

Atlanta Geological Society Newsletter

Next meeting of the Atlanta Geological Society is February 23, 2010 Fernbank Museum of Natural History (Clifton Road) Social begins at 6:30 pm – Meeting begins at 7:00 pm

February 2010

FEBRUARY HIGHLIGHTS

- Joint AGS/AEG meeting with 2010
 Jahns Distinguished Lecturer Dr.
 Paul Marinos
- 2010 Membership Renewal
- New Fernbank Exhibit Nature
 Unleashed
- The Relative Quiet of Atlanta
- February P. G. Class
- L. T. Gregg
- Society of Mining, Metallurgy and Exploration Meeting Notice

www.atlantageologicalsociety.org

DID YOU KNOW?

The word "hurricane" comes from *Huracan*, the god of big winds and evil spirits once worshiped by the Maya people of Central America.

Learn more at the Fernbank Website:

http://www.fernbankmuseum.org/exhibitions/special/NatureUnleashed/fun-facts.aspx

The February Meeting

Join us Tuesday, February 23, 2010 at the Fernbank Museum of Natural History, 760 Clifton Road NE, Atlanta GA. The pre meeting social starts with special fare at 6:30 pm and the meeting will start at 7 p.m. The speaker for evening will be Dr. Paul Marinos.



Dr. Marinos is the AEG 2010 Jahns Distinguished Lecturer and his talk is titled "Geology of Athens, Greece. A case of urban geology for land use, construction of major engineering structures, hazard assessment and sustainable development" The abstract for the talk and Dr. Marinos' biography are listed elsewhere in this newsletter.

February 2010 Meeting Presentation Title: Geology of Athens, Greece. A case of urban geology for land use, construction of major engineering structures, hazard assessment and sustainable development

Abstract: Unlike most capital cities, Athens does not have a history of continuous expansion; it is one characterized by the glory of the golden age of the 5th century BC, followed by decline and near annihilation and then resurgence in the 19th century when it became the capital of independent Greece. This was associated with increasing demands for expansion and the subsequent land use.

A brief review of the way that the ancient Athenians practiced geology in founding their city is presented. Particular attention is given to the building materials and the quarrying of marbles for monuments such as those on the Acropolis and the Parthenon which enjoys the reputation of being the most perfect Doric temple ever built (438BC). Water shortage due to climatic and hydrogeologic conditions imposed the 6th century BC Solonian rules for ground water management. To face groundwater scarcity Athenians constructed impressive aqueducts collecting water from the foothills of adjacent mountains with 20 km long tunnels, developed mainly during roman times (c 150AC), draining the surrounding poor aquifers.

The lecture follows the generic outline of the "Cities of the World" series of AEG. The geological model of the city is defined based on the geologic history and evolution. The alpine series of a flysch type slightly metamorphosed formation is the main bed rock of central Athens, named "the Athens schist". This is a highly heterogeneous folded and sheared formation providing weak rock masses. In the surroundings of the city post tectonic neogene, mainly marly, and quaternary deposits are developed. This development is modelled by a neotectonic structure with its activity to be demonstrated by the recent 1999 earthquake. The engineering geological Paul Marinos – 2010 Jahns Distinguished Lecturer and geotechnical data have been stored and processed through a relational database system, developed by the Geotechnical Division of the School of Civil Engineering of the National Technical University of Athens, providing information for the engineering behavior of ground in all parts of the city.

The geologic constraints include the geologic aspects of natural risks that may be present in the metropolitan area: ground instability where applicable, earthquake induced geologic effects such as ground motion amplification or liquefiable soils and erosion processes with solid transport risk from the adjacent mountains. Erosion risk maps were prepared by processing lithologic, geomorphologic, hydrologic, and hydrogeologic data through GIS. These maps are most useful in the case of land management after wildfires. The ground zoning for seismic hazards was based on the ground categories provided by the Greek Seismic Code, taking into account basic engineering geological characteristics of soils such as lithology, thickness, density and consistency.

