

Atlanta Geological Society Newsletter

**Next meeting of the Atlanta Geological Society is
October 26, 2010**

**Fernbank Museum of Natural History (Clifton Road)
Social begins at 6:30 pm – Meeting begins at 7:00 pm**

OCTOBER 2010

EVERYBODY ON THE SAME PAGE

Ben Bentkowski, Newsletter Editor

The first paragraph of our website proclaims the objective of providing an open forum for the exchange of ideas. To that end, I propose that the several Georgia professional geological societies work more closely together sharing information and meeting activities. As I think about the State's various geological societies¹, there are those whose strengths in one area might complement a short coming in another. For example, the AGS has historically not had a strong offering of field trips but that is the primary focus of the GGS. The joint meetings between the AGS and the AEG with the AEG's national speaker program have been a highlight of the last couple of years. The AIPG's training courses have been a great source of knowledge and CEUs. There may be others but, I'm just not as familiar with their activities.

I think a good first step would be to include information from these other organizations in our newsletter. Now that we are in the digital age, I find it is just as easy to send the newsletter to one person as it is to send it to 200 people. If we know about their meetings and they know about ours, I believe we all would benefit by having access to the various

Continued on Page 4

The October Meeting

Join us Tuesday, October 26, 2010 at the Fernbank Museum of Natural History, 760 Clifton Road NE, Atlanta GA. The pre meeting social starts at 6:30 pm and the meeting will start at 7 p.m. The speaker for the evening will be Dr. Hassan Babaie and his presentation is titled: Integration and Representation of Geologic Knowledge with Semantic Web Technologies.

Dr. Babaie was just recently elected as a 2010 Geologic Society of America Fellow "in recognition of distinguished contributions to the geosciences." Congratulations to Dr. Babaie on receiving this prestigious award. We are honored that he could take time from his busy schedule to present at the Society's meeting.

Look elsewhere in the newsletter for more information about Dr. Babaie and the topic of Semantic Web Technologies.

Integration and Representation of Geological Knowledge with Semantic Web Technologies

Babaie, Hassan A.

Department of Geosciences/Computer Science

Georgia State University, Atlanta, GA

Geoscientists investigate two types of Earth entities: continuants and occurrents. The continuants represent the static part of reality, and include material and immaterial substances, such as fault, lake, accretionary prism, rock, and porosity, which exist in their entirety (i.e., as a mereological whole) at any time instant of their spatio-temporal life history. Despite the continuous change in the object and relational properties (e.g., partitive and topological) of the continuants, these entities maintain their identity through time and space, as long as they exist. The occurrents, on the other hand, lead to the dynamics of the Earth, and include events, which signify the instantaneous beginning and end of state change in continuant objects through homogeneous processes that bring qualitative change to the continuants. For example, a mountain range (a continuant) forms during a specific tectonic event (e.g., Laramide) through a multitude of geological processes that occur within certain time intervals.

Geological knowledge is an open-end set of true statements about these Earth objects and processes. The knowledge grows by collecting and adding new, true knowledge fragments to the set as we learn more about the Earth. Our knowledge is gained through the analyses of data collected from individual Earth objects (e.g., Brevard Fault) or processes (Faulting along the Brevard Fault), which are instances of the more general types (universals, e.g., Fault and Faulting). The collected data are traditionally stored in databases, which despite the open-world reality, use a closed-world assumption and structure. Although useful for data storage, management, and query, the databases inherently cannot store the semantics of the data, i.e., knowledge. The joining of the tables in relational databases is based on artificial foreign keys that are unrelated to the relationships in reality. A knowledge base, on the other hand, is based on the open-world assumption, and allows storing and querying of both data and knowledge. A domain knowledge base is an instance of an ontology which formally and explicitly specifies the types of object and process entities, and their known relationships and the theories behind them. The Semantic Web technologies such as the Web Ontology Language (OWL), which are used to develop and instantiate the ontologies, have built-in inference rules that allow reasoning, i.e., deriving implicit knowledge from the explicitly asserted true RDF statements. In addition to databases, geoscientists need ontologies and related knowledge bases to represent, manage, and integrate their knowledge about the Earth.

