

HGS Bulletin

Volume 51 Number 2

Houston Geological Society

October 2008

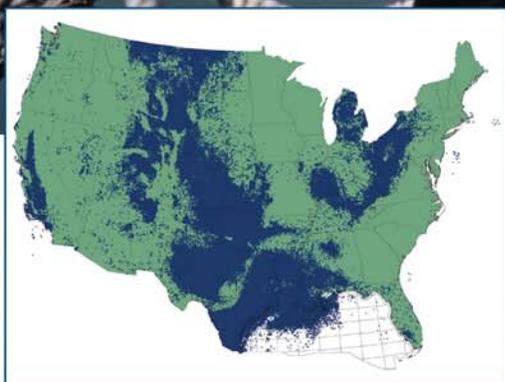
An aerial photograph of a river delta system, likely the Mississippi River delta. The image shows a complex network of channels and distributaries branching out from a main river into a large body of water. The land is green, and the water is a mix of light blue and white, indicating sediment transport. The overall scene is a vast, intricate landscape of water and land.

**EARLY PALEOGENE
ISOLATION OF THE
GULF OF MEXICO
FROM THE WORLD
OCEANS; DRAWDOWN
AND REFILL
PAGE 13**

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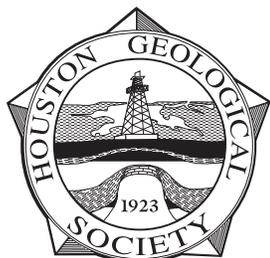
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The Bulletin

Houston Geological Society

Volume 51, Number 2

October 2008

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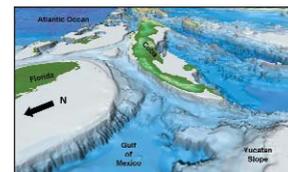
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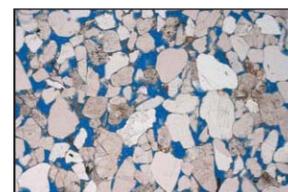
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About the Cover: Mississippi River Delta: Turbid waters spill out into the Gulf of Mexico where their suspended sediment is deposited to form the Mississippi River Delta. Like the webbing on a duck's foot, marshes and mudflats prevail between the shipping channels that have been cut into the delta. *Courtesy of the U.S. Department of the Interior and the U.S. Geological Survey. Our Earth as Art (<http://earthasart.gsfc.nasa.gov/mississippi.html>)*
 NASA Landsat 7 satellite image taken 5/24/2001 by ASTER.

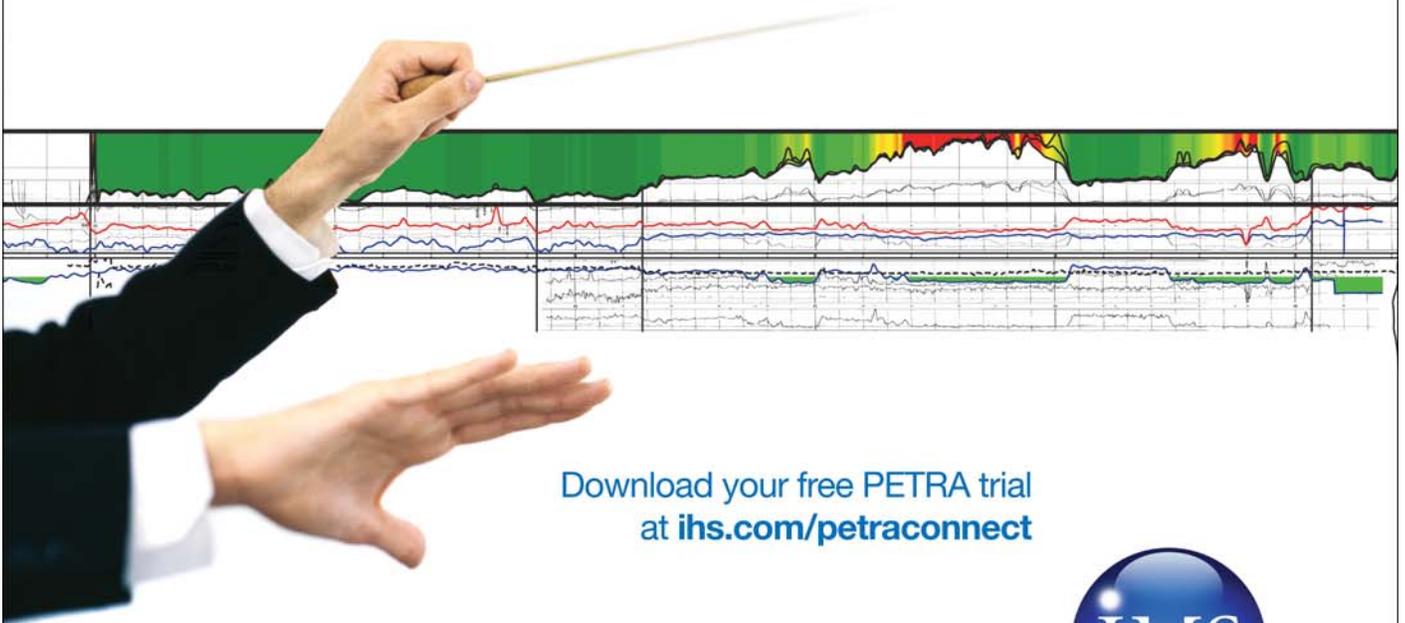
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Your membership expired June 30, 2008