February 2010 Meeting Presentation Title: Geology of Athens, Greece. A case of urban geology for land use, construction of major engineering structures, hazard assessment and sustainable development

Abstract Continued:

Resources such us building material, quarrying and environmental constraints are discussed. The hydrogeologic model is presented. The water supply of greater Athens is secured from a system of dams, some as far as 200km far from the city. A brief geological account is given on the weak foundations and the water tightness of these dams. Management of solid wastes and the choice of appropriate site for landfills is a priority issue at present. A site specific assessment of ground conditions, using rock mass classification was applied successfully for the metro works of Athens. The method considers the rock mass competence for boring on the basis of criteria related to lithology, tectonic deformation (fracturing-folding/shearing), weathering and rock mass classification rating as well as the geometrical-structural position around the tunnel and ground water criteria. Experiences from this construction and how weak zones in the "Athens' schist" were crossed by the boring machines, either rock shielded or an earth pressure balanced TBMs, are highlighted.

In conclusion the various ways in which the citizens of Athens are made aware of the geological conditions of their city are discussed.

Dr. Paul Marinos Biographical Sketch

Dr Paul Marinos has been named the 2010 Jahns Distinguished Lecturer. The Association of Environmental & Engineering Geologists (AEG) and the Engineering Geology Division of the Geological Society of America (GSA) jointly established the Richard H. Jahns Distinguished Lectureship in 1988 to commemorate Jahns and to promote student awareness of engineering geology trough a series of lectures offered at various locations around the country. Richard H. Jahns (1915 – 1983) was an engineering geologist who had a diverse and distinguished career in academia, consulting and government. Dr Paul Marinos received a Mining Engineering degree from the School of Mines of the National Technical University of Athens, Greece in 1966, a postgraduate degree in Applied Geology from the University of Grenoble, France, and his Doctorate in Engineering Geology from the same University in 1969. He worked for French and Greek design and construction companies until 1977 and then was elected as Professor at Democritus University in Northern Greece.

(Continued on Page 7)

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

FERNBANK FRIDAY NIGHT

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.

AGS PROFESSIONAL GEOLOGIST WORKSHOP February 27, 2010

The next Atlanta Geological Society Professional Geologist Workshop will be held Saturday, February 27, 2010 from 10:00 am to 12:00 pm at the Fernbank Science Center. The Fernbank Science Center is located at 156 Heaton Park Drive, Decatur, Ga.

The subject of the workshop will be groundwater hydrology. The presenter will be Dr. James Kennedy, PhD, P.G. Dr. Kennedy is the State Geologist of Georgia and holds B.S. and M.S. degrees in physics and geophysical sciences from Georgia Institute of Technology and a Ph.D. in geology from Texas A&M University where he did research on reclaimed lignite mines. As State Geologist, Dr. Kennedy has worked on the Coastal Sound Science Initiative to manage salt-water intrusion into the Upper Floridan aquifer, permitting of coastal groundwater supply wells, and the State Water Plan. He also has provided expert testimony at the Office of State Administrative Hearings in support of landfill, quarry, and water withdrawal permits issued by the Georgia Environmental Protection Division. Prior to joining the EPD, Dr. Kennedy worked as a consultant and conducted engineering geology, groundwater supply, and environmental remediation projects in various areas of the United States and Europe.

Please forward this message to anyone interested in becoming a Georgia Registered Professional Geologist, or anyone who might be interested in the topic. Two Professional Development Hours are available for attendees of the class. The classes are open to all, membership in the AGS is not required, but for \$25 per year (\$10 for students) it is quite a bargain. Please consider joining.

The class will be held the last Saturday of the month, February 27th, from 10:00 am to 12:00 pm at the Fernbank Science Center, located at 156 Heaton Park Drive, N.E. Atlanta, GA 30307, phone: 678-874-7102. The Science Center is about a mile north of the Fernbank Science Museum off Ponce DeLeon. The class will be held in the Bird classroom in the annex behind the main building near the forest gate. For more information about the Science Center go to http://fsc.fernbank.edu/.