Brief Biography of Dr. Hassan Babaie

Title: Associate Professor, Structural Geology and Geoinformatics

Affiliation: Department of Geosciences/Computer Sciences

Education

- Northwestern University, Evanston, IL: PhD, Structural Geology; 1984
- Northwestern University, Evanston, IL: MS, Geology; 1982
- University of Shiraz, Shiraz, Iran: BS, Geology, 1973

Current Research Interest and Projects:

1. *Brittle and ductile deformation in shear zones*

- *San Andreas Fault*
- *Basin and Range and hot-spot related normal fault systems in Montana and Idaho*

2. *Geoinformatics* – Develop OWL domain ontologies and XML markup languages:

- Develop static and process ontologies for fault, structural geology
 - Ontologies for San Andreas Fault Observatory at Depth (SAFOD) cores
 - Ontologies for the Nankai Trough, SW Japan
 - Ontologies for natural, experimental, and simulated rock deformation

Synergistic Professional Activities:

- **Editor-in-Chief:** *Earth Science Informatics* (ESIn) – A Springer journal
- **Chair:** *Geological Society of America, Geoinformatics Division*
- **2010 Geological Society of America Fellow**

A DIFFERENT PERIODIC TABLE

Check out this different arrangement of the periodic table by Dr. Bruce Railsback, UGA. It is billed as an “Earth Scientist Periodic Table of the Elements and Their Ions”. This link, <http://www.gly.uga.edu/railsback/PT.html>, shows this relatively new interpretation of the Periodic Table, explanatory text and several other interesting graphics.

AGS Members...The Professional Registration Committee Needs YOU...

If you are an AGS member and would like to contribute to the Professional Registration Committee by leading a lecture on one of the subjects listed below, then please contact me either by e-mail or at the monthly AGS meetings. The lecture should be for one hour followed by a Q&A session. We need different speakers for each workshop. Your volunteering to teach on one of these subjects is essential to the success of the Professional Registration Committee – we need more widespread participation by the AGS membership. Speakers can be compensated for expenses and will receive certificates to acknowledge their participation.

The following content domains are covered in the Georgia Professional Geologist exams:

- | | |
|---|---|
| A. General Geology | B. Mineralogy, Petrology, & Petrography |
| C. Sedimentology, Stratigraphy, & Paleontology | D. Economic Geology & Energy Resources |
| E. Structure, Tectonics, & Seismology | F. Hydrology & Environmental Geochemistry |
| G. Engineering Geology | |
| H. Quaternary Geology, Geomorphology, & Surficial Processes | |

We do not "teach the test" our aim is to review fundamental concepts of the earth sciences and acquaint candidates with industry specific information not easily obtainable from the literature. Please inform anyone who might be interested in becoming a professional geologist of our workshop. Please consider joining us even if you are not a P.G. candidate. The workshops are interesting and informative.

Ken Simonton, P.G., Chair
Professional Registration Committee

www.atlantageologicalsociety.org

EVERYBODY ON THE SAME PAGE (continued)

other topics and interaction with the other organizations. We would all need to adopt a 'No Fault' attendance policy as we all have different membership and dues rules.

I've only had a couple of informal discussions with our officers. We would need to formally reach out to the other organizations and their officers. But first, I would like some feedback from the AGS members. I unfortunately will be traveling on business on Tuesday and will not be able to be part of any discussion *this* Tuesday. But feedback by phone and/or email would be appreciated. It just seems to me that in a city with over 5 million people, we might generate some more geological society activity by sharing information and getting everybody on the same page; hopefully a page of the AGS newsletter.

