the shovel in the Matthew Holding case for five years and have only recently received permission to discuss it more fully. And if Fitzpatrick uses crime scene photos for a training or a conference presentation, he makes a point of deleting them from the slide show if it might be posted on the web.

"Our website gets a lot of hits around the world," he says, "and I'm trying to put less stuff on there that could be used to train baddies."

In conversation, Fitzpatrick tends to call everyone from petty thieves to terrorists by the slang term "baddies"—possibly finding its Aussie understatement helpful in preserving some emotional distance from the tougher types of cases his team handles.

And while CAFSS continues to produce materials to help police understand ways that today's soil evidence could help an investigation, they've turned down several offers to dramatize one of their cases "CSI"-style on television for a general audience.

"If a piece of soil is on a baddie or is on his clothes, they wouldn't even think that we could use it," he says. "If they saw blood or lipstick, they would immediately try and get rid of it, but they wouldn't think that soils could be used. And we want it to stay like that."

Company Makes Major Gift to NGWA Foundation



Franklin Electric Co. Inc. has made a \$300,000 contribution to the National Ground Water Research and Educational Foundation (NGWREF) in support of two major initiatives.

The gift is part of a NGWREF fund-raising campaign to underwrite national and international groundwater projects—the first such campaign in 16 years.

Franklin Electric's contribution breaks down as follows:

- » The McElhiney Distinguished Lecture Series in Water Well Technology will be made possible for six years by a \$150,000 grant.
- » Another \$150,000 will support initiatives that improve the skills and competencies of water well drillers and water well system installers and technicians. This includes underwriting a \$5,000-a-year scholarship in the Len Assante Scholarship Fund for a period of six years.

"This is an unprecedented gift to our Foundation which will do much to advance professionalism among water well drillers and those who install well systems," said National Ground Water Association (NGWA) Chief Executive Officer Kevin B. McCray, CAE, NGWA's liaison to the NGWREF.

The NGWREF fund-raising campaign hopes to raise \$3 million by the end of 2013 with 100 percent of funds raised going to Foundation programs.

The NGWREF is seeking support for:

- » Workforce Development, \$1.25 million, which includes two lecture series and two scholarship programs.
- » USA Groundwater Fund, \$1 million, which includes the domestic water well assistance program and public education programs focusing on groundwater and water wells.
- » Developing Nations Fund, \$500,000, which includes the international groundwater supply projects, and education and training.
- » Groundwater Research Fund, \$150,000, which finances new research considered important to understanding groundwater resources and water well systems.
- » 21st Century Fund, which allows donors to make flexible, unrestricted gifts to meet funding opportunities that arise.

Persons interested in learning more about the NGWREF campaign can obtain a campaign [booklet online](#), said McCray.

Clay Minerals Society: The President's Corner



I have been quite frequently involved in both personal and electronic discussions on journal impact factors (IFs) and related issues, leading to both expected and surprising information on this subject. This contribution is certainly not any form of sufficiently qualified complex analysis of the problem. People willing to learn more can get sufficiently detailed information from the source, from Web of Science® and its Journal Citation Reports®. Many of you know that IFs appear regularly every year, and that a journal's IF is a measure of the frequency with which the "average article" in a journal has been cited in a particular year. However, many of you may not realize that the IF helps effectively evaluate a journal's relative importance, especially when compares to other journals in the same field. Comparisons among journals from different fields are less straightforward and suffer from many factors and variables. Again, much on this can be learned from Journal Citation Reports®.

The most frequently used IFs are those covering two-year periods. The most recent IFs are those of 2011. They were calculated as the citations in 2011 to articles published in two previous years, C2009 + C2010, divided by the number of papers published in the same two years, P2009 + P2010. These numbers for our journal Clays and Clay Minerals were C2009 = 104, C2010 = 54, P2009 = 70, P2010 = 66; IF2011 = (104+54) / (70+66) = 158/136 = 1.162.

Based on this, it is easy to accept that the effect on IF of the papers published during the year differs. In our example, citations from the first issue (February 2009) contribute to the IF2011 for almost two years while those from the last issue (December 2009) for just over one year. This is a rough estimate because electronic versions are available for citations of the before the print version appears. The positive

side of the competition for higher IFs is in publishing better papers. A large number of citations of scientifically superior papers is the desired target of the publishers and editors of all journals. The opposite side is the possibility to manipulate a journal's IF without improving the quality of the papers. This is known also from papers devoted to this subject published in different electronic and paper media, including journals of the highest IFs, such as Science. Coercive citation in the scientific literature is recently a serious problem, which is difficult to fight effectively. Authors may get forced to include IF-increasing citations in the reviewed paper. Such a message can appear in the officially available Instructions for Authors, or less visibly in the individual Letters to Authors. These problems have been known to the CMS Executive Committee, but we decided to avoid any concrete requirements on the number of citations. Consequently, the references are not affected by any generally applied wish or recommendation of anyone and remain the full responsibility of the authors.

Best wishes,
Peter Komadel
President, The Clay Minerals Society
peter.komadel@savba.sk

GSA-USGS Congressional Science Fellowship



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The Congressional Science Fellowship is offered by the Geological Society of America and the U.S. Geological Survey as part of the [American Association for the Advancement of Science Congressional Science and Engineering Fellows Program](#).

Seismological Society of America Strategic Plan



For the last year SSA has been working to develop a strategic plan to set forth new SSA initiatives and future Society objectives. SSA is proud to announce, the Board of Directors have approved both the new mission statement and strategic plan to move SSA forward into the future. A letter from SSA's President, Christa von Hillebrandt-Andrade, further describing the strategic plan process and the strategic plan itself are both available online.

(http://www.seismosoc.org/inside/Strategic_Plan/message_from_the_president.php).

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Invisible Artifacts: Uncovering Secrets of Ancient Maya Agriculture with Modern Soil Science

By John Morgan
Originally Published in SSSA Soil Horizons



After emerging
sometime before
1000 BC, the ancient
Mesoamerican culture

of the Maya rose to become the most advanced Pre-Columbian society in the Americas. By 250 to 900 AD, the Maya were thriving in jungle cities—some larger than 40,000 people—where they erected grand temples, ball courts, and stepped pyramids, and made remarkable advances in language, art, mathematics, and astronomy. Their influence was felt throughout what are now the southern Mexican states of Chiapas, Tabasco, and the country's Yucatán Peninsula, as well as in the present-day nations of Guatemala, Belize, northern El Salvador, and western Honduras.

And then, for reasons that are still debated despite decades of research, the civilization abandoned its core settlements of the Central Maya Lowlands—in what some call a collapse.

It's a fascinating tale to archeologists, but one that's not normally associated with the field of soil science. And yet the story documented in the soils of the Maya's cities and settlements could hold the key to how they farmed, fed themselves, and treated the land, as well as why their society ultimately declined.

Archeologists have always been concerned with agriculture, notes Charles Golden, an archeological anthropologist at Brandeis University, "and that's always been one of the great questions about the Maya: How did they manage to maintain these large cities in the rainforest?"

While the questions are enduring, how archeologists are now trying to answer them is not. In collaboration with soil scientists, they're turning increasingly to the soil and the invisible artifacts it

contains, such as chemical traces of food and crops. What they're finding is that this substance—something archeologists literally used to brush aside—can be just as illuminating as more tangible artifacts.

"Archeologists are looking for stuff—for buildings and pottery and stuff that people left behind," Golden continues. "So most archeologists in the past weren't going to say, 'well, let's excavate here in this soil and see what the soil looks like.' So that's a critical change, when the concern becomes not just the stuff people leave behind, but also the soils they create, and the landscapes they create."

The Maya and Markets

Golden is a long-time collaborator of Brigham Young University soil biogeochemist Richard Terry, who 15 years ago offered to add some more robust soil testing in the field to the spot testing that archeologists had done previously at some Maya sites. Terry had no real expectations for where the research would lead or if he'd even stick with it. But the soil chemistry, microbial life, and architecture of the ancient settlements soon captivated him.

"I started this in '97 and here I'm still working on it," he says. "I can't seem to get out of it!"

Of particular interest initially were the stucco floors of Maya houses and large plazas. Using a battery-operated spectrophotometer in a field laboratory, Terry and his colleagues identified spatial patterns of various chemicals on the floors, especially of phosphorus, which indicates the remains of food.

In homes, for example, they could distinguish sleeping areas and pathways, which were low in phosphorus, from kitchen and dining areas that contained high levels. They also discovered significant amounts of phosphorus along the edges of floors and household patios, indicating those areas had been swept clean, with food remains pushed to the sides.

But, more surprisingly, they also found phosphorus lining the edges of large, open plazas, which led to a new hypothesis.

"The thought is: Could the ancient Maya have conducted marketplace activity at the plazas?" Terry asks. Much like today, he explains, vendors in ancient times likely sold goods in public spaces during the day and then packed up and cleaned up in the evening.

As a result, no tangible evidence of their activities would be left behind, except potentially for geochemical residues of the food and crafts they marketed long



This temple in Tikal, labeled "Temple 1" by researchers, was built by the ancient Maya somewhere between 682 and 734 A.D. Source: Department of Biological Sciences, University of Cincinnati.



Richard Terry (left) and Fabian Fernandez, a former student of Terry's at BYU, determine extractable phosphorus in samples of the palace floor at Aguateca, Guatemala. High phosphorus levels in the soil are indicative of ancient human activities related to food preparation and consumption.



Daniel Bair (left) and Chris Balzotti, graduate students at BYU, sample soils at the King's Palace of Ceibal, Guatemala.



A soil profile in the Sierra del Lacandón National Park in Northern Guatemala. This portion of the Petén rain forest has been largely uninhabited for more than 1,200 years since the Maya civilization disappeared.

ago. And if traces these items could be found in the plaza floors, they would help clear up what has always been a bit of a mystery to archeologists.

"The problem for the archaeologist

is that they find these plazas all over the Maya world—in fact, all over the Americas—and they appear as empty spaces," Terry says. "There are no artifacts. There's just nothing remaining. But the soil chemistry is still there."

And, in fact, at the same time this story line was emerging, another thread of research was suggesting that there was no way the large Maya cities of northern Yucatán could have sustained themselves solely by growing crops on the very poor soils of the region. A 2009 article in the *Soil Science Society of America Journal*, for example, summarized work at a site at Chunchucmil, Mexico. After analyzing the site's soils, the researchers concluded that the Maya, previously thought to live in self-sustaining communities, could not have grown enough food there to survive, and must have traded and operated markets.

"At this site, the population was just gargantuan," says Tim Beach, a Georgetown University geoscientist who collaborates with Terry and Golden. "I mean, if I were using modern agricultural technology, I could feed the people there, but it would be hard because the soils were extremely thin. And about half of this landscape had no soils at all."

If the Maya didn't grow all their food locally but also operated markets, this further suggested they were using a much larger area for agriculture than previously thought—including, potentially, steep uplands not really suited to farming. So the focus of the group has now shifted to understanding where exactly the food was grown, how the Maya grew it, and whether their practices were sustainable.

The last question is of particular interest today given climate instability and the increasing pressures on natural resources associated with population growth and emerging economies around the world. But these are also questions that archeologists have pondered for decades, Beach notes.

"Even in the 1930s, archaeologists and even some soil scientists found that the upland soils were very thin," he says. "And they put that together with the fact that there were large ancient Maya populations and many, many Maya sites, and speculated that they must have truncated or eroded those soils."

Were the Maya Living Sustainably?

If Maya agriculture did cause substantial erosion, Beach continues, the soil loss could eventually have undercut their ability to grow food. To find out whether this did indeed happen, the group has turned to new techniques, including a process that looks for a record of decomposed plant materials in soil layers. (And in many cases, the soil record is all the team has to go on because ancient farm fields are now often covered in rainforest vegetation in very remote areas.)

Terry explains that maize, or corn, carries out a special mode of photosynthesis, known as C4, while vines, trees, and other plants native to the region's jungles mostly use another type, called C3. These two forms of photosynthesis further lead to measurable differences in the decomposed organic matter derived from the two groups of plants—allowing scientists to track whether only C3 plants (forest vegetation) once grew in a certain place or if C4 plants did as well, indicating the presence of ancient corn crops and farm fields.

For example, a paper in the November–December 2012 issue of the *Soil Science Society of America Journal* summarized their findings from a research site in Tikal, Guatemala, where they looked for traces of ancient agricultural activity in upland versus lowland soils. What they found was strong evidence for the past existence of maize—and thus, farming—in the lowland soils, where erosion is less likely and agriculture was presumably more sustainable.

However, they also discovered evidence of erosion in upslope soils,



Richard Terry (center), along with BYU students Eric Becker (left) and Daniel Bair, analyze soils cores from Ceibal, Guatemala.

suggesting that perhaps Maya farming did spread to steeper, less suitable soils over time.

So it remains an open question: Were these clever builders, astute mathematicians, and skilled farmers also living wisely and sustainably in the environment? Or were the Maya terrifically clever but also tragically shortsighted?

What soil scientists and archaeologists have found is both, Beach says: evidence of rampant soil erosion, but also of conservation—in agricultural terraces, for example, and in ingenious farming systems that in some cases adapted to past mismanagement. So, he concludes, “We still don’t know if the Maya transition a millennium ago was caused by environmental or other factors. But we do know there are ways to avoid their soil management mistakes and follow their successes.”

Learning those lessons is no mere archeological exercise. Soil erosion, sustainable farming practices, and feeding a booming population are all pressing issues for our own exceedingly clever society of today. Now, fortunately, the tools of soil science and the soil record are giving researchers quicker, more effective ways to understand how ancient civilizations like the Maya farmed and treated their soils and whether their practices contributed to their demise.

What’s more, both soil scientists and archeologists agree that as the field of archeology has grown more interdisciplinary, they’ve been pushed to become more fluent in each other’s research languages. And in doing so, Golden says, they’ve arrived at a point where they may not have all the answers, but they’re now asking, more than ever, the right questions.

“I think now you would be hard pressed to find an archaeologist who isn’t concerned with the question of the way the land is being used, the way food is being produced, and the way trees are being harvested,” Golden concludes. “It’s always in our mind now.”

“It opens things up to thinking about the world in ways that we haven’t thought of before,” Terry adds. “We have changed the paradigm amongst the archaeologists.”

SSA Releases Statement on Conviction of Italian Seismologists

The Seismological Society of America (SSA) has released a statement on the conviction and sentencing of six Italian scientists and one government official for manslaughter in connection with the tragic L’Aquila earthquake of 6 April 2009. The statement in full is available on the SSA website (www.seismosoc.org) and includes an audio link to Dr. Tom Jordan’s presentation, Lessons of L’Aquila for Operational Earthquake Forecasting, given at the Public Policy Luncheon during the SSA 2012 Annual Meeting in San Diego, California.

Update from the National Cave and Karst Research Institute (NCKRI)

the National Cave and Karst Research Institute’s (NCKRI) latest annual report is now available for free



Photo credit: www.nckri.org

download from our website, www.nckri.org. Look under the “About NCKRI” tab and you’ll find our publications. The annual reports cover NCKRI’s activities over our July through June fiscal year.