Annual dues are only \$24.00
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Check your email for a reminder notice and renew online at www.hgs.org

Alternately, you may fill out this form and return with your remittance—include your CURRENT EMAIL (important)

Full-time students enrolled in a qualified geology program may be eligible to have their \$12.00 membership fee subsidized; details will be available on the HGS website soon.

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**FYI
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Kara Bennett

A World of Technical Programs and the New High School Earth Science Curriculum

After months of planning, the GCAGS/GSA Joint meeting has arrived. I encourage you to attend this unique meeting, which takes place at the George R. Brown Convention center here in Houston October 5-9. If you haven't yet registered, be sure to register as a GCAGS member, which you are if you are a member of HGS. With the joint meeting, we have an opportunity to attend the customary 2 days of GCAGS talks or the complete GCAGS and GSA technical programs. GSA expects a large number of student participants, and I hope that each one of you will make an effort to introduce yourself to at least one student at the meeting. These young people are the future of our industry, and any encouragement we can offer as future geoscientists will be good for both ourselves and our country's future.

Congratulations to the International Explorationists' committee for putting on the very successful Africa conference in September! Al Danforth and Ian Poyntz put together a superb technical program for this well-attended meeting, which was notable as not only one of the premier worldwide technical meetings focusing on Africa, but also for showcasing new technologies such as 3D beam migration and practical application of GIS to understanding geology. Committee members John Dombrowski, Tarek Ghazi, Martin Cassidy and Dave Schultz worked hard to bring the meeting to fruition, and our thanks also go to Fugro for sponsoring the meeting and providing CDs of the proceedings. A job well done!

I am looking forward to a great slate of technical talks this month, ranging from the Paleogene drawdown of the Gulf of Mexico to porosity in eolian reservoirs in Africa to shale fracturing to a review of the Marcellus and Haynesville Shales. Topping the month off with our short course, "Exploration Risk for Senior Management," and we have a very busy month.

Bring your family to the Annual Family Energy Festival at the Museum of Natural Science Oct 11, and plan to make a trip to the beach at Galveston for the Earth Science Week field trip. Geoscientists new to the industry are invited to Geoscience Day October 23, where they can learn about the life of an oil field from birth to retirement.

If you haven't renewed your HGS membership for this year, this is the last issue of the Bulletin you will receive. Every year, 500-800 members don't renew; most of them simply forget. The HGS board is debating ways to make renewal easier. One option is to allow you to choose to automatically renew each year; another is to provide a way to renew for multiple years at one time. I invite comments and ideas from all of you for making this process easier. HGS membership is one of the best bargains you are likely to find. At \$24 per year, our dues remain extremely low compared to other professional societies, and membership provides many benefits, including reduced prices for technical and social events and the monthly *Bulletin*, as well as abundant opportunities to network through volunteering.