If you have any questions, you can contact me at kws876@yahoo.com. See you there!

Ken Simonton, P.G. AGS Career Development Committee

Fernbank Museum of Natural History

Upcoming Public Programs and Events

(All programs require reservations, including free programs)

Fernbank Museum of Natural History

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

On Exhibit:

- Entrance Plaza, featuring a family of Lophorhothon dinosaurs
- Nature Unleashed: Inside Natural Disasters (through May 2, 2010).

Discover the science behind the forces that make the Earth shake, rattle and roll in Fernbank's newest special exhibition. Learn how—on a planet fueled by heat—tornadoes, hurricanes, volcanoes and earthquakes are simply signs that the engine is running.

Now Showing in the Fernbank IMAX movie theater:

(Check our website for special screenings)



Wild Ocean



- Forces of Nature
- Martinis and IMAX: Friday evenings,
 5:30 p.m. 10 p.m. with the Double
 Feature: Van Gogh, Brush With
 Genius and The Old Man and the Sea
 (Through March 26, 2010)

Upcoming Public Programs:

- Weekends in the Naturalist Center. Animal encounters, children's activities, outdoor walks and more. Check for day's activities upon arrival. Included with Museum admission; free for members.
- Storytelling. Saturday, March 13 at Noon. Included with Museum admission; free for members.
- **Kepulihan: Stories from the Tsunami,** Special Film Screening and Q&A with filmmaker David Barnhart. Sunday, March 21 at 3:30 p.m. Included with Museum admission; free for members. Reservations required at 404.929.6400.
- **Dinosaur Egg Hunt.** Saturday, April 3, 10 a.m. Noon. Included with Museum membership or admission.

Biographical Sketch Continued Dr. Paul Marinos

Since 1988 Dr. Marinos has been Professor of Engineering Geology in the School of Civil Engineering in the National Technical University of Athens and has served as head of the geotechnical Section of the School for several years. From 2001 to 2004 and from 2006 to 2008 he was the Director of a Graduate Course in Tunneling and Underground Construction. He was a visiting Professor in the Geology Department of the University of Grenoble (1987) and of the School of Mines in Paris (2003).

Dr. Marinos is a member of AEG and GSA and fellow of the Geological Society of London. He is a past President of the International Association of Engineering Geology and the Environment (IAEG), immediate past president of the Geological Society of Greece and honorary member of the International Association of Hydrogeologists (IAH). Dr Paul Marinos has received several awards, including the Hans Cloos medal of IAEG, and the Andre Dumont medal of the Geological Society of Belgium. He was selected for the presentation of named lectures, including the 6th Glossop Lecture in London (2002), the 19th Rocha Lecture in Lisbon (2002), the 33rd Cross Canada Lectures Tour (2005), and the Rock Mechanics annual Lecture in Madrid (2006).

Dr. Marinos and his team conduct research on a variety of applications of geology to engineering, mainly rock mass characterization, weak rock properties and behavior, with special emphasis to tunnel design. His work also covers landslides, dam geology, and engineering in karstic terrain. His other significant interest is the protection of historic monuments and archeological sites. Dr. Marinos has authored or co-authored over 300 papers in journals or major conference proceedings. He was a key or invited lecturer in more than 40 conferences or special events. He has given lectures to University Courses or Workshops, among them the Federal Technical University (EPFL) in Lausanne, Switzerland, the Polytecnico of Turin, Italy, the University of Durham, U.K., the University of Coimbra, Portugal, the University of Kobe, Japan, the Black Sea University Romania, the Aristotle University of Thessalonica, Greece, and the Griffiths University, Australia. He has edited proceedings published by international publishers. Dr. Marinos is a member of the Editorial Board of a number of prominent journals as "Engineering Geology", "Bulletin of the International Association of Geology", "Landslides", "Environmental Geology", "Rock Mechanics" and from 2009 "Environmental and Engineering Geosciences".