If you look under the “Events” tab at www.nckri.org, you’ll find information on three conferences we are hosting next year. If you are planning to attend the Carbon and Boundaries in Karst meeting in January or Sinkhole Conference in May, be aware that finding a hotel room in Carlsbad at the last minute is now difficult and expensive. The oil and gas industry has become very active in this area and it now not unusual for every hotel room to be booked, and the last rooms available going for over \$300 a night! We have reserved blocks of rooms in two hotels for both conferences at much lower rates. I urge you to make your reservations now. You’ll find the deadlines for making reservations at the conference rates on each conference’s website. Of course, if you haven’t registered yet for the conferences, please do!

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GSA GeoCorps America –

Applications for Summer 2013
Positions Due February 4, 2013



Assessing geohazards at Grand Canyon National Park; guiding visitors through a cave at the Tongass National Forest; searching for fossils at Grand Staircase-Escalante National Monument—do these sound like your idea of an awesome summer job? If so, check out the nearly 100 different paid, short-term geoscience positions offered during the summer of 2013 by the Geological Society of America's "GeoCorps America" program!

GeoCorps positions take place within America's amazing public lands, at sites managed by the National Park Service, the U.S. Forest Service, and the Bureau of Land Management. Summer positions generally last for three months (sometimes longer), offer a \$3,000 stipend, include free housing (or a housing allowance), and in some cases, a travel allowance. In 2013, GeoCorps continues to offer GeoCorps American Indian Internships, as well as ten GeoCorps Diversity Internships. There are also eight Guest Scientist positions directed toward graduates and professionals.



Rachael Dye conducts an elevation survey using a total station in a salt marsh at Cape Cod National Seashore (Massachusetts)

Participating in GeoCorps is a great way to gain real-world experience in preparation for a geoscience career in government or in private industry. Many GeoCorps participants have received professional recognition for their contributions to their host agency. Rachael Dye worked as a Coastal Geologist with the National Park Service at Cape Cod National Seashore (Massachusetts) through the summer and fall of 2012. Rachael presented her research at the Northeast Arc User's Conference (NEARC), and received both the Judge's Choice award for Best Poster and the People's Choice award for Best Poster—the first time in the history of the conference that one poster won both awards. Susan Bresney worked as a Hydrologic Technician with the Bureau of Land Management at the Gunnison Field Office



Susan Bresney records hydrologic data for a Land Health Spring Inventory organized by the BLM's Gunnison Field Office (Colorado)

(Colorado) during the summer of 2012. Susan's skills impressed her supervisors so much that the BLM extended her project an additional three months, and at the conclusion of her project, awarded her with a Letter of Recognition for "outstanding work". Success stories such as these happen every year around the nation through the GeoCorps America program.

Applications for summer 2013 positions can be submitted now, and must be received by February 4, 2013. To apply, go online to www.geosociety.org/geocorps. For more information, visit us on Facebook (www.facebook.com/geocorps), follow us on Twitter (www.twitter.com/geocorps), or contact Matt Dawson at mdawson@geosociety.org or 303-357-1025.

Gateway to the Future Video Contest



Undergraduates: Create a video showing excitement about careers in our sciences for a shot at the top prize of \$5,000: Entries due March 15. The contest was developed by the Agronomic Science Foundation through support of a private donor and The Mosaic Company Foundation. Learn more about participating in the contest at:

<https://www.soils.org/students/video-contest>

SSSA Announces Career Profiles



Soil Chemist, Soil Scientist, Research Hydrologist, Molecular Environmental Soil Scientist, and more!

The Soil Science Society of America K-12 Committee invites you to view, share, and contribute to [Career Profiles](#), a new online feature to encourage careers in our sciences. Members from any profession can submit their profile -- a series of questions guide you through the process. [Add your Career Profile today.](#)

AIPG: Student Voice One Student's Perspective on Gender and Work-Life Balance

Stephanie Jarvis, SA-1495, sjarvis@siu.edu



I'm a girl. When I look at this year's incoming grad students at SIUC, I see all guys. When I look through this year's AIPG national scholarship winners, I see a

 surprising majority of girls. When I look at "A History of AIPG 1963-2003", I see a whole lot of men (not surprising). When one of my fellow TAs looks at his earth science-for-education majors class, he sees no guys. When I look at the 20 students in the Sed/Strat lab I'm taking, I see two women. When I think about my field camp class, I realize that us girls were greatly outnumbered.

Huh.

I'm not one to dwell on gender ratios. Quite frankly, I hardly notice them. Somewhere in the back of my mind I'm sure I note that, once again, I'm surrounded by a bunch of guys. But that's the end of that thought. Sure, I definitely enjoy and value working with other women. I believe I described the feeling of walking out of a stream bed in Costa Rica after a long day of field work with two female PhD students, all of us silently basking in the glory of a beautiful place and in the satisfaction of a day's work, hammers and equipment bags clinking, research questions stewing, as "strong-woman-vibes" in a letter to my boyfriend. But guys are pretty cool, too.

I've been very lucky. I realize that. I've always been in an environment that encouraged me to do whatever I wanted, giving me the strength to have no regard for unbased limitations. I've been fortunate to have never experienced any kind of down-grading because I'm a woman. Never have I had to endure the "that's pretty good for a chick!" attitude, or been asked to be part of something to

balance out the numbers. My Girl Power phase didn't last very long, much to the disappointment of my pre-Title IX-era mother. The last time I felt the need to prove myself as a female was my last year of co-ed soccer in 6th grade. (I only played for another year after that...playing with all girls wasn't nearly as much fun.) Having gone to a small college, class gender ratios in the geology department were all over the place, and 50% (2 of 4) professors were women. I didn't realize that was unusual.

At last year's GSA I was catching up with one of those female professors from Wooster, and we happened to run into some of her former male colleagues from a different, but similar, college. They expressed how much they missed her, and especially how much their female students missed her. She later explained that she had been talking with one of their current students who had expressed her wish that they had female professors in the department. My response was a bit confused. Why does it matter? Her explanation, it being a matter of having an example, made sense. Once I thought about it.

That same professor brought my attention several months ago to a controversial Nature editorial that was creating quite a stir in the female science community ("Womanspace" by Ed Rybicki, doi:10.1038/477626a). Of course, I read the article. And laughed. I saw it as an amusing, intellectual, and appreciative take on some of the differences between men and women. Obviously, there are differences, and I saw no reason for recognition of that to be offensive. I sent it to one of my best friends, who tends to take a different view on and be a little more sensitive to such issues, and was surprised that she had the same reaction that I did. My mom did not. (Note: some of the criticism was based on the premise that Nature was not the place for such an editorial. I am not familiar enough with the journal to comment on that.)

I've realized that my experience, admittedly limited, has led me to see gender discrimination as nearly a non-issue, and that seems to be the attitude of many of my peers (male and female). We don't talk about it, because we have no

need to. We're all scientists, all capable of solving problems in our respective fields, and that's the end of it. The actual ratios don't matter, as long as they reflect the choice of individuals and not that of the profession. Of course, there are definitely still issues, but those are more and more isolated each day. At least as far as I can tell.

I have observed and can imagine varying reactions of women of different generations to this attitude. On one end of that spectrum is disdain. How can young women be so unaware of the price paid for their current state of comfort? If appreciation for that hard, long fight is lost, then the state of affairs will slip further and further until we're back to where we were 20, 30, 40 years ago. The other end-member of reaction, one that I think is much more appropriate, is celebration. We did it. Today's women, thanks to the efforts of those that paved the way, no longer have to worry (at least as much) about direct gender-based workplace discrimination. We can now focus on other issues.

A couple girlfriends and I have had several conversations about women and professionalism. Our topics never cover ratios. Numbers aren't the issue; perception and balance are. Our last year at Wooster, one of my friends (not a geologist, and the same one that also laughed at that editorial) was struggling with how to explain in job interviews why she was focused on a specific location without sounding like the stereotypical direction-less girl following her boyfriend around. I thought this was pretty silly, until I found myself spending a couple days this summer trying to decide how to word an email to AIPG Headquarters asking about some of the logistics of bringing my boyfriend along to Denver while I attended the ExCom meeting. I realized it was a waste of a couple days, as it was a total non-issue. But that sense of needing to be careful about perception, of not coming across as too much of a girl, is there. I foresee myself struggling with my friend's exact issue when I finish up my Masters and attempt to find a job closer to his law school in Idaho.

While perception is possibly just a mental issue for young women, balance is

not. So many of us have seen the career vs. family saga play out in the lives of our mothers, and, while extremely thankful for their sacrifices, want to somehow avoid the stress they endured. How do we set ourselves up to be able to balance our need and desire to contribute our education and passion to our professions and society, not to mention the check book, with having time and energy for the families we envision ourselves having someday? While this is something I've only really discussed with girlfriends, none of us see it as a strictly women's issue. We want our partners (in life, business, crime, etc.) to be able to find the same balance. While our mothers certainly had the same desire, the ones who were able and chose to pursue a professional career were under a lot of pressure to prove themselves, and I know first-hand that it showed in their stress levels.

After I wrote the first draft of this column, I spent some time catching up on emails and came across the recent issue of *Gaea* (Summer 2012), the quarterly newsletter of the Association for Women Geoscientists (AWG). On the first page, in the President Elect's column, was a reference to a recent article in *The Atlantic* titled "Why Women Still Can't Have It All" by Anne-Marie Slaughter. (<http://www.theatlantic.com/magazine/archive/2012/07/why-women-still-cant-have-it-all/309020/>). I looked it up, frustrated that I hadn't seen it before, and at first glance thought it would completely refute what I have just said and I'd end up rewriting this whole column. In fact, Slaughter lays out (in much more experienced terms) the exact sentiment I have just described. She discusses underlying hurdles to women, and to balanced, healthy families, inherent in current promotion and tenure timelines and describes her realization that she could not continue her stint at her "foreign-policy dream job" without serious detriment to her family. Slaughter notes that women of the up-and-coming generation have already realized this flaw in the feminist philosophy and have thus stopped listening to older women when they talk about having it all:

"Women of my generation have clung to the feminist credo we were

raised with, even as our ranks have been steadily thinned by unresolvable tensions between family and career, because we are determined not to drop the flag for the next generation. But when many members of the younger generation have stopped listening, on the grounds that glibly repeating "you can have it all" is simply airbrushing reality, it is time to talk."

So what should, and what can, be done about this? A societal shift toward a healthier work-life balance would be great, but I'm not quite sure how to go about instigating that one. Slaughter offers some suggestions, ranging from encouraging women in power to set work-family boundaries and talk about their kids like they do their degrees to electing a female president and 50 female senators. Mostly, though, she suggests flexibility in the workplace for men and women.

Where does AIPG come in on this issue? We are an organization of professionals — employers and employees, men and women. I haven't seen much discussion on gender issues, which I take to be a good sign. However, I also have not ventured much out of the academic realm and have not seen what the playing field is like post-school. Even if there aren't the blatant discrimination issues of the past, there's still the issue of perception and there's no denying a work-life imbalance in all professions. A reading of Slaughter's piece and a good look at how our profession can address these issues, at least the perception of them by students and young professionals, is undoubtedly warranted.

The Decision Process in Changing Jobs



Jean E. McLain, *This column originally appeared in the November 2012 issue of CSA News magazine.*

Our lives are full of decisions. A job change can be one of the most challenging decisions a person can make.

However, we will all face this at some point. The U.S. Bureau of Labor Statistics reports that the average baby boomer will switch jobs 10 times over the course of his/her career.

But while job moves are just about inevitable, they are seldom easy. People who switch organizations, whether they are moving from a small liberal arts college to a university, or moving from private industry into a government position, all face hurdles. I am not referring solely to the learning curve associated with new job duties. Moves of all kinds entail significant internal and external challenges: upheaval in your home and social life; adjustments to new cultural and political norms; navigation of changed employer expectations; and the need to learn a new skill set and jargon.

As someone who made a recent career change from a federal government research position to a research and administrative position at a Tier I research university, I learned several lessons during my job change that I would like to share. Making this move methodically and taking the time to ensure that the new job is a good fit for you and for the employer can greatly reduce the stress in making this important decision. Before applying for a new position, I suggest performing two initial tasks:

Step 1. Perform a Serious, Unbiased Self-Assessment

Why are you leaving your present position? You will be asked this question during the interview process, and you must be prepared to answer it in a direct and truthful manner. A serious self-assessment should provide a realistic view of your skills and your culpability and will help you to identify the sources of success and failure at your existing job. This self-assessment will aid you in targeting new positions that are good fits for your talents. If you receive personal satisfaction from effecting change and are leaving a smaller firm because you are unhappy with the "impersonal" nature of the leadership, a move to the federal government, where the bureaucracy is so much larger, could prove frustrating.

Step 2. Research the New Employer

In a job change, one would expect that you are seeking an opportunity for advancement. Recruits assume that the official job title and description accurately reflect the role, but this may not be completely true. What is the evidence that this new position would be a good fit? Are there expectations from the employer that are not listed in the job description? Though an "assistant professor" position may seem fairly self-explanatory, it could involve far different levels of responsibilities (teaching, service, and/or advising) in a large research university vs. a smaller liberal arts college. This research will be critical to ensuring your success in the new position. You do not want to be so unhappy with your present position and desperate for "escape" that you skip this step, rather than waiting for a position that is a true fit for your talents.

Making the Decision

When you receive a job offer, it's important to take the time to carefully evaluate it, so you are making an educated decision to accept or to reject. The last thing you want to do is to make a hasty decision that you will regret later on. Weigh the pros and cons; it is perfectly acceptable to ask the employer for some time to think it over. This is where Tasks 1 and 2 will be of help: from your self-assessment, you will have an understanding of your needs, and during your researching of the position, you may have gained information on what parts of the offer can be negotiated. Be certain to contact the employer to address anything about the offer that is unclear. This is a big life change; you need to be well informed to ensure the best result.

If you decide not to accept the position, a polite refusal is an applicant's responsibility as well as a professional courtesy. Notify the employer that you are not interested to allow them to continue to search as quickly as possible. Given the chance that you may encounter the employer at a professional meeting in the future, closing the door gently with a pleasant note of goodwill makes good sense.

Submitting Your Resignation

Your resignation should be handled in person. Ask your direct supervisor if you can speak with him/her in private. When you announce your intention to resign, you should also hand your supervisor a letter that states your last date of employment. Let your supervisor know that you've enjoyed working with your employer, but that an opportunity came along that you couldn't pass up, and that your decision to leave doesn't reflect any negative feelings you have toward the company or the staff. Let your supervisor know that you appreciate all that the company has done for you and that you'll do everything in your power to make your departure as smooth and painless as possible.

Keep your resignation letter short, simple, and to the point. There's no need to go into detail about your new job or what led to your decision to leave. If these issues are important to your old employer, an exit interview will be scheduled for you, at which time you can hash out your differences ad infinitum. Be sure to provide a copy of your resignation letter for your company's personnel file. This way, the circumstances surrounding your resignation will be well documented for future reference.

For valuable tips on the application and interviewing processes, and for articles on navigating your entry into a new position, please refer to the recent columns on these subjects in CSA News magazine authored by members of the ASA, CSSA, and SSSA Early Career Members Committee.