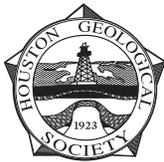
We are also looking to expand our membership through new member acquisition. This is the responsibility of the Membership Growth committee, currently headed by Linda Sternbach. Membership Growth is key to the survival of the HGS, as we need to bring in the next generation of geoscientists in order to continue the substantial networking and technical opportunities that HGS provides. I urge you to ask your colleagues if they are HGS members and sponsor their membership if they are not. It continually surprises me how many times I've asked someone I've known for years if they are an

HGS member, and their response is, "No, but I'd like to be." I have been gratified to see many new faces (and a lot less gray hair) at our activities this year, but we need to actively recruit to maintain our society as the current generation begins to reach retirement age.

The HGS has worked hard to support the addition of a required year of earth science in the Texas public school system. The Texas Legislature passed the requirement, and the Texas State school board has been developing the curriculum of the course. Board Member Alison Henning has been part of the curriculum development committee. She reports that the course curriculum is completed and is both thorough and accurate. The curriculum will be put out for public comment this fall. It is important that, as geoscientists and parents, we provide input to support the

The HGS has worked hard to support the addition of a required year of earth science in the Texas public school system.

From the President continued on page 9



The Houston Geological Society Continuing Education Committee Presents

An Overview of Exploration Risk Analysis for Senior Management

This seminar synthesizes the key concepts and applications of risk analysis (RA) for the upper echelons of your organization, regardless of their disciplines, to illustrate exploration as a profitable long-term business.

The seminar identifies key management issues, common misconceptions and pitfalls (as well as their consequences), and the inherent power of systematic RA methodology to design and enhance the predictability of portfolios which optimize corporate goals. It highlights the critical management tasks necessary to cause progressive improvement in exploration performance and addresses concerns about the constraints on management decision-making imposed by systematic RA procedures.

Because the course integrates fundamental topics such as Uncertainty, Reserves Estimates, Chance of Success Predictions, Economic Measures, Portfolio Management, Profitability Forecasts, and Performance Tracking, we strongly encourage the participation of senior decision-makers with diverse backgrounds, such as Geoscience, Engineering, and Finance.

Course Outline

1. Risk Analysis: What and Why
2. Statistics: The Language of Uncertainty
3. Coping with Uncertainty and Its Consequences
4. Prospect Reserves: The Size of the Prize
5. Chance of Prospect Success
6. Economic Measures and Consequences
7. Managing Exploration by Managing the Portfolio
8. Choosing New Theaters: Play Analysis
9. Acquiring Petroleum Rights: Methods and Consequences
10. Performance Tracking: The Simple Secret Essential Management Role in RA Implementation

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An Overview of Exploration Risk Analysis for Senior Management
(1 Day)

This seminar synthesizes the key concepts and applications of risk analysis (RA) for the upper echelons of your organization, regardless of their disciplines, to illustrate exploration as a profitable long-term business.

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Course Outline

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4. Prospect Reserves: The Size of the Prize
5. Chance of Prospect Success
6. Economic Measures and Consequences
7. Managing Exploration by Managing the Portfolio
8. Choosing New Theaters: Play Analysis
9. Acquiring Petroleum Rights: Methods and Consequences
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Date: Thursday October 30, 2008

Time: 09:00am – 04:00pm

Location: Houston Research Center, 11611 West Little York Road, Houston, Texas 77041

Please make your reservations on-line through the Houston Geological Society website at www.hgs.org

A Certificate of Continuing Education will be provided for this seminar.

For more information about this event, contact Ken Schwartz at kenschwartz@mail.com or 281-690-0995.



Michael Forlenza, PG
hgs.forlenza@gmail.com

Stalking the Wild Beast: The Rule of Capture in Texas

Modern geologists may not think of underground fluids, such as oil, gas, and groundwater, as “occult and obscure.” But until relatively recent times, this is how these subsurface resources were viewed by the courts and legislature. For centuries, underground fluids in Texas and throughout the United States were thought of as *ferae naturae*, that is, free in nature like a wild beast or a feral animal, and subject to the “Rule of Capture.”

The rule of capture is founded in English common law and states that the first person to “capture” the resource owns that resource. A wild beast, such as a deer, a turkey, or a bear, which roams across the ground surface, is no one’s property until it is captured, then becoming the property of the person who captured it. Just as there is no owner for the wild beast that wanders freely across property lines, under the rule of capture, no one owns oil and gas underground because it is considered fugacious, evanescent, and fleeting. Only when the wild beast is trapped, or the oil is recovered and pumped into a container, is it owned.