Dr. Paul Marinos has extensive industrial experience having served as consultant, independent reviewer and member of consulting boards or panel of experts on major civil engineering projects in Greece, France, India, Iran, Jordan, Morocco, Portugal, Saudi Arabia, South East Asia, Spain, Sweden, and Turkey.

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.

February 23: Dr. Paul Marinos; Geology of Athens Greece

March 30: Poster Session

April 27: Speaker TBD

May 25: Speaker TBD

June 29: Annual Social

AGS Committees

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The Relative Quiet of Atlanta

A fair share of the news today deals with dramatic examples of natural forces and their impact on mankind. With the recent earthquake still on the global consciousness, only now is life in Haiti transitioning from emergency response to recovery. Our own Fernbank Museum has recently opened a major exhibit titled "Nature Unleashed" which explores the science behind these events (runs through May 2, 2010). As dramatic and interesting at this topic is Atlanta is not so much at risk from such events. I have joked with my wife for years that Atlanta is a relative safe haven from natural and geologic disasters.

That's not to say that we don't have some problems. We all remember the recent three inch snowfall. Many snowmen were built but in about 24 hours things were about back to normal. But, we did *not* get 30+ inches ands we did *not* get shut down for nearly a week like Washington and Baltimore.

We do get some storms here. Just now, the glass is being replaced in the Westin Peachtree Tower from the Atlanta tornado two years ago. But 11 years ago my wife's aunt and uncle were three houses away from complete destruction. A F5 tornado came through Moore, OK destroying 1750 homes and damaging 6500 more. This storm was part of a single day 66 tornado outbreak and set a new wind speed record of 301 mph. Even the hurricanes, so big and terrible on the Gulf coast, loose much of their punch by the time they track up through north Georgia. In fact, I remember during the recent drought talk of wishing for a hurricane to fill up the lakes.

As for tectonic activity, life is pretty quiet on the trailing edge of a passive continental margin. Sure we get the occasional earthquake but the USGS website lists only eleven earthquakes in Georgia between 1990 and 2005 and none in greater Atlanta. Why, east of Los Angeles there have been 204 earthquakes in the last week alone. Just think of how life would be if Atlanta had 204 earthquakes a week. And as for volcanoes, I'm glad Stone Mountain long ago cooled off and will not blow its top. I'd be much more concerned if we were like Seattle with Mount Rainer a short distance away or even worse like Naples with still smoldering Mount Vesuvius literally just next door.

Elsewhere in the newsletter is a link to a recent landslide video. Just last Sunday there were news reports from Madeira (off the northwest coast of Africa) of 40 fatalities in overnight landslides. It is quite dramatic to see whole hillsides crumble away and entire neighborhoods destroyed in minutes.

With regards to natural and geologic hazards, it is good to live in the relative quiet of Atlanta. It does make for an interesting trip to the museum or dramatic television coverage. I for one am glad to <u>not</u> live where the hills and mountains are still rising, vegetation is burned off by firestorms and earthquakes trigger landslides of soils saturated by winter rains.

Ben Bentkowski Newsletter Editor See additional information on Page 12

Society of Mining, Metallurgy and Exploration Georgia Section Meeting Notice

A meeting of SME Georgia Section will be held on March 18, 2010 in the University Banquet Room (Presidential Dining Room) at Georgia College & State University in Milledgeville, Georgia.

Abstract: Serpentinized ultramafic rocks are magnesium rich and for this reason are being evaluated as potential source rock material for use in carbon-dioxide sequestration efforts. Serpentinized ultramafic rocks are also typically magnetite rich and hence can produce distinct magnetic anomalies. Researchers at the U.S. Geological Survey and Columbia University have collaborated to produce a national-scale map of magnesium-rich ultramafic rocks within the United States. We use the newly compiled geologic data in combination with airborne magnetic surveys over parts of the Coast Range and Sierra Nevada Foothills ultramafic belts in northern California to illustrate how the magnetic data can be used to extend the mapping of the ultramafic rocks into the shallow subsurface and to identify potentially unmapped ultramafic rock. The geophysical data can provide three-dimensional information on the geometry, lateral extent, thickness, and volume of ultramafic rock that occurs in the shallowly buried subsurface to minable depths. Results contribute to a first approximation of accessible rock material for mineral sequestration. Airborne magnetic surveys exist for the United States and, consequently, we believe this study demonstrates an adaptable approach that can be used to map the surface and shallow subsurface extent of ultramafic rocks in other parts of the country.