Jean E. McLain, Incoming Chair of the ASA, CSSA, and SSSA Early Career Members Committee



Photo credit: Abby Seadler, AGI

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS

SCHOLARSHIP PROGRAM

Purpose

To assist students with college education costs and to promote student participation in the American Institute of Professional Geologists (AIPG). Up to four scholarships will be awarded to declared undergraduate geological sciences majors who are at least sophomores.



Scholarship Awards

Scholarship awards in the amount of \$1,000.00 each will be made to eligible students attending a college or university in the U.S. Scholarships are to be used to support tuition and/or room and board.

Eligibility Requirements

Any student who is majoring in geology (or earth science), is at least a sophomore, and is attending a four-year accredited college or university in the U.S. can apply. Also, the student must be either a student member of AIPG or must have applied for student membership at the time the application for the scholarship is submitted.

Each student who is awarded a scholarship agrees, by accepting the scholarship, to prepare a 600 to 800 word article for publication in *The Professional Geologist*. The subject of the article must be related to a timely professional issue.



Application Process

Applicants must submit: a letter of interest with name, mail and e-mail addresses, and telephone number; proof of enrollment in an eligible geological sciences program; transcripts; an original one-page essay on why the applicant wants to become a geologist; and a letter of support from a faculty member familiar with the applicant's academic work. The application packet should be submitted to:



American Institute of Professional Geologists
Attn: Education Committee Chr.
12000 Washington St., Suite 285
Thornton, CO 80241

For questions regarding the application process
call (303) 412-6205 or e-mail: aipg@aipg.org.

Applications must be
received by
FEBRUARY 15th
Awarded the month of
SEPTEMBER



Basis of Awards

Awards will be based on the content and creativity of the essays as judged by the Education Committee. The decisions of the Education Committee are final.

The Power of SME: A Review of Selected Educational Programs



The Society for Mining, Metallurgy and Exploration (SME) is dedicated

to educating both the public and its members on issues pertinent to the exploration, extraction and processing of minerals for the benefit of society. To this end, SME has three principal purposes as stated in its Articles of Incorporation:

1. to provide the means for collection, dissemination and exchange of technical information concerning exploration for and extraction and processing of metallic, nonmetallic, and fuel ores and other materials produced through mining techniques for the public benefit;

2. to provide support for educational institutions through its programs and publications; and

3. to provide opportunities through its programs for interested individuals to maintain and upgrade their individual technical competence in the aforementioned areas for the public benefit, thereby assisting state and federal governmental entities in their responsibility for providing the means of testing the competence of individuals pertaining to the public health, safety and welfare.

The primary purpose of SME is to educate both the public and its members on issues pertinent to the exploration, extraction and processing of minerals. SME is a nonprofit corporation and is the preeminent society for mining industry professionals. SME has supported mining schools with Ph.D. programs; provides K-12 educators with the materials required to teach the fundamentals of geology, rocks and minerals; is recognized as an international mining technical content leader; and provides scholarships to students worldwide.

SME implements these programs through the effort and expertise of its members and its members' commitment

to volunteerism, all of which is supported by an administrative and technical staff and extensive resources in Englewood, Colorado. SME has more than 14,000 members representing 85 different countries. Member professions range from mining engineering and mineral processing, to geosciences and exploration, to underground construction, environmental sustainability and mining economics. SME is comprised of topic-specific divisions devoted to focus areas for the mining and mineral industry, local sections organized geographically, student chapters at universities and volunteer committees. These divisions, sections and student chapters seek to promote their respective areas of interest by fostering communication between professionals through the exchange of technical papers, periodic meetings and continuing education.

Many activities are carried out under the SME Foundation (SMEF)

The Foundation's mission is to support scientific, technical, educational and other activities that foster interchange and understanding concerning the responsible development of the world's mineral resources, and further the professional disciplines serving the minerals industry. SMEF provides services for the industry professional, the university student, and K-12 educators. It supports the health of the industry by strengthening the professional workforce, enhancing mining-related education and educating communities about mining. SMEF core programs include:

ABET (formerly the Accreditation Board for Engineering and Technology)

ABET is committed to ensuring that courses of study at both United States and foreign universities devoted to mining and mineral related fields meet minimum standards. Through the SME Foundation's membership in ABET, the Accreditation and Curricular Issues Committee develops curricular standards and ensures that accredited schools adhere to such standards. SME

has sole curricular responsibilities in the fields of mining engineering and geological engineering, and contributes to curriculum development in the fields of environmental engineering and metallurgical engineering. The Accreditation Committee performs site visits to verify at the outset that a program meets ABET standards and to ensure that a program continues to do so on an ongoing basis. During a site visit, SME member-volunteers serve as ABET program evaluators, and must: observe classes; interview students, faculty members, administrators, and staff; visit classrooms, labs, and other key facilities; and review textbooks, course syllabi, student work and assessment materials. In 2010, members of the Accreditation Committee performed site visits for the mining engineering and geological engineering programs at the University of Alaska and the University of Nevada-Reno. In 2011 they visited the petroleum geosciences program at the Petroleum Institute in Abu Dhabi, and in 2012 performed a site visit at the Colorado School of Mines to review its geological, geophysical and mining programs for the school's ABET accreditation. The Accreditation Committee's work is performed by SME member-volunteers, with support from SME staff and resources. Neither SME nor SME member-volunteers receive any compensation for the work performed by the Accreditation Committee to establish the curricula of these public institutions of higher education.

The Minerals Education Coalition (MEC)

MEC is SME's designated program to develop and deliver accurate and timely K-12 educational materials and activities, and to conduct public awareness outreach about mining and minerals. MEC is the successor entity of the SME Foundation's Mineral Information Institute (Mii) and SME's Government, Education & Mining (GEM) programs which merged in February 2012. The MEC program focuses on identifying and developing factual and relevant K-12 curriculum and materials about mining and minerals, providing these

relevant K-12 curriculum and materials to teachers and other educators, and providing supplemental materials for use in community settings to SME members through SME Sections and SME Student Chapters. Lesson plans, supplemental materials and classroom activities can be downloaded from the website www.mineraleducationcoalition.org for free, while certain items including CDs, DVDs and posters are available for purchase. In 2011, the website enjoyed an average of 188,000 visits and 4.2 million hits per month. In developing its curriculum, MEC organizes and funds educator focus groups which help determine the direction of earth science education, the results of which are used by MEC to tailor, adapt and improve the content of its materials. Additionally, MEC serves as a resource to the community-at-large by identifying and linking all appropriate resource providers of K-12 mining and minerals education to the MEC website.

In 2011, SME member-volunteers staffed booths at three National Science Teachers Association (NSTA) conferences, the Florida Science Teachers' Convention, the Northwest Mining Association annual meeting, an AIPG Legislative Reception, and the Denver Gem and Mineral Show. In 2012, we added the Colorado Association of Science Teachers conference, as well as NSTA's in Louisville, Atlanta and Phoenix, to our growing list of exhibit participation. MEC will present the importance of mining at the 2013 Boy Scouts of America Jamboree. Free materials were shipped to in-service teacher workshops for educators across the nation, and materials were purchased by dozens of organizations and companies for their teacher workshops. In addition, thousands of "Teacher Helper Packets" were shipped nationwide to educators in MEC's database at no cost to the teachers or schools.

MEC participates in at least three NSTA regional conferences annually. Each exhibit relies on a local SME Chapter or Student Chapter to help organize the gathering of rock and mineral samples for the mineral kits that are distributed to thousands of teachers at each conference. Volunteers answer questions

from educators passing through the booth and hand out hundreds of pounds of posters, classroom activities and other free materials to visiting teachers. SME Local Section and Student Chapter members are encouraged to search for new and innovative ways to reach the public and media with educational information about minerals and mining. These may include speakers bureaus, mine and plant tours, local and state science fairs, geology field trips, mineral kit distribution, and career fairs.

The Professional Engineers (PE) Exam Committee

The PE Exam Committee is responsible for drafting a professional engineers' exam in mining and mineral processing. The Exam Committee consists of 39 SME member-volunteers who are also practicing professional engineers, including practicing engineers working in private and public-sector mine health and safety positions, as well as university professors. The Exam Committee is the exclusive source for mining and mineral processing questions for the professional engineers' exam produced by the National Council of Examiners for Engineering and Surveying (NCEES). SME's PE staff coordinator submits the questions produced by the Exam Committee to NCEES, attends both Exam Committee and NCEES meetings and serves as the staff liaison between SME and NCEES. NCEES provides the exam to all states which, in turn, administer the exam. The Committee is also responsible for reviewing the questions and answers it furnished that do not perform within expected statistical parameters, and handles challenges by examinees to certain answers. Periodically, SME will provide a new Professional Activities and Knowledge Study (PAKS) survey and establish a Cut-Score Panel. The PAKS survey is the result of Exam Committee members from around the country coming together and meeting to determine what a professional mining and mineral processing engineer needs to know, and reformulates the professional engineers' exam accordingly. The Cut-Score Panel

is a group of Exam Committee members from around the country who meet, take the revised exam, discuss the questions and recommend a passing score to NCEES.

Scholarships

A key purpose of SME is to foster interest in, and facilitate the study of, mining and mineral related topics at universities by providing scholarships to qualified students. SME provides scholarships through several channels, including the Women's Auxiliary to the American Institute of Mining, Metallurgical and Petroleum Engineers (WAAIME) and SMEF. The SME Foundation currently awards the Rong Yu Wan memorial scholarship to metallurgical graduate students, the George V. Weisdack memorial scholarship in the field of mining engineering, and the J.H. Fletcher memorial scholarship for students interested in underground tunneling. Through a joint program between SMEF and the Mining and Metallurgical Society of America (MMSA), the MMSA/SMEF Past Presidential Scholarship provides scholarships to students majoring in studies that encompass aggregates, coal, industrial minerals, metals, and related mineral sciences; virtually all the mining-related sciences. The McIntosh Engineering Fund provides funding for various projects, activities, and scholarships that promote, develop, and stimulate an interest in the underground mining and minerals industries. Scholarships are awarded to undergraduates enrolled in a mining engineering program with a focus on underground mining. SMEF also administers the Syd Peng Ground Control in Mining award, and the Syd S. & Felicia F. Peng Ground Control in Mining scholarship. Scholarship selection committees are comprised of SME member-volunteers located throughout the country and globally.

WAAIME's current activities are devoted to providing scholarships to students seeking to study mining, metallurgical and petroleum engineering related subjects. The amount of scholarships furnished varies

from year-to-year based on the availability of funds and the financial needs of applicants. In 2011, WAAIME provided 102 scholarships at U.S. universities, as well as six scholarships at foreign universities. In 2012, the WAAIMEs had 99 applicants for scholarships. The WAAIMEs dispensed \$280,000 to the applicants. The WAAIMEs are consistently reviewing how to get more students involved in the mining and minerals discipline. Formerly affiliated with AIME, WAAIME merged with SME in 2008, and since the merger has distributed hundreds of thousands of dollars in scholarships.

OneMine, Inc.

OneMine, Inc. was established in 2008 as an affiliate of SME. OneMine serves as a centralized electronic database containing pertinent mining related research material, including technical papers, conference papers and articles produced by various organizations throughout the world. Contributing organizations include the Australasian Institute of Mining and Metallurgy, the Deep Foundation Institute and the Minerals, Metals and Materials Society. OneMine contains over 100,000 documents which are searchable by the general public, with individual documents available for purchase on a per document basis, or through an annual subscription. All SME student members receive free subscriptions to OneMine. SME also educates the public and its members through both its brick and mortar library at its headquarters office that houses a collection of mining and mineral related research materials. The collection consists of historical documents generated by AIME that date back to the 1870s, as well as technical papers, periodicals and reference material produced by SME and its members. SME's library is free and open to the public during regular business hours.

The Society for Mining, Metallurgy and Exploration and the SME Foundation

SME and the SME Foundation are tireless advocates for the mining and minerals industry, educating and

building relationships with communities worldwide. As millions around the world rise from poverty to join the growing global middle class, the mining and minerals industry is providing the resources that drive economies and raise standards of living. SME and SMEF are poised to take on the greatest opportunities and challenges facing our industry today:

- » Meeting the global need for expertise;
- » Training the next generation of global leaders;
- » Educating the world about mining; and
- » Sustaining excellent mining education programs.

SME and the SME Foundation are committed to support the industry that will fuel the next century of global growth.

AAPG Upcoming Educational Forums and Geoscience Technology Workshops (GTWs)



AAPG Education Launches New Series: Forum of Experts

- » Playmaker Forum: Jan 24, 2013
Houston, Texas: <http://www.aapg.org/forum/playmaker/index.cfm>
- » Mississippian Forum: Jan 31, 2013
Oklahoma City, Oklahoma: <http://www.aapg.org/forum/MississippianLime/index.cfm>
- » Woodford Forum: April 2013
Oklahoma City, Oklahoma

AAPG Education's GTWs Meet New Needs:

- » Deepwater Reservoirs: Jan 15-16, 2013
Houston, Texas: <http://www.aapg.org/gtw/DeepwaterReservoir2013/index.cfm>
- » Solving Water Problems in the Oil Field: Feb 26-27, 2013

Fort Worth, Texas: <http://www.aapg.org/gtw/fortworth2013/index.cfm>

- » Eagle Ford: March 18-20, 2013
Houston, Texas: <http://www.aapg.org/gtw/eagleford2013/index.cfm>
- » Geomechanics: July 2013
Baltimore, Maryland

Explore the Secret World of Soil in Dig It! at Minnesota's Bell Museum



Within one gram of soil are close to one billion living bacteria, a fact made all the more astounding

considering most people know relatively little about soil...but not for long! Dig It! The Secrets of Soil, an exhibit opened on Nov. 10, 2012 and runs through July 28, 2013 at the University of Minnesota's Bell Museum of Natural History, reveals the complex world of soil and how this hidden ecosystem supports nearly every form of life on Earth, especially humans.

The popular exhibit gives an up close look into the fascinating world of soil science through hands-on models, interactive displays, soil samples, videos and activities. Perhaps its most ambitious element is a collection of 54 soil monoliths representing every U.S. state and territory and the District of Columbia. "The monoliths are really a star of the exhibit showing an amazing variety of colors and textures," shared curator Jennifer Menken.

Though centered on soil science curriculum, the exhibit covers a diverse array of subjects like nutrition, global food production, chemistry, biology, botany, physics, geology, climate, history and art.



Menken has plans for diving deeper into many of these subjects through exhibit-related programming. "We're going to have a lot of programming with Dig It! There are so many enthusiastic people and resources to enhance the exhibit experience throughout its run into summer 2013."

For members of the University of Minnesota soils department, the timing couldn't be better. 2013 will mark the department's 100th anniversary. Many of the department's soil scientists, like Carl Rosen, see an opportunity to spread an important message. "Soil is a precious natural resource," shared Rosen. "When we raise awareness of soil, we raise the quality of life for all."

The show includes elements from an exhibition organized by the Smithsonian's National Museum of Natural History. Now owned and toured by the Soil Science Society of America (SSSA), has ties close to the University of Minnesota. Jay Bell, associate dean of the College of Food, Agricultural and Natural Resource Sciences and a soil scientist himself, was part of the original team advocating for the exhibit's creation, and guiding its content.