Possession of the land, therefore, is not necessarily possession of the underlying oil, gas, or groundwater. If an adjoining, or even a distant, owner, drills on his own land, and taps into a gas reservoir that underlies your property, the gas that comes to his well and under his control is no longer yours, but his. The rule of capture does not give a property owner the “right” to drain a neighbor’s tract, but merely denies any liability for the person who does so.

The Rule of Capture in Texas Oil Fields

The rule of capture has been an integral part of oil and gas law in the United States since the completion of the first commercial oil well in Pennsylvania in the 1840s. Texas joined the ranks of oil producing states in 1866 when Lynis T. Barrett completed the first oil producing well at in Melrose, Nacogdoches County.

In the early 1900s, the Texas legislature passed several bills relating to the use and conservation of the state’s oil and gas resources. However, these regulations were largely ignored and only sporadically enforced. In 1919, the legislature assigned jurisdiction over oil and gas production to the Texas Railroad Commission. In response, the Texas Railroad Commission, established earlier to regulate the railroads, created its Oil and Gas Division.

After the East Texas oil field was discovered in 1930, a multitude of small independent operators raced to put up rigs. Production wells were drilled close together and along lease boundaries to drain reservoirs quickly. Derricks touched legs with adjoining derricks. Wells were operated wide-open to out produce the competitor across the lease boundary. The price of oil crashed. More critically, the natural water drive of the field was damaged and the resource was wasted.

When the Railroad Commission tried to step in and cut back production, action began in the courts and, at one point, state military forces were called in to regain order. It was several years before courts and the State Legislature were able to settle on the position that the Railroad Commission had the right to prorate production to conserve the state’s natural resources, to protect correlative rights, and to prevent pollution.

The rule of capture was colorfully elucidated in the recent film “There Will Be Blood.” In the film, oilman Daniel Plainview, portrayed by Irish actor Daniel Day-Lewis, sinisterly explains his view of the rule of capture by remarking to a competitor:

“... if you have a milkshake and I have a milkshake, and I have a straw and my straw reaches across the room and starts to drink your milkshake: I drink your milkshake! I drink it up!”

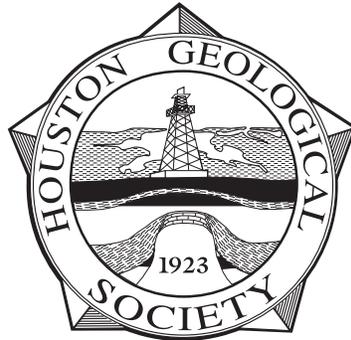
From the Editor continued on page 9

Gulf Coast Association of Geological Societies
& Gulf Coast Section of SEPM



58th Annual Convention

October 6th – 7th, 2008
Houston, Texas



HOSTED BY THE HOUSTON GEOLOGICAL SOCIETY

TECHNICAL SESSIONS (Oral & Poster)

Energy Budgets & the Global Markets

Applied Micropaleontology

Shale Gas

Hydrates and Shallow Gas

Integrated Pore Pressure Predictions: Case Studies

Geology of the Gulf Coastal Plain: Insights into Offshore Exploration

Faults: Friend and Foe

Allochthonous Salt: Impact from Exploration to Production

Visualization of Depositional Systems

Predictive Models for Deep-Water Reservoir Distributions: The Subsalt Challenge

Old Fields-New Life: How New Technologies or New Ideas Have Made a Difference

Advances in Seismic Imaging-Impact on Exploration through Production: Case Studies

Depositional Systems: Insights from Outcrops, Shallow Seismic, or Coastal Studies

Uncertainty Assessment & Its Impact on Decision Making

Gulf of Mexico Coastal Plain Paleontology

Environmental Geology & Hydrology

curriculum as it is currently written. When the public comment period begins, we will place a link on the HGS web site to the curriculum and comment site. Please take a few minutes out of your schedule to review the program and lend your support—as

always with public commentary, the more positive responses the curriculum receives, the more likely it will be to pass.