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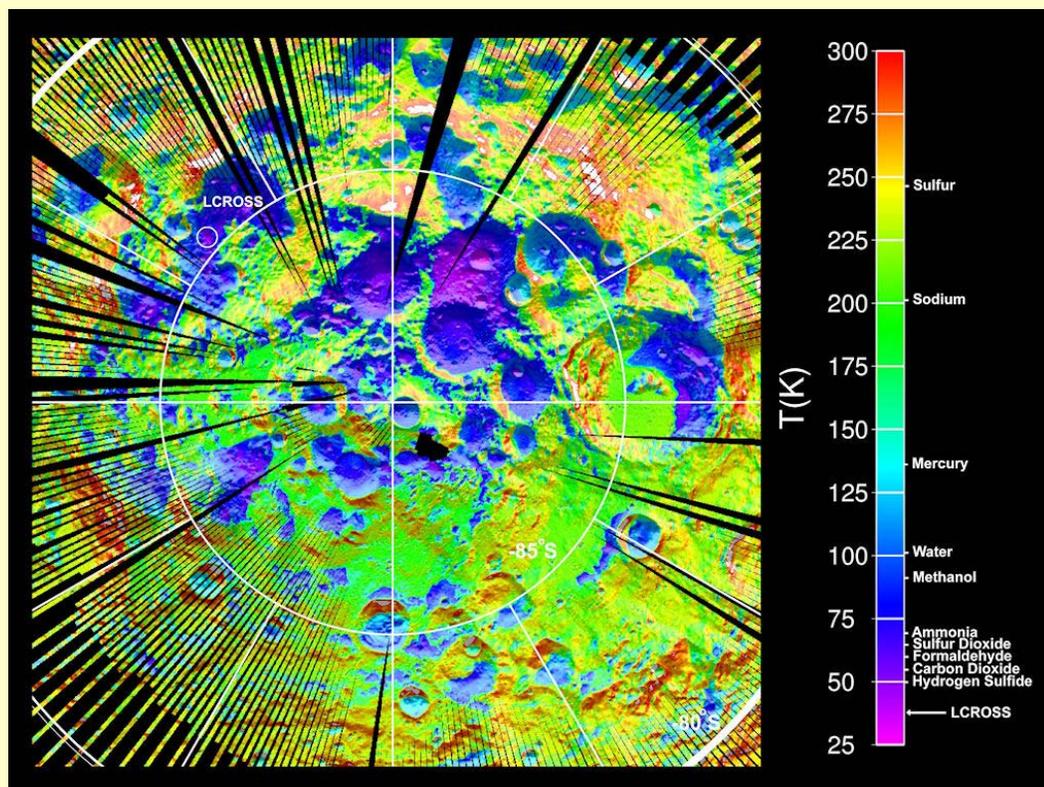
¹ AGS – Atlanta Geological Society, AIPG – American Institute of Professional Geologists, AEG – Association of Environmental and Engineering Geologists, Southeastern Section, GGS – Georgia Geological Society, GGWA – Georgia Groundwater Association, SME – Society of Mining, Metallurgy and Exploration, Georgia Chapter. Please let me know if I've left any group out.

This Month's BIG Geology News – Water on the Moon!

http://science.nasa.gov/science-news/science-at-nasa/2010/21oct_lcross2/

Nearly a year after announcing the discovery of water molecules on the moon, scientists have revealed new data uncovered by NASA's Lunar CRater Observation and Sensing Satellite, or LCROSS, and Lunar Reconnaissance Orbiter, or LRO—and it's more than just water. The missions found evidence that lunar soil within shadowy craters is rich in useful materials. Moreover, the moon appears to be chemically active and has a full-fledged water cycle. Scientists also confirmed that 'moon water' was in the form of mostly pure ice crystals in some places.

The twin impacts of LCROSS and a companion rocket stage in the moon's Cabeus crater on Oct. 9, 2009, lifted a plume of material that might not have seen direct sunlight for billions of years. As the plume traveled nearly 10 miles above the crater's rim, instruments aboard LCROSS and LRO made observations of the crater and debris and vapor clouds. After the impacts, grains of mostly pure water ice were lofted into the sunlight in the vacuum of space. In addition to water, the plume contained "volatiles." These are compounds that freeze in the cold lunar craters and vaporize easily when warmed by the sun. The suite of LCROSS and LRO instruments determined as much as 20 percent of the material kicked up by the LCROSS impact was volatiles, including methane, ammonia, hydrogen gas, carbon dioxide and carbon monoxide.



Left: A surface temperature map of the lunar South Pole made by LRO's Diviner Lunar Radiometer Experiment. The map contains several intensely cold impact craters that could trap water ice and other icy compounds commonly observed in comets. The approximate maximum temperatures at which these compounds would be frozen in place for more than a billion years are noted at right side of graphic.

The next Atlanta Geological Society PG Candidate Workshop will feature a presentation on engineering geology by Benjamin Black, P.G.

The class will be held the last Saturday of the month, October 30th, from 10:00 am to 12:00 pm at the Fernbank Science Center. The Science Center is located at 156 Heaton Park Drive, N.E. Atlanta, GA 30307, and is about a mile north of the Fernbank Science Museum off Ponce DeLeon. The meeting will be held in the Microscopy Lab in the main building of the Science Center. For more information about the Science Center go to <http://fsc.fernbank.edu/>.

The class will cover:

- Introduction Soil Mechanics and Strength Soil Testing (Laboratory and Field Methods),
- Rock Mechanics and Rock Mass Strength, Rock Testing (Laboratory and Field Methods),
- Geologic Hazards (Slope Stability, Earthquakes, etc.),
- Engineering Geological Mapping,
- Site Investigation, and
- Miscellaneous Topics (deep foundations, etc.) – time permitting.