"The exhibit started as a conversation between the Smithsonian and the SSSA that soil was something important to highlight, and fund," recalls Bell. "It's wonderful to see this exhibit here in Minnesota – as well as traveling all over – and inspiring visitors to see the beauty and importance of soil."

The Bell Museum is part of the University's College of Food, Agricultural and Natural Resource Sciences, and strives to advance the quest to discover, document and understand life in its many forms and to inspire curiosity, delight and informed stewardship of the natural world. For details, visit bellmuseum.org

The Soil Science Society of America, www.soils.org, is the Founding Sponsor of the Dig It! The Secrets of Soil exhibit.

The Master of Arts in Teaching Program at AMNH

The Master of Arts in Teaching Program at the American Museum of Natural History (AMNH) is the first urban teacher residency program offered by a museum. Behind the scenes at the Museum, and immersed in an urban classroom: degree candidates learn to teach Earth and Space science in New York State in this paid full-time Masters program with science and pedagogy coursework and real-world teaching experience.

- » Full-time 15 month program with benefits and stipend
- » Small class sizes and one-on-one mentoring
- » Science coursework at a world-class museum
- » Learn to teach in a supportive nurturing environment
- » Work alongside scientists and urban teachers
- » Graduate with real-world teaching experience
- » Ongoing professional support following graduation

The AMNH MAT Program seeks a student body with diverse life and career experiences, such as recent college graduates, veterans, former participants in volunteer corps, and career changers. Application to the program is open to all candidates meeting the eligibility requirements.

Eligibility Requirements

- » A Bachelor's Degree in Earth Science or a related discipline (e.g., Geology, Meteorology, Oceanography, or space sciences) OR a Bachelor's with a minimum of 24 credits in Earth Science plus 6 additional credits in Physics, Chemistry, Environmental Science, or Biology
- » Minimum GPA of 3.00
- » U.S. Citizen or Legal Resident
- » Applicants with a previous Education degree will not be considered for the program

Financial Support

- » Full fellowship for degree candidates

- » Stipend and health benefits
- » Two years of continued professional support after graduation – ongoing mentoring, new teacher professional development and access to Museum programs and resources

There will be a final Open House in January 2013.

More info and event schedule: <http://www.amnh.org/calendar/nov-2012-mat-open-house>

Who should attend: Prospective students, their friends and family, and others interested in learning more about the pioneering AMNH MAT Program.

SSSA Online Courses

Register for these SSSA online courses featuring live, online instruction by Dawn Ferris. CEUs are available and lectures are recorded and posted to the class webpage for later viewing:

Riparian Systems: Ecology, Function and Management - Tuesdays Jan. 8-Feb. 26, 2013, 11am-12:30pm (central) - course focuses on the complex and dynamic nature of the riparian zone, including: hydrology, geomorphology, biophysical properties, disturbance, and management. Register by Jan. 3

Fundamentals in Soil Science - Wednesdays Jan. 9-March 27, 2013, 6-8 pm (central) - introductory course for the practitioner to build knowledge for a fundamental understanding of soil science. Register by Jan. 2.





SCHOLARSHIP ANNOUNCEMENT

ANGELO TAGLIACOZZO MEMORIAL GEOLOGICAL SCHOLARSHIP

Available to Current Junior and Senior Undergraduate Geology Students
2012 - 2013 Academic Year



The Northeast Section of the American Institute of Professional Geologists (NE-AIPG) is pleased to announce the continuation of its scholarship program to support and encourage undergraduate students in the geological sciences. These awards will be made for the 2012 - 2013 academic year through the Angelo Tagliacozzo Memorial Geological Scholarship Trust Fund.

Angelo Tagliacozzo (1936 - 1986) served AIPG and the eight-state NE Section Executive Committee from 1974 until 1986. He held several section and national officer positions, including Executive Committee Member (1974 - 1982), Vice President (1977 - 1978), President (1979 - 1980), National Advisory Board Delegate (1981 - 1982), and Chairman of the NE Section Screening Board (1984 - 1986). His dedication to his responsibilities as Chairman of the NE Section Screening Board is the ultimate standard for service in such a position.

Aims - The principal aim of this scholarship program is to offer financial support to current junior and senior undergraduate geology students and to encourage serious and deserving students to continue their studies in the geological sciences. The focus on undergraduate students has been selected in recognition of Angelo Tagliacozzo's special interest in having the NE-AIPG reach and assist young geologists as early as possible in their careers.

Scholarship Award Amount - The total distribution for the 2012 - 2013 academic year will be determined based on the Scholarship Committee's evaluation of the applications submitted. Over the past seven years, more than \$68,000 has been awarded to a total of 40 applicants. Individual awards ranged from \$1,000 to \$3,000.

Use of Scholarships - Scholarship awards may be applied toward tuition, fees, field camp, or other costs directly related to undergraduate study.

Fields of Interest - Junior and senior undergraduate students majoring in a geological science at an accredited college or university in any of the eight-states that comprise the NE Section (NJ, NY, CT, RI, MA, VT, NH and ME) are eligible to apply for a scholarship.

Basis of Award - The Scholarship Committee, comprised of officers and members of NE-AIPG, will make the final selection of students to receive a scholarship based on their review of the application form and two letters. The first letter will be from the department chair or a faculty supervisor; the second letter will come from the student. Any number of junior or senior students may apply from each college; however, the committee may limit awards to no more than two students from any college. The scholarships will be awarded primarily on the basis of financial need and academic qualifications; career goals, projects/accomplishments/educational plans, and the faculty recommendation letter will also be considered. Financial need may be documented through the methods described below. Former scholarship recipients are not eligible to apply; however former applicants may apply in 2012 providing they still meet the application requirements.

How To Apply - The Scholarship Committee requests a brief summary of the academic qualifications of each student submitting an application from their department chair or a faculty supervisor. The summary should include information on the student's academic qualifications and accomplishments, career goals, financial needs, and reasons for selecting the candidate. We ask that the summary be no longer than two (2) printed pages and include at least one paragraph on each of the above listed criteria. The Committee may request additional information to complete its evaluation.

In addition to a completed Application Form, the Scholarship Committee also requests a letter from the applicant specifically discussing three evaluation criteria: financial need, academic qualifications, and career goals (one paragraph for each criterion). Additional information on recent research projects, on-campus or off-campus activities and accomplishments, and educational plans that would aid the Committee in reaching its decision can also be included. The applicant's letter should be a maximum of two (2) printed pages. Documentation of financial need is especially important. At a minimum, applicants must complete the Financial Needs Assessment section that is part of the Application Form. Applicants may supplement their financial need documentation by submitting a Student Aid Report. This report can be obtained by completing the on-line application for Free Application for Federal Student Aid (FAFSA) for the 2012 - 2013 academic school year on the U. S. Department of Education web site (<http://www.fafsa.ed.gov>). If the applicant has already completed the FAFSA application for other sources of financial aid, the Student Aid Report is a direct output of the FAFSA application process. Please do not submit federal and state income tax returns. Information on this scholarship is also posted on www.scholarships.com.

Electronic or paper copies of the application form, both letters and all financial need documentation must be submitted to Dennis G. McGrath, The Louis Berger Group, Inc., 565 Taxter Road, Suite 510, Elmsford, NY 10523 or neaipg.atscholarship@gmail.com. The application package must be postmarked or e-mailed on or before December 6, 2012. Prior to the submittal of application packages, student applicants and faculty sponsors may submit questions via e-mail to neaipg.atscholarship@gmail.com.

APPLICATIONS MUST BE SUBMITTED ON OR BEFORE DECEMBER 6, 2012

Election Brings Leadership Changes to Congress

Kathryn Kynett and Wilson Bonner, AGI



The November election has brought changes to key leadership positions in geoscience related committees for the 113th Congress.

The Democrats and Majority Leader Harry Reid (D-NV) will retain control of the Senate after successfully defending 21 seats and picking up two. Senator Mitch McConnell (R-KY) will remain Minority Leader. Below are the announced and expected leaders of committees that have jurisdiction over geoscience-related issues.

Senate Commerce, Science and Transportation Committee:

- » Chairman: Jay Rockefeller (D-WV)
- » Ranking Member: Either John Thune (R-WY), Roger Wicker (R-MS), or Johnny Isakson (R-GA). Senator Kay Bailey Hutchison (R-TX), former ranking member of the committee is retiring. It is unclear who will replace Hutchison since Senator Jim DeMint (R-SC), who was next in line, resigned in December.

Senate Energy and Natural Resources:

- » Chairman: Ron Wyden (D-OR) will replace Jeff Bingaman (D-NM) who is retiring.
- » Ranking Member: Lisa Murkowski (R-AK) will return as ranking member.

Senate Environment and Public Works Committee:

- » Chairman: Barbara Boxer (D-CA) is expected to remain chair
- » Ranking Member: David Vitter (R-LA) will likely replace James Inhofe (R-OK) who is stepping down as he has reached the six-year term limit.

Senate Appropriations Committee:

- » Chairman: Barbara Mikulski (D-MD)
 - » Ranking Member: Richard Shelby (R-AL) will replace Thad Cochran (R-MS) who has reached his term limit in ranking member position
- Republicans and Speaker of the House John Boehner (R-OH) will maintain

control of the House with a considerable majority. Eric Cantor (R-VA) and Nancy Pelosi (D-CA) will remain in their positions as House Majority Leader and Minority Leader, respectively.

House Science, Space and Technology Committee:

- » Chairman: Lamar Smith (R-TX) will replace Ralph Hall (R-TX) who has completed his six-year term limit as chairman and ranking member.
- » Ranking Member: Eddie Bernice Johnson (D-TX)

House Natural Resources Committee:

- » Chairman: Doc Hastings (R-WA)
- » Ranking Member: Edward Markey (D-MA) has announced he will run for outgoing Senator John Kerry's (D-MA) seat. If he loses, he will remain in the House and will likely keep his seat. Rep. Peter DeFazio (D-OR) is next in seniority.

House Energy and Commerce Committee:

- » Chairman: Fred Upton (R-MI)
- » Ranking Member: Henry Waxman (D-CA)

House Appropriations Committee:

- » Chairman: Hal Rogers (R-KY)
- » Ranking Member: Nita Lowey (D-NY) will replace Norm Dicks (R-WA) who is retiring.

Other notable leaders in the House and Senate who retired or lost their re-election include Brad Miller (D-NC), Jerry Costello (D-IL), Ben Quayle (R-AZ), Olympia Snowe (R-ME). Brad Miller, ranking member of the Energy and Environment Subcommittee of the Science, Space and Technology Committee, has retired after having his district redrawn. Costello, acting ranking member of the Space and Aeronautics Subcommittee of the Science, Space and Technology Committee, retired while Quayle, chair of the Technology and Innovation Subcommittee of the Science, Space and Technology Committee, lost his primary election. Senator Snowe, chair of the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard in the Senate Commerce, Science, and Justice Committee, retired.

Representatives Judy Biggert (R-IL), Roscoe Bartlett (R-MD), Hansen Clarke (D-MI), Jo Ann Emerson (R-MO), Steven

LaTourette (R-OH), and Russ Carnahan (D-MO), all strong supporters of science, will not return next Congress.

SSSA Congressional Science Fellowship



If you have an interest in science policy, **apply by March 14** for the Soil Science Society of America's Congressional Science Fellowship. The Fellow selected will spend one year in Washington DC, applying his/her professional and scientific expertise as a special assistant on the staff of a member of Congress or Congressional committee. The purpose of the Fellowship is to make practical contributions to the more effective use of science and technical knowledge in government, to demonstrate the value of such science-government interaction, to inform the scientific and educational communities about public policy and the legislative process, and to provide a unique public policy learning experience. The Fellowship can begin anytime from September to early January, though the exact date is flexible and open to negotiation. For more information, view the PDF:

<https://www.soils.org/files/science-policy/activities/csf.pdf>

Roger Wakimoto Selected as Assistant Director for NSF's Directorate for Geosciences



Roger Wakimoto has been selected to serve as the assistant director of the Directorate for Geosciences (GEO), a directorate within the National Science Foundation (NSF) which has a \$1 billion annual budget for supporting core research in the atmospheric, polar, Earth and ocean sciences.

The facilities and academic research fleet managed by GEO include the newly launched R/V Sikuliaq and the NCAR-

Wyoming Supercomputing Center, both of which were opened in October.

Wakimoto is a geophysicist with expertise in severe weather including tornadoes and thunderstorms and has co-authored over 100 peer-reviewed papers. Wakimoto's numerous awards and honors include a scientific and technical achievement award from the Environmental Protection Agency in recognition of air pollution observations and the American Meteorological Society's Clarence Leroy Meisinger Award for his contributions to understanding mesoscale weather events.

Currently, Wakimoto serves as the director for the National Center for Atmospheric Research (NCAR). Previously, he served as associate director for NCAR's Earth Observing Laboratory and was a professor at the University of California - Los Angeles where he chaired the Department of Atmospheric Sciences.

Wakimoto will begin his appointment in February 2013.

Outlook for Science Legislation in the 113th Congress

Kathryn Kynett, AGI



The 113th Congress will be tasked with the reauthorization of the America COMPETES Act (P.L. 111-358), reauthorization of the National Aeronautics and Space Administration (NASA), the closing of the Federal Helium Reserve, and regulations related to unconventional oil and gas development.

The America COMPETES Act is set to expire in the fall of 2013. The act was first passed in 2007 (P.L. 110-69), and then reauthorized in 2010 (P.L. 111-358). The act promotes science education through governing and supporting science and education programs through the National Science Foundation (NSF), National Institute of Standards and Technology (NIST) and the Department of Energy (DOE). Among the provisions in the 2010 reauthorization is a 10-year doubling of these three key federal agencies budgets, which has yet to be realized.

The current NASA authorization passed in 2010 (P.L. 111-267) expires in 2013 and incoming Chairman Lamar Smith (R-TX) will lead the effort in the House to set the policy and authorization levels for NASA.

The Federal Helium Reserve is currently on track to close in 2013, which would devastate the helium market. Outgoing Senator Jeff Bingaman (D-NM) introduced the Helium Stewardship Act of 2012 (S. 2374) which would continue to fund the Federal Helium Reserve as the helium market transitions to relying on helium from private industry. If Congress does not pass S. 2374 this December, look for similar legislation to be introduced early next year.

The next Congress will shape the role of unconventional oil and gas production in decreasing dependence on imported energy. The U.S. has the largest shale energy resources of any country. Because of recent technological advances in hydraulic fracturing and horizontal drilling, the U.S. poised to overtake Saudi Arabia as the world's top producer of oil by 2020. However unconventional energy production remains controversial due to uncertain environmental impacts, especially regarding water use.

U.S. and Mexico Sign Colorado River Agreement



On November 19, officials from the U.S. and Mexico signed an updated agreement on managing Colorado River water resources.

The U.S. and Mexico have agreed to plan for future drought by allowing Mexico to store water in Lake Mead during times of water surplus in return for tapping less water from the River during dry periods. Under the five-year agreement, Mexico will receive \$21 million for repairs to irrigation canals and other infrastructure damaged by an earthquake in 2010. Such repairs will allow agricultural production to resume on thousands of acres of farmland which has dried up.