About the Speaker: Anne is a Research Geophysicist with the U.S. Geological Survey in Denver, Colorado. She has worked with the USGS for over 20 years with a research focus on analyses of airborne magnetic and electromagnetic data for a wide range of applications. She has experience in development, application, and interpretation of geophysical data for hydrologic and geologic studies, experience with statistical approaches as a means to integrate geoscience information for resource assessments, and in the analyses of radioactive and magnetic minerals related to human health impacts. She regularly participates on multidisciplinary teams and is currently contributing to a project to explore mineral carbonation as a means to sequester carbon dioxide in ultramafic rocks.

Location: The Presidential Dining Room is on the upper floor of the Maxwell Student Union located at corner of N. Clarke Street and W. Hancock Street on the campus of Georgia College & State University. The entrance is on the Hancock St. side of the building. See http://www.gcsu.edu/about/campusmap/ for a GC&SU campus map.

For registration and additional information click on this PDF.

L. T. Gregg's Passing

Lawrence Terrell Gregg, known to many as "L.T.", passed away on February 8, 2010 in Atlanta, GA at the age of 73. L.T. was born on May 17, 1936 in Fort Worth TX. He graduated from Texas A&M with dual B.S. degrees in geology and geophysics, where he became a lifetime Aggie fan. L.T. had a remarkable 50 year career in environmental, geophysical, geotechnical, and mining exploration consulting, culminating as an environmental department manager and senior consultant at QORE, Inc. for the last 24 years. He was a registered professional geologist in several southeastern states, and was one of a small number of members of both the American Institute of Mineral Appraisers and a Certified Mineral Appraiser.

L.T. was regarded as a brilliant thinker, a consummate professional, and was always on the lookout for an adventure, both in his career and as a world traveler.

L.T. was blessed with a loving family, and is survived by his wife, Catherine Broussard Gregg, of Atlanta; his younger sister, Mavis Crawford, of Plano, TX; his oldest son, Davis Gregg & wife Maryann, and his four children Robyn Schellenberg, Julie Johnson, Ricky, and Alfonso, all of San Diego, CA; his second son, Thomas Gregg & wife Kathy, and his four children; Amy, Erika, Dana, and Lane, and his great-grandson Brayden Strickland, all of San Diego, CA; his third son, Robert Gregg & wife Karina, and his son Lucas, all of San Diego, CA, and; his fourth son, Richard Gregg & wife Lori Sue, of Boulder Creek, CA. In lieu of flowers, donations may be made to Hospice Atlanta.

MEMBERSHIP RENEWAL

Now is the time to renew your Atlanta Geological Society membership. Membership operates on a calendar basis and 2010 dues are due. This month's program with the Jahns Distinguished Lecturer is one of the many benefits of membership. Please take a few moments to seek out Stacy Durden, our new treasurer and pay your 2010 dues. She will be at the meeting February 23 or you may use the membership form on page 13. It is with <u>your</u> support that we can keep the Atlanta Geologic Society strong and growing.

Ben Bentkowski, Membership Chairman

The Relative Quiet of Atlanta continued:

Former pickup truck after the Moore Tornado 1999



This link is a video of a landslide in Southern Italy where the hills have been loosened by winter rains.

 $\underline{http://control.newsinc.com/Home/VideoPlayer/?freewheel=69016\&sitesection=ndnsubss\&VID=7\\ \underline{2676}$

Ben Bentkowski Newsletter Editor

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: | | | |
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| Mailing Address: | | | |
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| 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.