Mr. Black works as geological engineer for Arcadis US, Inc. and has thirteen years of experience in hydrogeological analysis and geotechnical assessment and analysis. He has a B.S. in Geology from Eastern Michigan University, an M.S. in Geological Engineering from the University of Idaho, and a Certificate in Applied Geotechnics from the University of Idaho. Mr. Black is a registered Professional Geologist in Georgia, South Carolina, North Carolina, and Mississippi. He is experienced in a wide variety of geotechnical subsurface investigation methods, including geophysical surveys, geotechnical soil borings, and coring of various types of soft and hard rock. In particular, Mr. Black is experienced with the assessment and analysis of rock mass strength with application to slope stability and engineered structures.

Ben is experienced in shallow and deep foundation design including piles and drilled shafts, slope stability analysis and stabilization techniques, seepage analysis, excavation design and materials handling, tunnel design and construction, surveying, and ground reinforcing techniques. He has conducted slope stability analysis for open pit joint frequencies, selection of design sections, and other pertinent data. He developed a stability model and performed all calculations necessary to determine factor of safety and recommendations for slope stabilization for both planar and wedge failure modes.

Please forward this announcement to anyone that might be interested. Everyone is invited to attend; membership in the Atlanta Geological Society is not required, though everyone with an interest in geology is invited to join. Two Professional Development Hours will be offered for attendance.

If you have questions or need more information, please contact me at kws876@yahoo.com, or visit our website: <http://www.atlantageologicalsociety.org>.

See you there!

Ken Simonton, P.G.
Career Development/Professional Registration Committee
Atlanta Geological Society


FERNBANK MUSEUM
 of NATURAL HISTORY

Fernbank Museum of Natural History
Upcoming Public Programs and Events

(All programs require reservations, including free programs)

LOCATION:

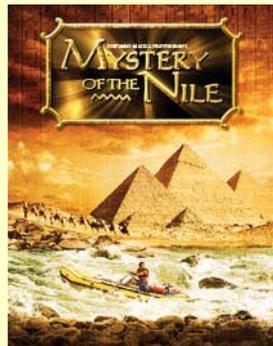
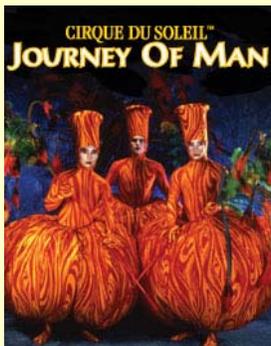
767 Clifton Rd, NE Atlanta, GA

404-929-6400 For tickets and details on exhibits, films, and events, please visit our website at www.fernbankmuseum.org

Follow us on Facebook or Twitter for the latest news and updates!

On Exhibit:

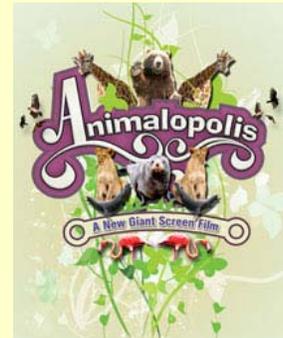
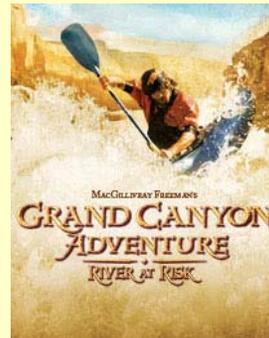
- *Entrance Plaza, featuring a family of Lophorhothon dinosaurs*
- *Martinis and IMAX: Friday evenings, 5:30 p.m. – 10 p.m. Cirque de Soleil: Journey of Man and Mystery of the Nile*


Now Showing in the Fernbank IMAX movie theater:

(Check our website for special screenings)

Current Daytime Schedule:

- *Grand Canyon Adventure: River at Risk*
- *Mystery of the Nile*
- *Animalopolis (limited showings on Saturdays, Sundays and holidays)*



Martinis & IMAX® is presented at the Fernbank Museum of Natural History every Friday evening, January through November; from 5:30 p.m. to 10 p.m. Enjoy no cover charge when you visit us between 5:30 p.m. to 6:30 p.m. This event includes a wine bar, where featured wines can be purchased by the glass and by the bottle. Dinner is also served in the Dining Room, where smaller parties can order chef-prepared dishes-from gourmet pizzas to prime entrées-and dine together in a more intimate and sophisticated setting. Desserts and coffee are available as well.

As always, a full cash bar is offered in the Great Hall where patrons can enjoy a lively atmosphere and musical performances by some of Atlanta's best jazz artists. Bands perform live from 6:30 p.m. to 10 p.m. IMAX® film tickets are \$10. For those who wish to enjoy the atmosphere of Martinis & IMAX® without attending a film presentation, there is a \$5 cover charge after 6:30 p.m. The cover charge is waived for members and patrons who purchase an IMAX® ticket. To purchase tickets in advance, call 404.929.6400.