Arizona, California and Nevada, the three lower basin states, will purchase

about 100,000 acre-feet of water from Mexico, which would provide water for 200,000 homes for a year. The U.S. pledged to buy additional water to support restoration of the Colorado River Delta. Over the decades, areas of the delta have dried up due to diversions down stream causing agricultural lands to become infertile as well.

Bill Introduced to Fund DOE Oil Shale Energy R&D Program



The House Science, Space and Technology Committee Chairman Ralph Hall (R-TX) introduced a bill, the Tapping America's Energy Potential through Research and Development Act of 2012 (H.R. 6603), to authorize \$111 million to the Department of Energy to research and develop oil shale energy extraction. The bill focuses on funding research and development (R&D) for extracting methods and reducing environmental impacts.

The bill authorizes support for R&D in oil and shale resource characterizations, modeling and simulation of oil shale exploration and production technologies, minimization and re-use of water, efficient use of energy in exploration and production activities, and methods which reduce potential environmental impacts. If the bill is not passed in the lame duck session, it must be reintroduced in the 113th Congress.

The Science Committee held a hearing on this bill on November 30. A summary of the hearing can be found on AGI's energy policy hearing web site.

The AGI policy stories were originally published in the [AGI Geoscience Policy Monthly Review](#). To subscribe to the monthly review please visit <http://www.agiweb.org/gap/index.html> or email Wilson Bonner at govt@agiweb.org.



Photo credit: Abby Seadler, AGI

Tom Reed In Memoriam

Seismological Research Letters 83:6 – Transitions

Tom Reed, the retired founder of the Federal Affairs Office and former Washington Representative for SSA, died 13 September 2012 at a hospital near his home in Lady Lake, Florida. He was 70 years old. Before founding Federal Affairs Office, Reed served as the U.S. Geological Survey's first Congressional Liaison Officer from 1977 to 1994.

Charles "Charlie" Mankin, Former AGI President, Passes Away

It is with deep sadness that we regret to inform you of the passing of Dr. Charles "Charlie" Mankin on Tuesday, November 13, 2012 at the age of 80.

Former president of the American Geosciences Institute (1977-1978), Mankin

was awarded the Ian Campbell Medal for superlative service to the geosciences in 1987 for his long history of scientific achievement and his exceptional service to the geoscience profession.

Charlie was born on January 15, 1932 in Dallas, Texas to Green and Myla Mankin. He grew up in West Texas, and later earned three degrees in geology from the University of Texas before taking a post-doctoral position at Cal Tech. Mankin began at the University of Oklahoma in 1959 as an assistant professor and served as director of the School of Geology and Geophysics beginning in 1963. In 1967, Mankin became director of the Oklahoma Geological Survey, maintaining this role until his retirement in 2007. He was one of the longest-serving Directors of any state geological survey in the history of our country.

Additionally, Mankin served as president or vice president of various national organizations, including the Association of American State Geologists, the Mid Continent Section of the Society of Economic Paleontologists and Mineralogists, and the American Institute of Professional Geologists. Charles was honored at the AASG annual meeting

in June for playing a key role in pushing through the National Geologic Mapping Act.

Charlie is survived by his wife, Betty Bellis Mankin, of Norman; daughters: Sally Geyer, of Atlanta; Helen Volak, of Tulsa, and her children, Daniel and Katie; and Laura Veal and husband Larry and their children, Ashley Atherton and husband Aaron and their son, Collin, and Jeff Veal, all of Noble; Betty's children: Doug Bellis and wife Tina, of Norman, and their daughters, Jenna and Carmen; and Karen Powers and husband Mark, of Cedar Park, Texas; and sister, Carolyn Thompson and husband Sam, of Austin, Texas.

Services were held on November 19, 2012, at the First Christian Church in Norman, Oklahoma. Online condolences may be shared at www.havenbrookfuneralhome.com.



AIPG Student Poster Contest Winners



Six cash prizes were awarded to three undergraduate students and three graduate students at the AIPG/NHOG Conference this year in Rapid City, South Dakota. The undergraduate student awardees were:

1st Prize - \$500 - Lilly Jones, Oglala Lakota College, *A Resource Inventory of Selected Outcrops Along the White Clay Fault in Southwestern South Dakota*;

2nd Prize - \$150 - Armando Hernandez, SA-3785, SD State University, *Oglala Lakota College, Sampling Plants for Heavy Metals on Pine Ridge Reservation, South Dakota*; and

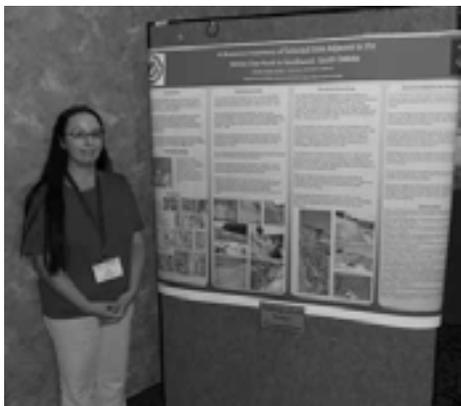
3rd Prize - \$100 - Kristina Proietti, SA-3449, SD School of Mines & Technology, *Investigation of the White Clay Fault as Part of a New STEM Education Program at the Pine Ridge Indian Reservation, South Dakota*.

The graduate student awardees were:

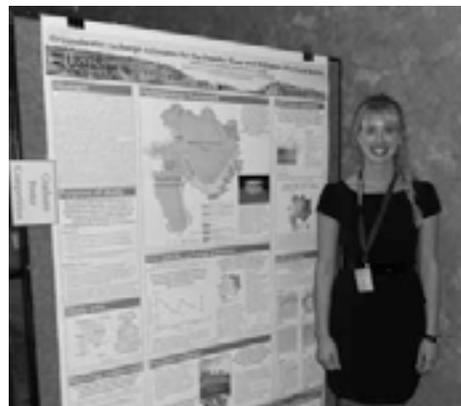
1st Prize - \$600 - Katherine Aurand, SA-3695, SD School of Mines & Technology, *Groundwater Recharge Estimates for the Powder River and Williston Structural Basins*;

2nd Prize - \$250 - Henok Tiruneh, SD School of Mines & Technology, *Discontinuity Characterization Using LiDAR at the Sanford Underground Research Facility at the former Homestake Mine*; and

3rd Prize - \$100 - Joanita Kant, SA-3784, SD State University, *Sampling Wild Roses and Soils for Heavy Metals along White River on and near Pine Ridge Reservation, South Dakota*.



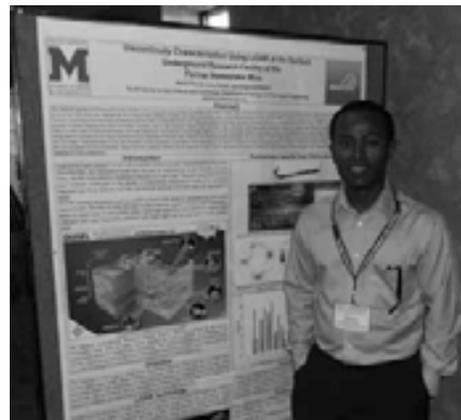
1st Place undergraduate winner, Lilly Jones.



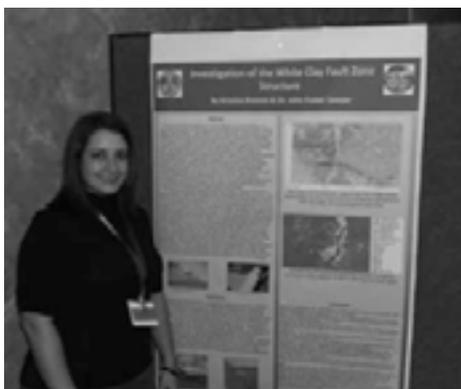
1st Place graduate winner, Katherine Aurand.



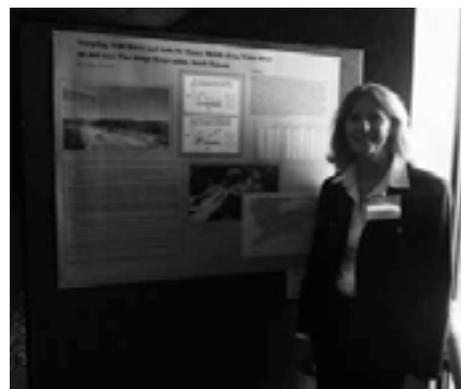
2nd Place undergraduate winner, Armando Hernandez



2nd Place graduate winner, Henok Tiruneh



3rd Place undergraduate winner, Kristina Proietti



3rd Place graduate winner, Joanita Kant

NGWA Elects Board Members



Two members were elected to the National Ground Water Association (NGWA) Board of Directors by delegates representing NGWA's membership at the 2012 NGWA Ground Water Expo and Annual Meeting in Las Vegas in December.

Jeffrey W. Williams, MGWC, CVCLD, vice president of Spafford and Sons Water Wells in Jericho, Vermont, was elected to a second three-year term on the

board. David Henrich, CWD/PI, CVCLD, vice president of Bergerson-Caswell Inc., Maple Plain, Minnesota, was elected to a first term on the 19-member board.

Williams has worked more than 32 years in the groundwater industry. He also has held officer positions in the Vermont Ground Water Association for 27 years, currently serving as treasurer and educational director. Williams has chaired NGWA's Government Affairs Committee and served on its Geothermal Subcommittee as well as served on NGWA's Affiliate States, Rural Water, and Safety subcommittees.

Henrich has worked 19 years in the groundwater industry. He has served three years on the NGWA Government Affairs Committee and its Geothermal Subcommittee for two of those years. He also has served on the Department of Transportation/Occupational Safety and Health Administration Subcommittee. Henrich also serves on the Minnesota Water Well Association Board of Directors and is a member of the International Ground Source Heat Pump Association and the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

Final Call for 2013 AGI Nominations



AGI relies on Member Society participation in its nomination process to ensure the perspective of those societies in AGI by having their members serve on the AGI Executive Committee. Consider nominating past officers or your own society award winners to ensure AGI has quality candidates in its pool. Specifically AGI is seeking your nominations for the following:

AGI 2014 Executive Committee Positions (4 meetings/year)

- » President Elect (3-year commitment)
- » AGI Treasurer (4-year commitment)
- » AGI Member at Large (3-year commitment)

AGI 2013 Awards

- » Marcus Milling Legendary Geoscientist Medal
- » Medal in Memory of Ian Campbell for Superlative Service to the Geosciences
- » Outstanding Contribution to the Public Understanding of the Geosciences

Completed nomination forms need to be returned to AGI by February 1, 2012.

The nomination forms can be downloaded from our web site and each includes a list of responsibilities for that position. More than one candidate may be nominated for a position or award and names remain in the candidates' pool for two extra years. In addition to the nomination form, it is suggested a brief biography outlining the qualifications and experience of the candidate(s) be included to strengthen the nomination. Up to three letters of support may also be sent for each nomination. Online nominations may be submitted at <http://www.agiweb.org/members/nominations.html>.

The spring AGI Member Society Council meeting is where individuals, chosen from the pool of candidates by the 2013 AGI Nominating Committee, receive

final approval. If you have any questions, please contact Leigh Sutherland at AGI (voice: 703-379-2480 ext. 203 or email: LS@agiweb.org).

Your assistance in submitting candidates for AGI officer positions and awards is appreciated!

CMS Student Research Spotlight



Congratulations to *Michael B. Meyer* for winning a CMS Student Research Grant Award. Michael is a Ph.D. student in the Department of Geosciences at Virginia Polytechnic and State University, working on a Ph.D. in paleontology with Shuhai Xiao. He received B.S. degrees in geology and anthropology from Beloit College and a M.S. in geology from the University of South Florida. His research focuses on the underlying forces that drove early metazoan radiations through a combination of field studies, isotope analyses, body and trace fossils, and new micro-investigative tools.

Nominations Sought for CMS Awards



The CMS gives four awards at its annual meetings. See the CMS website for a description of the awards and an overview of the nomination process, www.clays.org. **Nomination deadline for the 2014 awards is March 31, 2013.**

CMS Student Research Grants and Travel Awards



The research grant program is designed to provide partial financial support (up to \$3000) of masters and doctoral research for graduate students of clay science and technology. The travel grant program is designed to provide partial

financial support to graduate students to attend the annual meeting of the Clay Minerals Society to present results of their research. All student members of the Clay Minerals Society are eligible for the Travel Grant Program. See the CMS website for more information, www.clays.org. **Application deadline is 30 April 2012.**

Upcoming GSA/ ExxonMobil 2013 Field Awards for Undergraduates, Graduate Students and Faculty



Deadline to apply for all three awards is 8 April 2013

Questions? Contact Jennifer Nocerino, jnocerino@geosociety.org or +1-303-357-1036.

Bighorn Basin Field Award - Sixth annual Field Seminar in the Bighorn Basin of north-central Wyoming emphasizing multi-disciplinary integrated basin analysis for undergraduate students, graduate students and faculty. The field camp will run 3-9 August 2013.

Field Camp Scholar Award - This award is for undergraduate students to attend summer field camp. Seventeen students will be awarded \$2,000 each to attend the field camp of their choice based on diversity, economic/financial need, and merit.

Field Camp Excellence Award - This \$10,000 award is given each year to a geology field camp to assist with the summer field season. It is based on safety awareness, diversity, and technical excellence.

For more information please visit <https://rock.geosociety.org/ExxonMobilAward/index.asp>.

KWI: Upcoming Deadline for Wilson Scholarship in Karst Science



The William L. Wilson Scholarship in Karst Science was established in 2002 by the Karst Waters Institute to recognize the significant karst science contributions of the late William (Bill) L. Wilson. Bill Wilson used a variety of techniques, and unusual creativity, to tackle some of the most difficult karst science questions in Florida and elsewhere. He developed a leading karst consulting company in the United States, Subsurface Evaluations, Incorporated. To stimulate the development of new, energetic, motivated, and creative karst scientists, and to remember the person of Bill Wilson and his dedication to karst science, the scholarship has been established in his memory. The value of the scholarship as a one-time award is \$1,000.

To apply for the William L. Wilson Scholarship, the following conditions exist: The applicant must be currently enrolled in, or have been accepted into, a MS degree program at an institution of higher education in the USA. PhD students are not eligible.

A written proposal of the planned karst study must be submitted. It is limited to 1000 words or less for the narrative, not counting figure captions and references. The research topic should be one concerning karst science, from the field of geochemistry, geology or hydrology. A very simple budget indicating how the funds would be used should also be included (it does not count in the 1000 word limit). Applicants are requested to not recycle master's thesis proposals as applications.

Academic transcripts of undergraduate, and any graduate work, should be submitted. Copies issued to the student by their institution are preferred. Two letters of recommendation, with one of them from the student's advisor or mentor, should be submitted. It is requested that these letters be submitted as e-mails by the letter writers.