I look forward to seeing you at our events this month! ■

From the Editor *continued from page 7*

The Rule of Capture for Texas Groundwater

While Texas has adopted state management of oil and gas production, groundwater use and production in Texas is still unregulated at the state level and the rule of capture is used to settle court disputes. Groundwater is vital to the life and health of Texans and the Texas economy. Texans use nearly 17 million acre-feet (5.5 trillion gallons) of groundwater each year, making up about 60 percent of our total water usage.

As applied to groundwater in Texas, the rule of capture provides that, absent malice or willful waste, landowners have the right to take all the water they can capture from under their land and to do with the water what they please, and they will not be liable to neighboring landowners, even if their actions deprive their neighbors of the water's use.

The rule of capture contrasts with the "reasonable use" or the "American rule," which provides that the right of a landowner to withdraw groundwater is not absolute, but limited to the amount necessary for the reasonable use of his land, and that the rights of adjoining landowners are correlative and limited to reasonable use. Since its adoption in Texas more than 100 years ago, the rule of capture has been widely criticized. Today, Texas stands alone as the only western state that continues to follow the rule of capture for groundwater.

The Texas Supreme Court first adopted the rule of capture for groundwater in the landmark 1904 decision *Houston & Texas Central Railroad Co. v. East*. The railroad company completed a water well on its property near Dennison, Texas to supply water for its locomotives. The well, which produced 25,000 gallons of water daily, lowered groundwater levels in the aquifer and dried up the household well of a neighboring landowner. The landowner sued the railroad for damages.

The court asserted that the rule of capture applied to groundwater in Texas and decided the railroad was not liable for damages: "Because the existence, origin, movement and course of such

waters, and the causes which govern and direct their movements, are so secret, occult and concealed that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty, and would therefore be practically impossible."



The court held that the "this inconvenience to his neighbour falls within the description of *damnum absque injuria* [an injury without a remedy], which cannot become the ground of an action." By denying relief, the court essentially granted unlimited rights to take as much groundwater as can be pumped. Thus, the rule of capture is often known as "the law of the biggest pump."

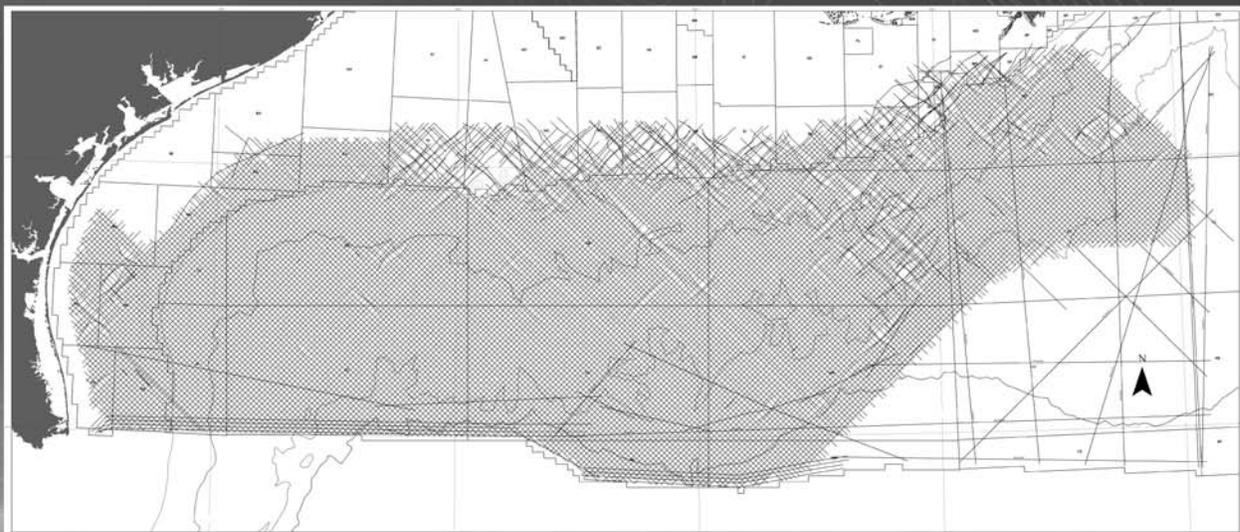
Half a century later, in 1955, the Texas Supreme Court reaffirmed the rule of capture in *City of Corpus Christi v. City of Pleasanton*. The City of Pleasanton sued the Lower Nueces River Supply Company and the City of Corpus Christi to block them from pumping groundwater into the Nueces River and allowing the water to flow more than 100 miles downstream to Corpus Christi. The plaintiff claimed the practice was wasteful and damaged their nearby wells by lowering aquifer water levels. When fully operational, the supply wells pumped 10 million gallons of water per day into the river. Evidence showed that as much as 63 to 74 percent of the water discharged into the river was lost to evaporation, transpiration, and seepage. A trial court ruled in favor of the City of Pleasanton finding that the conduct was wasteful. But in a split decision, the Texas Supreme Court reversed the decision, holding that liability could only be established by proving that the water was to be put to an unlawful use as distinguished from a lawful use.