Fernbank Museum of Natural History

767 Clifton Rd, NE Atlanta, GA 404-929-6400

Special Exhibits On View:

- *Water: H₂O=Life* (through January 9, 2011)
- *DeSoto's Footsteps: New Archaeological Evidence in Georgia* (through March 2011)

Upcoming Public Programs:

- **Spirits and Bones Festival.** Wednesday, October 27, 7 p.m. – 10 p.m.
- **Martinis and IMAX Fright Night.** Friday, October 29, 6:30 p.m. – Midnight.
- **Halloween Sleepover.** Saturday, October 30, 6 p.m. – 9:30 a.m. the following day. Advanced registration required.
- **Pirate Weekend.** Saturday, November 6, 10 a.m. – 2 p.m. and Sunday, November 7, Noon – 4 p.m. Free with membership or admission.
- **Ask a Scientist/Scout Day.** Saturday, November 13, 10 a.m. – 2 p.m. Special discounts for Scouts in uniform.

WATER



On View Through January 9, 2011

Get swept away in this new hands-on, family-friendly experience.

Look beneath the oceans, above the clouds and all around the world and discover the amazing things that water can do—from sustaining life here and now to shaping the peaks and canyons of tomorrow!

Explore an oversized interactive globe, experience immersive walk-through dioramas that mimic the effects of erosion and learn how some animals have adapted to deal with water challenges through live animal displays.

Follow water cycle from the air to the land to the sea and back again, and in doing so, shapes our planet—and nearly every aspect of our lives. Along the way, guests will learn how each of us can help conserve and protect this precious resource.

AGS Officers

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AGS 2010 Meeting Dates

Listed below are the planned meeting dates for 2010. Please mark your calendar and make plans to attend.

October 26 Dr. Hassan Babaie

November 23 TBD

December No Meeting - **Happy Holidays**

January 25 TBD

February 22 TBD

2010 Groundwater and Fractured Rock Virtual Conference (#5017)

NATIONAL GROUNDWATER ASSOCIATION

Join NGWA's first one-day virtual Groundwater and Fractured Rock Conference **October 27, 2010 • 8:45 a.m. to 4:30 p.m. ET**

Fractured rock is often considered the most challenging environment to characterize and remediate. This conference is being designed to provide a better understanding of that environment and to focus on tools and technologies that can make remediation more effective.

Conference advisers: Thomas P Ballestero, Ph.D., University of New Hampshire and Fred Paillet, Ph.D., University of Arkansas

[View the conference program schedule.](#)

Those who attend will:

- Gain insight into the latest groundwater and fractured rock issues
- Interact with groundwater professionals and regulators
- Acquire conference knowledge without the associated travel costs.

Education level : Introductory to advanced.

Fees : NGWA member — \$195 (per site)
Nonmember — \$295 (per site)

*Please note that the cost for this virtual conference is **per company location/site (i.e., per line hookup), not per person.** Whether there is one person at your office attending the conference — or 10 viewing on the same line hookup — you only pay the one fee.*

Register: [Register online](#) through our secure online registration system. **OR**

Register by phone by calling NGWA with your credit card information at 800 551.7379 or 614 898.7791. Customer service hours are Monday through Friday 8 a.m. until 5 p.m. (ET).

Registration closes Monday, **October 25, 2010, 5 p.m. ET.** No refunds will be issued after **October 18, 2010.**

This informational notice was provided for the benefit of the AGS membership, not as an endorsement.

Join the Atlanta Geological Society

Membership Application/Information Update Form

Annual membership dues for the Atlanta Geological Society are \$25 for professional membership, \$10 for students, and \$100 for corporate sponsorship (which includes up to 4 professional memberships). For further details, contact the AGS Treasurer:

Stacy Durden
 Phone: 770-617-1146
 Email: Stacy.Durden@gmail.com

Make checks payable to the "Atlanta Geological Society" and remit with the completed form to:

Atlanta Geological Society
 Stacy Durden, Treasurer
 2534 Centennial Commons View
 Acworth, GA 30102

Name: _____

Organization: _____

Address: _____

 Mailing Address: _____

Phone: (Work) _____ (Home) _____ (Cell) _____

Fax: _____

Email 1: _____

Email 2: _____

Ready to Serve the Society?

Remember that although we have officers and various standing committees, it is ultimately the membership that keeps the Atlanta Geological Society active and growing. We have a world of experience within our membership. Please consider volunteering. Your Atlanta Geological Society needs you.