Applications are due by February 15, 2013. They should be submitted electronically as a single pdf file, containing the application, transcripts, etc., to:

Dr. John E. Mylroie, Department of Geosciences, Mississippi State University, Mississippi State, MS 39762
mylroie@geosci.msstate.edu

Questions regarding the scholarship should be addressed to Dr. Mylroie. Applicants will be notified in early March of the decision of the Scholarship Committee. Publications derived from supported research should acknowledge the Karst Waters Institute and the William L. Wilson Scholarship. For more information, including a list of previous recipients, go to: <http://karstwaters.org/scholarship/>

2013 National Groundwater Association (NGWA) Awardees



NGWA recognizes excellence in the groundwater industry by annually awarding those individuals and companies having made significant contributions to the industry. These awards represent the highest quality in standards and business practices. Award recipients are recognized for their contributions through service, innovation, research, safety, and projects of scientific and technological importance affecting the growth and well-being of the industry.

Awards will be presented during the Keynote and Awards Ceremony at the 2012 NGWA Groundwater Expo and Annual Meeting, Wednesday, December 5, 10 a.m.–12 p.m. in Las Vegas.

NGWA Awards of Excellence

Ross L. Oliver Award

Tom Downey, CWD/PI, Downey Drilling Inc., Lexington, Nebraska, is this year's recipient of the Ross L. Oliver Award. Established in Oliver's honor by his family, this award is presented to a member who has made outstanding contributions to

the groundwater industry.

M. King Hubbert Award

Brian Berkowitz, Ph.D., Weizmann Institute of Science, Rehovot, Israel, is this year's recipient of the M. King Hubbert Award, presented to a person who has made major science or engineering contributions to the knowledge of groundwater through research, technical papers, teaching, and practical applications.

Robert Storm Award

John W. Henrich, MGWC, CVCLD, Bergerson-Caswell Inc., Maple Plain, Minnesota, is the recipient of this year's Robert Storm Interdivisional Cooperation Award. This award is presented to a person or team who through their activities or written works contribute to promoting collaboration, enhancing cooperation, and fostering community along all groundwater professionals and to advancing the mutual interests of all those interested in communicating the importance of the Earth's water resources.

Life Member Awards

The Life Member Award is presented to retired NGWA members or members of retirement age who have contributed a special service in the furtherance of the groundwater industry or to NGWA.

- » **William "Bill" M. Alley, Ph.D., U.S.** Geological Survey, retired, San Diego, California.
- » **Leroy Goodson**, Texas Ground Water Association, Austin, Texas
- » **Beverly L. Herzog, CGWP**, Illinois State Geological Survey, retired, Champaign, Illinois
- » **Randy Lyne**, Preferred Pump & Equipment LP, Fort Worth, Texas
- » **Thomas E. Reilly, Ph.D., U.S.** Geological Survey, Reston, Virginia
- » **Jose Joel Carrillo Rivera, Ph.D.**, University of Mexico, Colonia Napoles, Mexico

Honorary Member Award

Jane Wittke, Ohio-Kentucky-Indiana Regional Council of Governments, Cincinnati, Ohio, will receive the 2012 Honorary Member Award, presented to persons of eminence from outside the groundwater industry who have contributed a special service to the

industry or to NGWA.

Technology Award

Ray Roussy, PE, Sonic Drill Corp./Sonic Drilling Ltd., Surrey, British Columbia, Canada, will receive the 2012 Technology Award, presented to a person who has made major contributions to the groundwater industry in the development of ideas, tools, and equipment; techniques of well construction; exemplary service to coworkers through the industry in sharing these developments; or performing services for the protection of the groundwater resource and the consuming public.

Individual Safety Advocate Award

Jim Wright, National Exploration, Wells and Pumps, Shawnee, Kansas, is this year's recipient of the Individual Safety Advocate Award. This award recognizes a person who has made significant contributions to promoting, improving, maintaining, and enhancing safety in daily working operations.

Special Recognition Awards

The Special Recognition Award is presented to an individual or organization that demonstrates dedication, service, and commitment to the groundwater industry and community through involvement and achievement on a local or regional level.

- » **Water Replenishment District of Southern California**, Lakewood, California
- » **Stephen Baker**, Operation Unite® Water Alliance, Nevada City, California.

Standard Bearer Award

Scott Fowler, CWD/PI, Dahlman Pump & Well Drilling Inc., Burlington, Washington, will receive the 2012 Standard Bearer Award, presented to outstanding volunteers involved in the legislative process on behalf of NGWA and its initiatives.

Groundwater Protector

U.S. Representative Betty McCollum (D-Minnesota) received the 2012 Groundwater Protector Award, which recognizes outstanding public service

in conjunction with groundwater conservation, protection, and use. (Please note that the Groundwater Protector Award was presented at the 2012 NGWA Washington Fly-in.)

Outstanding Groundwater Project Awards

NGWA Outstanding Groundwater Project Awards recognize member innovation and contributions affecting groundwater supply, protection, and remediation.

Groundwater Protection

Mesa Water District (California) will receive the Outstanding Groundwater Project Award—Protection for their innovations and advancements in the Colored Water Treatment Facility Technology Replacement and Expansion Project. This award demonstrates a unique and innovative solution in protecting groundwater from overdraft and contamination.

Groundwater Remediation

ARCADIS will receive the Outstanding Groundwater Project Award—Remediation for their innovations and advancements in the Advanced Water Treatment Research Program for Hexavalent Chromium in Drinking Water. This award demonstrates excellence in restoring contaminated groundwater or overdrafted groundwater resources.

Divisional Awards

John Hem Award for Excellence in Science & Engineering
Paul Hsieh, Ph.D., U.S. Geological Survey, Menlo Park, California, will receive the 2012 John Hem Award for Excellence in Science & Engineering. This award is presented by the Scientists and Engineers Division in recognition of significant, recent (within five years) scientific or engineering contributions to the understanding of groundwater. The award is presented annually for significant contributions from either a single publication or a body of works.

Keith E. Anderson Award

John Jansen, Ph.D., PG, PGP, Cardno ENTRIX, West Bend, Wisconsin, will receive the 2012 Keith E. Anderson Award, presented by the Scientists

and Engineers Division in recognition of outstanding contributions to the Association.

Manufacturer's Division Special Recognition Award

George Simas, Flexcon Industries, Randolph, Massachusetts, will receive the 2012 Manufacturer's Division Special Recognition Award, which is given annually by the Manufacturers Division to honor an individual's accomplishments in the groundwater manufacturing industry including, but not limited to, industry improvements, special education contributions, and patents and technology.

Supplier of the Year Award

Greg Esborg, Preferred Pump & Equipment LP, Tacoma, Washington, will receive the 2012 Supplier of the Year Award, presented by the Suppliers Division in recognition of outstanding contributions to the Association.

Honored SSA Members



Mustafa Özder Erdik, professor in the Department of

Earthquake Engineering at the Kandilli Observatory and Earthquake Institute at Boğaziçi University will receive the 2013 Bruce Bolt Medal. The Bruce Bolt Medal will be jointly awarded by SSA, the Consortium of Organizations for Strong-Motion Observation Systems (COMSOS), and the Earthquake Engineering Research Institute (EERI). Professor Erdik will receive the Bolt Medal in 2013 February at the EERI Annual Meeting in Seattle, Washington.

Dr. Robert Youngs, Principle Engineer with AMEC Environment and Infrastructure, Inc. was presented with the 2012 Jesuit Seismological Association Award at the Eastern Section of the Seismological Society of America 84th Annual Meeting in October 2012 for his work in developing and improving seismic hazard assessment methods and contributions to the seismology of eastern North America.

Dr. Tom Jordan, W.M. Keck Foundation Chair in Geological Sciences,

USC professor of earth sciences, Director of SCEC has been awarded the AGI 2012 Outstanding Contribution to the Public Understanding of the Geosciences Award. Dr. Jordan received this award during the GSA meeting in North Carolina, 2012 November.

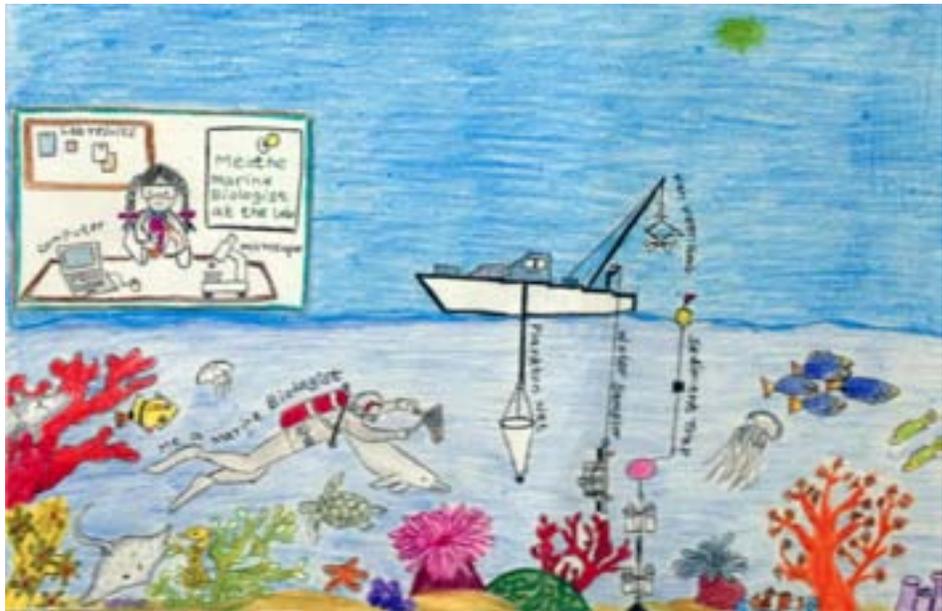
Earth Science Week Contest Winners Announced

 **Vijeta Revankar** of Seabrook, Texas, won first place in the visual arts contest with a colorful drawing of the 10-year-old collecting samples underwater as a marine biologist. Finalists were Mandy He, Cynthia Liu, Rohan Raman, and Arya Kailash Sasne. Students in grades K-5 made two-dimensional artworks illustrating the theme "Imagine Me, an Earth Scientist!"

Gurneet Kaur Chhabra of Dilsukhnagar, India, won first place in the photo contest with her image of various types of geoscientists studying ground fissures in India. Finalists were Alexis Bryant, Carolyn Forrester, Haley Gobla, and Trevor Salmon. Submissions illustrated the theme "Earth Science Is a Big Job."

Aishani Sil of Plano, Texas, won first place in the essay contest with a piece about collaborations among geoscientists engaged in the process of hydraulic fracturing. Finalists were Parlin Escobar, Chelsea Frank, Shiva Saravanan, and Richard Yang. Students in grades 6-9 wrote essays of up to 300 words addressing this year's theme, "Geoscientists Working Together."

Congratulations to the winners, finalists, and hundreds of students and others who entered. Each first-place winner receives \$300 and a "Faces of Earth" DVD set. Entries submitted by winners and finalists are being posted online for viewing at <http://www.earthsciweek.org/contests/index.html>.



First place entry in the 2012 Earth Science Week visual arts contest. By Vijeta Revankar of Seabrook, Texas.



First place entry in the 2012 Earth Science Week photography contest. By Gurneet Kaur Chhabra of Dilsukhnagar, India.

Society of Economic Geologists Awards 2012-2013



» **Robert O. Rye** (U S Geological Survey, USA)

- **R.A.F. Penrose Gold Medal for 2012**

» **José Perelló** (Antofagasta Minerals SA, Chile) - **SEG Silver Medal for 2012**

» **Allan P. Juhas** (Consultant, USA) - **Ralph W. Marsden Award for 2012**

» **Martin M. Reich** (Universidad de Chile, Chile) - **Waldemar Lindgren Award for 2012**

» **Anthony E. Williams-Jones** (McGill University, Canada) – **SEG Distinguished Lecturer for 2013**

» **Stephen J. Turner** (Newmont Asia Pacific, Australia) – **SEG International Exchange Lecturer for 2013**

» **José Perelló** (Antofagasta Minerals SA, Chile) – **SEG Thayer Lindsley Visiting Lecturer for 2013**

» **Nicholas T. Arndt** (University of Grenoble, France) – **SEG Regional VP Lecturer for 2013**

SSA Awards



2012 Awards – to be presented at the 2013 Annual Meeting

SSA is pleased to announce the recipients of several of the Society's awards for 2012. These awards will be presented at the Society's Annual Meeting in Salt Lake City, Utah in April 2013.

- » **The 2012 Harry Fielding Reid Medal** has been awarded to James Rice, Mallinckrodt Professor of Engineering Sciences and Geophysics, Department of Earth and Planetary Sciences and School

of Engineering and Applied Sciences (SEAS), Harvard University.

- » **The 2012 Richter Early Career Award** has been awarded to Katsuichiro Goda, University of Bristol.

- » **The 2012 Frank Press Public Service Award** has been awarded to Randall White, USGS, Volcano Disaster Assistance Program.

2013 Awards – 'Call For Nominations' Seismological Research Letters 83:6 – News and Notes

SSA members are invited to submit nominations for the following SSA awards **by 15 February 2013.**

- » **The Harry Fielding Reid Medal**
- » **Charles F. Richter Early Career Award**
- » **Frank Press Public Service Award**
- » **SSA Distinguished Service Award**

The 2013 nomination deadline and Award details are listed on the Awards page (www.seismosoc.org/awards/) of the SSA website (www.seismosoc.org).

The Names of the 2013 award winners will be announced at the SSA Annual Meeting Luncheon in Salt Lake City, Utah – April 2013. The 2013 awards will be presented at the 2014 SSA Annual Meeting Luncheon in Anchorage, Alaska.

February 2013 February 2013 Meetings February



2013 SME Annual Meeting & Exhibit and CMA 115th National Western Mining Conference
February 24-27, 2013 • Denver, CO, USA

The Society for Mining, Metallurgy and Exploration is holding its annual meeting February 24-27, 2013 in Denver, Colorado. The meeting program is available at [http://www.](http://www.smenet.org/docs/meetings/2013/2013AMPreliminaryProgram.pdf)

[smenet.org/docs/meetings/2013/2013AMPreliminaryProgram.pdf](http://www.smenet.org/docs/meetings/2013/2013AMPreliminaryProgram.pdf). The theme of the meeting is "Mining: It's about the people," and part of the meeting will focus on workforce issues.

View upcoming meetings, short courses, and events on the

AGI Geoscience Calendar

<http://www.agiweb.org/calendar/index.php>

To add an event please email Abigail Seadler at

aseadler@agiweb.org.



2013 Geo-Congress

March 3-6, 2013

Town and Country Resort Hotel

San Diego, CA

www.geocongress.org

You asked. We listened. The Geo-Institute's Technical Committees that span the geo-profession, have contributed their thoughts, ideas, and papers to help build the 2013 Geo-Congress program. You're guaranteed a cost-effective program that will provide you a full-spectrum view of the dozens of geotechnical aspects related to embankments, dams, and slopes. From intensive short courses to a comprehensive range of technical sessions including case history evaluation, numerical modeling, field testing, monitoring, rehabilitation and more, your time and money will be well spent.