After examining precedents on the rule of capture, the court reiterated the common law view that "an owner of land could use all of the percolating water he could capture from wells on his land for whatever beneficial purposes he needed it, on or off of the land, and could likewise sell it to others for use off of the land and outside of the basin where produced, just as he could sell any other species of property."

From the Editor *continued on page 11*



Gulf of Mexico: In Depth & In Focus



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Later, the case of *Sipriano v. Great Spring Waters of America, Inc.*, also known as the Ozarka case, squarely presented the issue of whether Texas should continue to follow the rule of capture. Henderson County landowners sued when the aquifer supplying their wells was depleted by Ozarka's pumping of 90,000 gallons of water per day. Relying on the rule of capture, the district court granted summary judgment against the landowners, and the court of appeals affirmed. The landowners then asked the Texas Supreme Court to overturn the rule of capture in favor of the rule of reasonable use. The Supreme Court refused.

Texas Senate Bill 1 and Groundwater Conservation

In 1997, the Texas legislature passed Senate Bill 1, which is commonly known as the "Water Bill." The landmark legislation instituted a 'bottom-up' approach to state water planning through 16 regional groups representing the diversity of stakeholders. Senate Bill 1 confirmed that local groundwater conservation districts "are the state's preferred method of groundwater management." Groundwater conservation districts put resources in the hands of local stakeholders. Local groundwater conservation districts can set well-spacing requirements and pumping limits to ensure that pumping on one property

minimizes draw-down of the water table on another. These rules can be modified as needed due to changes in population, water demand, and aquifer conditions. Through these rules, districts now help protect private water rights.

As Mark Twain famously remarked, "Whiskey is for drinking and water is for fighting over."

Currently, 84 groundwater conservation districts have been created and confirmed by local voters and 5 districts are pending confirmation. With the new groundwater conservation districts formed in the last few years, approximately 89 percent of Texas' groundwater production is now managed by

districts. In areas with no groundwater conservation district, the rule of capture prevails and groundwater pumping is basically unregulated.

Water has long been a contentious issue in the American West leading to prolonged legal battles and even actual hostilities. As Mark Twain famously remarked, "Whiskey is for drinking and water is for fighting over." In the United States, only California and Texas do not regulate the use of groundwater at the state level. And Texas is alone among the western states in clinging to the ancient rule of capture. For groundwater issues in Texas, the wild beast still roams. ■

Letter to the Editor

Dear Editor:

I'm writing to comment on the science in the opening paragraphs to Ms Milne-Andrews' article 'HGS Guest Night 2008: Life without the Big G'.

The first sentence cites "the theory of universal gravitation." This aspect of classical mechanics is most commonly referred to as Newton's Law of universal gravitation. It was a theory when first published by Newton in 1687. Then G was first accurately measured by Cavendish 111 years later. Admittedly, this law of physics has been superseded by Einstein's theory of general relativity.

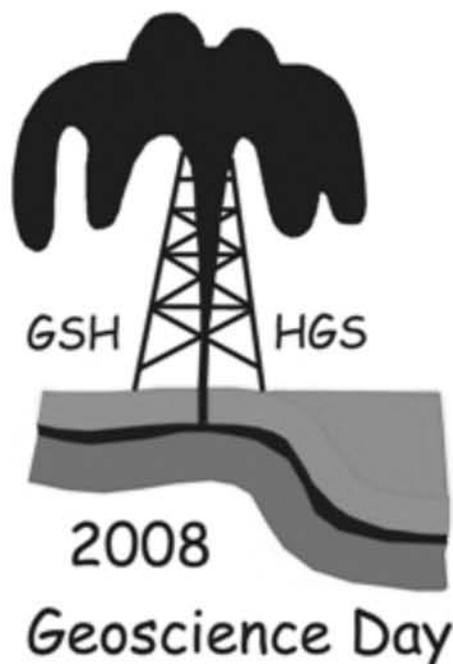
Then the second paragraph implies that the gravitational constant G is 'remove(d)' at some unspecified distance away from the center of the earth, presumably the distance of the International Space Station. Of course, "the fun begins"