Ways to Save \$\$\$

- » Register by January 3, 2013 for your chance to win a \$200 Starbucks gift card.
- » Register by January 30, 2013. Save up to \$120 on your Congress registration.
- » Exhibitors: Receive an Organizational Membership for \$500. Valued at \$1,000. (New members only.)
- » Reserve your room at the Congress hotel for \$155/night.
- » Students: Visit the Student page of the 2013 Congress website for travel grant information at <http://content.asce.org/conferences/geo-congress2013/student.html>

Check the 2013 Geo-Congress Highlights foldout for program, event, tour, registration, and hotel information at <http://content.asce.org/conferences/geo-congress2013/registration.html>.

National Groundwater Awareness Week is March 10-16



The 15th annual National Groundwater Awareness Week will take place March 10-16, 2013, once again putting the spotlight on the resource of groundwater and its importance to people and the environment.

The awareness week is sponsored by the National Ground Water Association (NGWA).

"NGWA appeals to all AGI Member Societies to join with us to

promote groundwater awareness during the week of March 10th through the 16th. With 99 percent of all available fresh water in the form of groundwater, it is incumbent upon those of us in the earth sciences to draw attention to this critically important, life-sustaining resource," said NGWA Director of Public Awareness Cliff Treyens.

Any organization interested in promoting National Ground Water Awareness Week can visit the Awareness Week Web page or contact Treyens at 800 551.7379, ext. 554, or ctreyens@ngwa.org. Those organizations that commit to promoting Groundwater Awareness Week can be recognized on NGWA's Awareness Week Web page by notifying Treyens.

In 2012, more than 350 Web sites worldwide promoted Groundwater Awareness Week.

Geological Society of America Northeastern Section Meeting



THE GEOLOGICAL SOCIETY OF AMERICA

Omni Mount Washington Resort

Bretton Woods, New Hampshire, USA

18-20 March 2013

Early Registration Deadline: 2/11/2013

<http://www.geosociety.org/Sections/ne/2013mtg/>

Geological Society of America Southeastern Section Meeting



THE GEOLOGICAL SOCIETY OF AMERICA

Caribe Hilton

San Juan, Puerto Rico

20-21 March 2013

Early Registration Deadline: 2/19/2013

<http://www.geosociety.org/Sections/se/2013mtg/>

Geological Society of America South-Central Section Meeting



THE
GEOLOGICAL
SOCIETY
OF AMERICA

AT&T Center

Austin, Texas, USA

4–5 April, 2013

Abstracts Deadline: 1/15/2013

Early Registration Deadline: 3/4/2013

<http://www.geosociety.org/Sections/sc/2013mtg/>

Soil Systems and Critical Zone Processes – Integrating Life Support Functions across Disciplines

Ascona, Switzerland

April 14-18, 2013

An international conference aimed at creating a roadmap for integrating soil science with earth, climate and ecological sciences towards addressing most pressing global and societal challenges.

Soil serves as a central biogeochemical-hydrological domain. This interface is one of the most biologically active and diverse compartments of the biosphere. A unique international conference on 'Soil Systems and Critical Zone Processes – Integrating Life Support Functions across Disciplines' is planned for April 2013 in Ascona, Switzerland. The conference is motivated by a growing recognition for the need to integrate soil as a scientific discipline into contemporary cross-disciplinary initiatives that address the most pressing global challenges. The conference will provide a scientific forum aimed at:

- » Delineating the scientific questions and required linkages between soil function and contemporary environmental and societal challenges;
- » Establishing a road map for transforming and integrating soil science into key Earth Science disciplines; and
- » Establishing cross-disciplinary links and platforms for scientific exchange.

We invite you to participate in this scientific gathering. Our goal is to transform interactions with our colleagues in other disciplines and integrate soil-related processes and functions into contemporary scientific initiatives. Input from scientific leaders in related fields will help frame key questions and pathways on soil-relevant aspects of global interdisciplinary themes such as:

- » Climate Change
- » Food Security and Biofuel Production
- » Water and Land Resources
- » Ecosystem Services and Biodiversity
- » Global Biogeochemical Cycles
- » Earth Observatories.

We anticipate participation across a broad range of backgrounds, including ecology, atmospheric science, biogeochemistry,

hydrology, geological sciences, among others.

The conference will be held on April 14-18, 2013 at the Centro Stefano Franscini (CSF) in Ascona, Switzerland (<http://www.csf.ethz.ch/about/index>) – the conference is scheduled immediately after the 2013 EGU meeting in Vienna (<http://www.egu2013.eu>). Informal interactions and discussions will play a key role in the success of the conference. The CSF provides lodging and meals, and meeting format will be similar to the Gordon Research Conferences. A limited number of travel grants for PhD students to present their work in a dedicated poster session is available on a competitive basis (please consult the conference website). Additionally, in the tentative conference program (<http://www.intersoil2013.ethz.ch/program.php>) we reserved a limited number of time slots for unsolicited presentations that will be selected by the organizing committee based on their topical suitability to primary themes and conference objectives. More information can be found at: <http://www.intersoil2013.ethz.ch/index.php>. We look forward to seeing you in Monte Verita next year!

The Organizing Committee

Dani Or, ETH Zurich

Jan W. Hopmans, UC Davis (SSSA)

Paul M. Bertsch, U Kentucky (US NAS)

Peter M. Groffman, Cary Inst. (ESA)

Jennifer Harden, USGS (AGU)

Molly Jahn, UW-Madison (CGIAR-CCAFS)

Sonia Seneviratne, ETH Zurich (ILEAPS/WCRP)

Michael H. Young, UT-Austin (GSA)

2013 NGWA Summit — The National and International Conference on Groundwater

San Antonio, Texas

April 28-May 2, 2013



Groundwater is a resource to be protected. It ignores political boundaries, transports contaminants, floods mine and construction sites, spins communities into an uproar, and can't be found when you need it. Model, explore, characterize, bank, inject, extract, treat, and predict all your subsurface needs with everything groundwater at the 2013 NGWA Summit

Conference program

The call for abstracts for the 2013 NGWA Summit closed November 23, 2012 and the submissions are currently under review. Once completed, the link to the program will be posted here.

Keynote speaker

Charles Fishman, New York Times bestselling author of *The Big Thirst*, has been named as the keynote speaker for the 2013 NGWA Summit.

SSA 2013 Annual Meeting - Call for Abstracts

Salt Lake City, Utah

April 17-19, 2013

www.seismosoc.org



SSA is now accepting abstracts for the 2013 Annual Meeting in Salt Lake City, Utah. The list of annual meeting technical program Special Sessions is now available online.

The SSA Annual Meeting consists of oral presentations, poster sessions, exhibits, field trips, business meetings and social gatherings. SSA is offering a special half-day workshop on 16 April 2013 titled, Career Game-Changers: Strategic Avenues to Landing the Right Job and Finding Success in Science. The workshop is geared toward graduate students, postdocs, and early career professionals – students and early career individuals will be given sign-up priority.

Technical Program Special Sessions Include (but are not limited to):

- » Advances in High-Frequency Physics-Based Earthquake Systems Simulation
- » Broadband Seismic Observations on the Seafloor
- » Characterizing Active Faults for Seismic Hazard Assessments
- » Data Products as Research Resources
- » Earthquake Sourced Physics
- » Implementation of Physics-Based Earthquake Source and Ground Motion Findings in Engineering Solution Models
- » Including Ground Failure in Scenario Events, Rapid Response, and Loss Estimation Models
- » Infrasound and Seismoacoustics
- » Intermountain West Earthquake and Volcano Characterization and Related Hazards
- » New Developments in Earthquake Forecasting and Predictability Research
- » New Frontiers in Seismic Data Analysis
- » Next Generation of Ground Motion Prediction Models
- » Oceanographic and Atmospheric Signals in Seismology
- » ShakeMap-Related Research, Development, Operations, and Applications
- » Towards Integrated Understanding of Slow Earthquakes: What We know, What We Don't Know, and How to Move Forward
- » The Magnitude X.X Earthquake on YY of ZZZZ: Major Earthquakes of 2012/13
- » Triggering of Seismic and Volcanic Events
- » When and Why Do Earthquake Ruptures Stop? Evaluating Competing Mechanisms of Rupture Termination

Abstract Submission Deadline is 10 January 2013. The Program and Abstracts will be posted online 08 February 2013. Annual meeting and hotel registration is now available online.

For more meeting and workshop information, abstract

submission details, or to register for the meeting today - please visit the 2013 Meeting page of the SSA website (<http://www.seismosoc.org/meetings/2013/>).

Limited exhibit space is available, in addition to Corporate and Organizational meeting sponsorship opportunities, for more information please contact Katie Kadas (Katie@seismosoc.org).

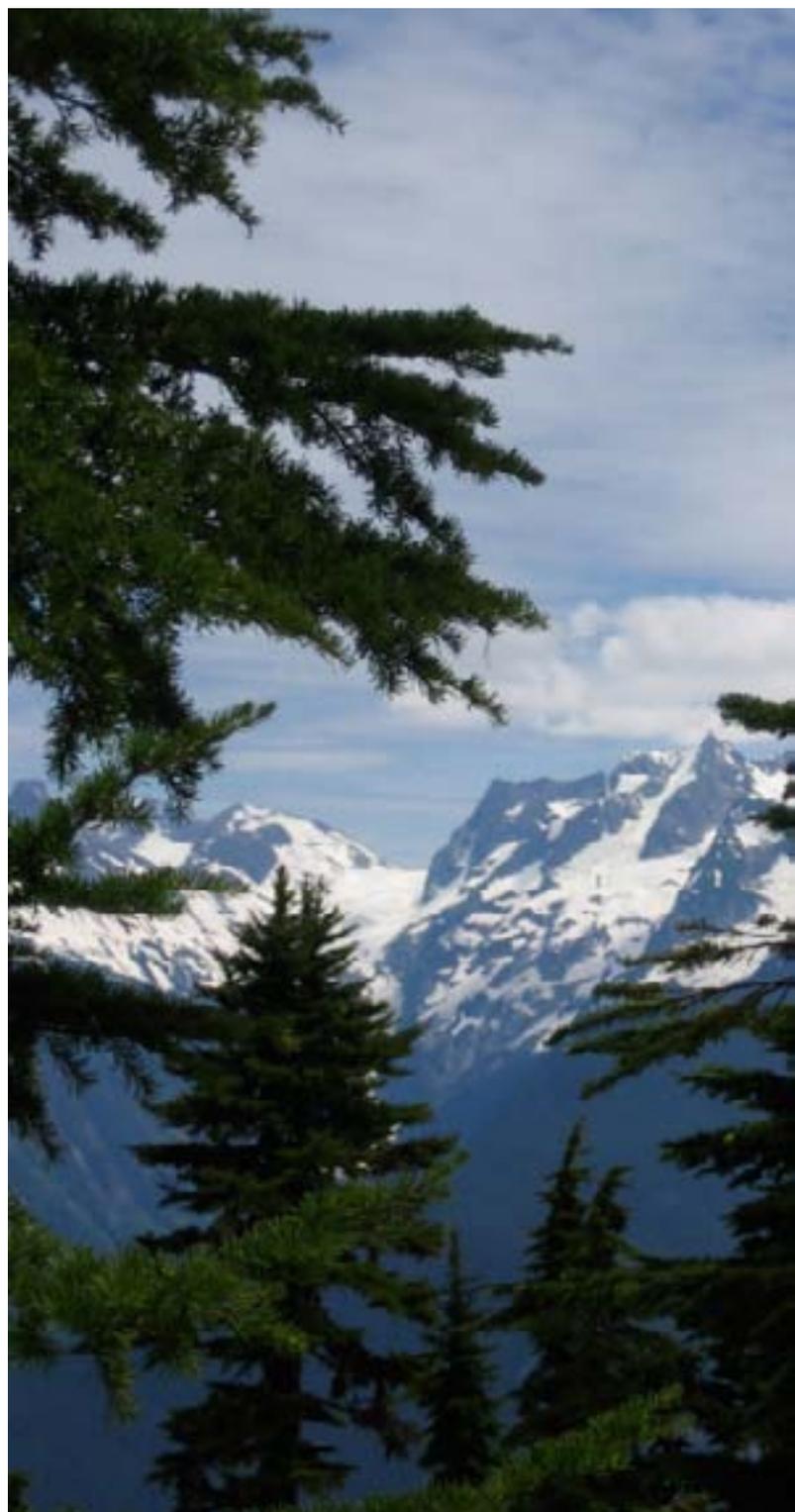


Photo credit: Abby Seadler, AGI



Geological Society of America North-Central Section Meeting



Fetzer Center, Western Michigan
University
Kalamazoo, Michigan
2–3 May 2013

Abstracts Deadline: 2/5/2013
Early Registration Deadline: 4/1/2013
<http://www.geosociety.org/Sections/nc/2013mtg/>

Geological Society of America Rocky Mountain Section Meeting



Western State College of Colorado
College Center
Gunnison, Colorado, USA
15–17 May 2013

Abstracts Deadline: 2/12/2013
Early Registration Deadline: 4/15/2013
<http://www.geosociety.org/Sections/rm/2013mtg/>

Geological Society of America Cordilleran Section Meeting



Radisson Hotel and Conference
Center
Fresno, California, USA
20–22 May 2013

Abstracts Deadline: 2/19/2013
Early Registration Deadline: 4/15/2013
<http://www.geosociety.org/Sections/cord/2013mtg/>

Roof of the World

Joint Scientific Meeting of the Geological Society of China
and The Geological Society of America

17–19 June 2013

Jinjiang Hotel, Chengdu, Sichuan Province, China

A Joint Scientific Meeting of the Geological Society of China and The Geological Society of America with cooperation from the GSA International Section

Please join us for the first joint conference between GSC and GSA. Conducted in English, the three-day conference will include post-meeting field trips investigating the Qinghai-Tibet Plateau, intra-continental deformation and mineral resources, and unique sites for the end-of-Permian mass extinctions.

Scientific Program Chairs

Prof. Dong Shuwen, Chinese Academy of Geological Sciences, Prof. J.G. Liou, Stanford University

Additional Organizers

Chinese Academy of Geological Sciences
Dept. of Land and Resources of Sichuan Province, China, Chengdu University of Science and Technology

Abstract deadline: 1 March 2013



www.geosociety.org/meetings/2013china/

IUSS Global Soil Carbon Conference

Madison, Wisconsin

June 3-6, 2013

The International Union of Soil Sciences Global Soil Carbon Conference will be held June 3-6 June in Madison, WI. The IUSS Global Soil Carbon Conference is the first IUSS interdivisional and intercommissional conference that focuses on soil Carbon in space and time, soil Carbon properties and processes, soil Carbon in relation to soil use and management, and the role of soil Carbon in sustaining society and the environment. Abstracts can now be submitted by the deadline of 1 February 2013: <http://iuss-c-conference.org/>

negative impacts to groundwater withdrawals and quality to the forefront. Drought conditions in the Buckeye State emphasize the importance of long-term water resource management—what about water reuse, recharge, drought mitigation? Since water usage changes can occur quickly, how can we be nimble enough to make appropriate adjustments with changing weather patterns? Several different entities are collecting groundwater-related data in the state—how can that data best be captured to create a reliable database of credible information for all to use while respecting privacy issues? How sustainable are our well fields? What about arsenic, methane, and radioactivity in groundwater and what should we be doing about unregulated types of constituents?

Call for abstracts:

While this forum will focus on those groundwater issues of most critical concern to those industry professionals working in Ohio, it welcomes participation by all who are concerned about or doing research related to the resource.

- » Abstracts are being sought in the following topic areas and need to be submitted online by 11:59 p.m. ET, January 19, 2013:
- » Hydraulic fracturing/shale gas development and groundwater protection
- » Water resource planning
- » Groundwater quality
- » Data collection, analysis, and utilization
- » Class II injection wells
- » Wellfield sustainability.

Ohio Groundwater Forum: Protecting and Managing Groundwater for the Future

Columbus, Ohio



June 19, 2013

Ohio is both a focal point and a microcosm for various groundwater issues. Shale gas development activities thrust potential

Deadline for abstracts:
June 4, 2013



Early registration deadline:
July 22, 2013

MEDGEO 2013
5th International Conference on Medical Geology

**The Natural Environment & Health:
*Hidden Dangers, Unlimited Opportunities***

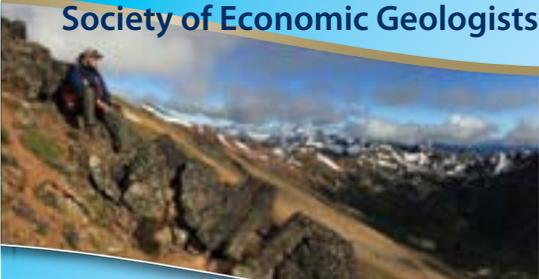
August 25-29, Hilton Crystal City Hotel, Arlington, VA






For additional information please visit:
http://rock.geosociety.org/GeoHealth/MEDGEO_2013/Welcome.html
or contact Robert Finkelman: medgeo2013@utdallas.edu

Whistler 2013: Geoscience for Discovery
Society of Economic Geologists and SEG Canada Foundation



September 24-27, 2013
Whistler, BC
www.seg2013.org




AAPG 2013 International Conference and Exhibition (ICE)

Cartagena, Colombia

September 8-11, 2013



Abstracts may now be submitted for the American Association of Petroleum Geologists 2013 International Conference and Exhibition (ICE) — Energy for Integration and Prosperity to be held in Cartagena, Columbia 8-11 September 2013.

AAPG, the AAPG Latin American Region and the Colombian Association of Petroleum Geologists will be hosting ICE; an international event that attracts over 2,000 attendees from 70 different countries. With the Latin America region experiencing an oil industry activity boom it has significantly increased exploration and production activities in the region making it a perfect place for geoscientists from around the world to actively participate in what promises to be a rich technical program.

Industry professionals and students are invited to submit abstracts that relate to any of the following themes:

Theme 1: Latin American Basins and Petroleum Systems

Theme 2: Unconventional Resources

Theme 3: Challenges in Heavy Oil

Theme 4: Mature Fields

Theme 5: Deep Water Exploration and Production

Theme 6: Environmental Geology

Special Session: History of Petroleum Geology (oral only)

You can submit abstracts online at <http://aapg2013ice.abstractcentral.com> through 18 January 2013. Sessions and formats (oral or poster) will be determined by the actual submittals. Acceptance notifications will go out in March 2013. For guidelines and more information please go to <http://www.aapg.org/cartagena2013/guidelines.cfm>

NGWA Conference on Groundwater in Fractured Rock and Sediments (#5017)

Burlington, Vermont

September 23-24, 2013



Groundwater problems in fractured media environments are among the most complex and challenging to characterize and remediate and such problems occur throughout the world. How do observations in individual boreholes relate to groundwater flow systems across a basin? What lessons have we learned from

previous work at thousands of contaminated sites and how does this relate to emerging issues such as new contaminants and unconventional gas development? How do we make the best use of 30 plus years of research? What innovative approaches are being developed and applied by private industry and government entities? Technological advances; advanced modeling techniques; scalability tools; regional, national, and international initiatives; and 3-D visualization provide a variety of options and resources today both to understand the fate and transport of contaminants, improved remedial actions and source water protection strategies.

Call for abstracts

The conference welcomes global participation and seeks abstracts in the following topic areas. Abstracts must be submitted online by 11:59 p.m. ET, January 31, 2013:

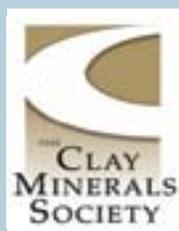
- » Advances in the understanding of fracture occurrence and the importance of fractures in groundwater flow systems
- » Aquitard characteristics and integrity assessment
- » Characterizing and remediating large dilute plumes in fractured media
- » Developing a consistent model by integrating data obtained at different scales of investigation
- » Diffusion and reaction processes in rock matrices
- » Lessons learned from both legacy and nonlegacy sites
- » Measuring mass flux/mass discharge and groundwater flow velocity in fractured media
- » Remediation in fractured rock environments - effectiveness and innovation
- » Risk assessment and vapor intrusion concerns in fractured rock environments
- » Surface water/groundwater interaction in fractured rock environments
- » The role of fractured media characterization in locating and designing natural gas wells to protect potable groundwater supplies
- » The state of the art in borehole geophysical tools and methods for site characterization
- » Understanding emerging contaminant transport and fate in groundwater systems
- » Visually depicting the fractured rock environment - using three-dimensional visualization

Submit your abstracts now: <http://ngwa.confex.com/ngwa/frc13/cfp.cgi>.

50TH 1963–2013 *Anniversary* OF THE CLAY MINERALS SOCIETY



**ANNUAL MEETING
OCTOBER 6–10, 2013
UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN**



[WWW.CLAYS.ORG/ANNUAL%20MEETING/
50TH_ANNUAL_MEETING_WEBSITE/](http://WWW.CLAYS.ORG/ANNUAL%20MEETING/50TH_ANNUAL_MEETING_WEBSITE/)



Association of Earth Science Editors (AESE) Annual Meeting

Tulsa, Oklahoma

October 10–13, 2013



Tentative dates for the Association of Earth Science Editors 47th Annual Meeting, Tulsa, Oklahoma. Watch for confirmed dates and details of this meeting in "America's Most Beautiful City," which was the "Oil Capital of the World" for several decades and the center of the development of petroleum geoscience.

Call for Proposals



2013 ANNUAL MEETING & EXPOSITION Celebrating Advances in Geoscience

Denver, Colorado, USA, 27–30 October
2013 Technical Sessions
Proposals due **15 Jan. 2013**

Share your knowledge, experience, and research, and draw from a myriad of geoscience experts by submitting a technical session proposal. Help mold what is sure to be a dynamic technical program at next year's 125th Anniversary Meeting in Denver.

2013 Short Courses
Proposals due **1 Feb. 2013**

Short courses make a great start to the annual meeting. Offer a short course to help your colleagues, peers, students, and K–12 teachers develop professional, teaching, and research skills at all levels, and be a part of the action. Questions? Contact Jennifer Nocerino, jnocerino@geosociety.org.

Help shape the 2013 Annual Meeting and be a part of the 125th Anniversary Celebration!

[www.geosociety.org/
meetings/2013/](http://www.geosociety.org/meetings/2013/)



Red Rocks Amphitheatre. Photo by Ron Ruhoff. Photo courtesy Denver Metro Convention & Visitors Bureau.

Mark Your Calendar

AIPG 50th Annual Meeting
October 23 - 26, 2013
Broomfield, Colorado

In addition to field trips to see incredibly fascinating geology, AIPG will be offering technical sessions focusing on issues of economic importance. Planned sessions include uranium resources, natural gas resources, petroleum development, water, drought issues, natural hazards, legal hurdles to development, and more.

Plan on attending!



American Institute of Professional Geologists
12000 Washington Street, Suite 285
Thornton, Colorado 80241-3134
303-412-6205 | aipg@aipg.org

www.aipg.org

The National Cave and Karst Management Symposium

Carlsbad, New Mexico

November 4-8, 2013



The National Cave and Karst Management Symposium (NCKMS) is now accepting abstracts for its next meeting, which will be held on 4-8 November 2013 at the National Cave and Karst Research Institute (NCKRI) in Carlsbad, New Mexico. This is the 20th of this internationally attended conference series. For details about the conference and to submit an abstract, go to <https://sites.google.com/site/nckms2013/home>.

Please note the following deadlines. They are a little earlier

than usual for NCKMS because by popular demand we plan to have the proceedings ready in time for distribution at the symposium, instead of after which has been the norm.

- » March 15, 2013: Abstract due
- » April 1, 2013: Authors notified of abstract acceptance
- » June 1, 2013: Draft manuscripts due
- » August 14, 2013: Authors provided with review and comments
- » September 9, 2013: Final papers due

Anyone needing financial assistance to attend NCKMS, especially students, are encouraged to apply for a George N. Huppert Scholarship. For information about the scholarship and how to apply, visit: <http://nckms.org/scholars.html>

On-line registration for the conference will be posted soon.

American Institute of Professional Geologists



Upcoming Events

March 19-20, 2013 - Austin, Texas

Shale-Gas Development and Water Issues Conference

Presented by AIPG and AGWT

April 10-11, 2013 - Canton, Ohio

Marcellus, Utica, and Point Pleasant Shale:

Energy Development and Enhancement by Hydraulic Fracturing

October 23-26, 2013 - AIPG 50th Anniversary Conference

Geology Serving Society: Energy Independence, Mineral and Water

Resources, and Geologic Education

Broomfield, Colorado

Visit our website at www.aipg.org

Watch for Registration, Sponsorship, and Exhibitor Information for all Events!

2014 Conference on Hypogene Cave Morphologies

February 2014

San Salvador Island, The Bahamas

The "Hypogene Cave Morphologies" conference will be held at the Gerace Research Centre (GRC) on San Salvador Island, The Bahamas, the first week of February, 2014. Exact dates are still to be determined. The main theme of the conference will be to examine and discuss the unique cave morphologies and speleogens associated with hypogene caves, from the scale of 100 km+ cave maps down to the centimeter wall-rock shapes and forms. Hypogene caves can be argued to represent a laminar flow regime that is quite different from the turbulent flow found in epigenic stream caves coupled to surface hydrology. Can these morphologies be uniquely characterized to identify hypogene caves? What effect do these laminar flow regimes have on geochemical dissolution models in hypogene settings? Do flank margin caves fall in a hypogene flow environment?

Initial plans call for an opening day, optional field trip to see two very large but easily accessible flank margin caves on Eleuthera Island that have a large suite of morphologies commonly associated with hypogene caves. The remainder of the conference will be held on San Salvador Island, with morning talk sessions, evening poster sessions, and afternoon field trips to see caves and karst. The geologic setting of time and space constraints will help illuminate possible mechanisms of cave formation.

The GRC is a field station (see www.geraceresearchcentre.com for more information about the field station; note the British spelling of "centre" in the URL). Registration will open in 2013. The registration fee, when established, will cover all meals and lodging at the GRC, as well as all San Salvador field trip expenses, field guide, etc. Participants will arrive by commercial air to San Salvador. The Eleuthera pre-conference field trip will fly Nassau to Eleuthera and then on to San Salvador for the start of the conference. Time will be made available to enjoy the sights and culture of San Salvador, including swimming and snorkeling on beautiful tropical beaches.

Space will be limited for this conference, and participation will initially be by invitation, opening to volunteered abstracts as lodging space allows (~50 people in two-to-a-room accommodation). Contact John Mylroie at: mylroie@geosci.msstate.edu for more information.



19 November 2012

GEOSCIENCE CURRENTS

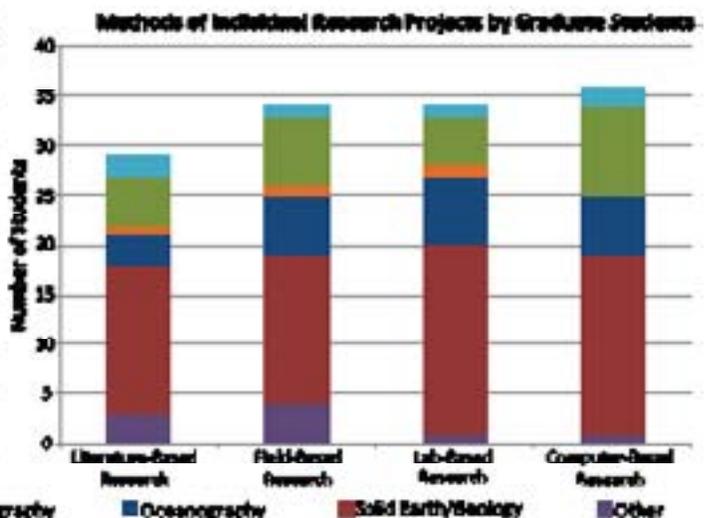
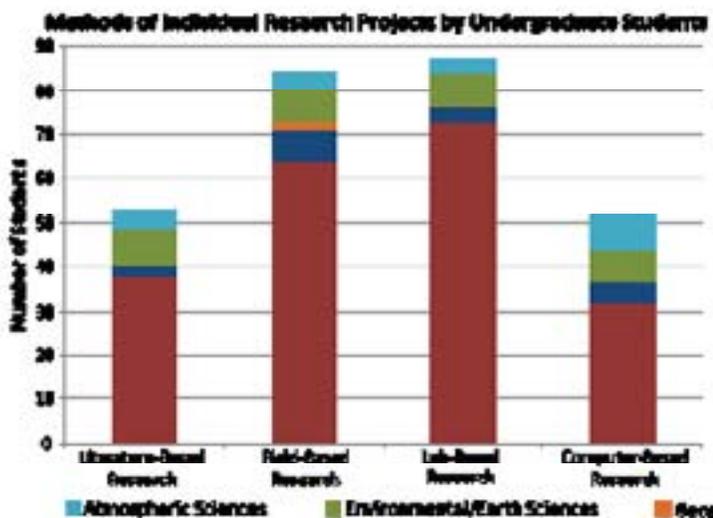
No. 66

AGI's National Geoscience Student Exit Survey, Spring 2012 Student Theses Research Methods

AGI's National Geoscience Student Exit Survey measures the relevant experiences in school and the immediate career plans upon graduation of recent geoscience degree recipients. In April 2012, AGI conducted the second pilot test of this survey received responses from 46 different departments. This Currents examines the results from two of the questions which inquire about the decision points for successful graduates pursuing a degree in the geosciences.

The survey participants were asked about their research experiences while in school. Out of the 204 survey participants, 279 said they have research experience, and 199 of them worked on individual research projects—145 undergraduates, 35 master's students, and 19 doctoral students. These 199 participants indicated the methodologies used to conduct their research (literature-based research, field-based research, lab-based research, and computer based research). Respondents could select multiple methodologies.

The majority of the undergraduate students worked in the field and in the lab (171 students), whereas the highest number of graduate students did computer-based research (36 students), although that number is only slightly higher than field-based (34 students) and lab-based research (34 students). Looking specifically at students studying solid earth/geology, there is a slightly higher number of undergraduate students participating in lab-based research (73 students) than in field-based research (64 students). Among the graduate students studying solid earth/geology, 19 students participated in lab-based research and 18 students participated in computer-based research, compared to the 15 students participating in field-based research and literature-based research.



- Carolyn E. Wilson