because of an increase in the little 'r', not because of the removal of G. Even the simplest understanding of the equation holds that the big G is, in fact, always there. That is the essence of a constant. Why would a universal law of physics change just a few hundred kilometers away from our little planet?

Maybe a better title would have been "Life with an increased little r" or "Life with a decreased little g".

Admittedly, I did not attend the function so perhaps big G has some double meaning based upon the theme for the night. But if it simply refers to the gravitational constant, then the big G was, of course, there all along.

Regards,
Christopher A. Paschke
ExxonMobil Development Company



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HGS General Dinner Meeting

HGS General Dinner Meeting

Joshua H. Rosenfeld, Yax Balam, Granbury, Texas; Arthur E. Berman, Labyrinth Consulting Services Sugar Land, Texas; Jon F. Blickwede StatoilHydro, Houston, Texas; and Louis R. Chaboudy El Paso Energy

Early Paleogene Isolation of the Gulf of Mexico from the World Oceans; Drawdown and Refill

Recent oil and gas discoveries in thick Wilcox-age reservoirs of the deep-water offshore region of the Gulf of Mexico have challenged existing depositional models. The presence of such reservoirs, at locations far from the shallow-marine depositional centers of their contemporaneous basin, is most easily explained by a short-lived Late Paleocene-Early Eocene sea-level drawdown of the Gulf of Mexico.

Supporting evidence for an extreme sea-level drawdown in the Gulf of Mexico includes the presence of deep paleocanyons across shelves and slopes, the sudden deposition of massive sandstones hundreds of kilometers from paleoshelf margins, salt and redbeds in the Veracruz Basin, and a deep water unconformity marked by paleokarst near the Yucatan Straits at the mouth of the Gulf of Mexico. The trigger for this sea-level fall event was the closing of the 200 kilometer (124 mile) wide, deep water strait connecting the Gulf and the world ocean by the northward advancing Caribbean Plate (Cuban Arc) as it docked against the high-standing Yucatan and Florida-Bahamas blocks.

Evaporation far exceeded inflows from rainfall and runoff into the isolated basin, thereby lowering the water level in the Gulf of Mexico by about 2,000 meters (6,600 feet) within a few thousand

years. The release of hydrocarbon gases from hydrates and disrupted thermogenic reservoirs may have exacerbated the Paleocene-Eocene Thermal Maximum. The strait barrier was breached after about one million years ago as Cuba moved east relative to the Yucatan. A deep erosional thalweg, the deepest path along a course of flowing water, formed in the eastern Gulf during the rapid refill of the basin.

Evaporation far exceeded inflows from rainfall and runoff into the isolated basin, thereby lowering the water level in the Gulf of Mexico by about 2,000 meters (6,600 feet)

Synoptic understanding of the Gulf of Mexico has been difficult to achieve because of the poor communication among United States, Cuban, and Mexican investigators. Moreover, petroleum companies working in the Gulf are reluctant to release confidential information. In spite of these constraints, data that have become available since this idea was first published in 2002 continue to point to sea level drawdown as the least

improbable explanation for the aforementioned phenomena. In spite of the obstacles, we believe that the idea merits dedicated investigation by a consortium of industry and academic scientists, particularly as additional information is forthcoming from petroleum exploration in the eastern Gulf offshore, Mexico, Florida, and Cuba. ■

Biographical Sketch

JOSHUA H. ROSENFELD earned his BS degree at the City College of New York in 1960, his MA degree at the University of Miami in 1978, and his PhD at the State University of New York, Binghamton in 1981. His early career included geological reconnaissance, mineral prospecting, and mining geology in Central America followed by 19 years of petroleum exploration with Amoco plus two years with Veritas. Most of his petroleum exploration work was conducted in areas in and around the Gulf of Mexico within the United States, Mexico, and Belize.

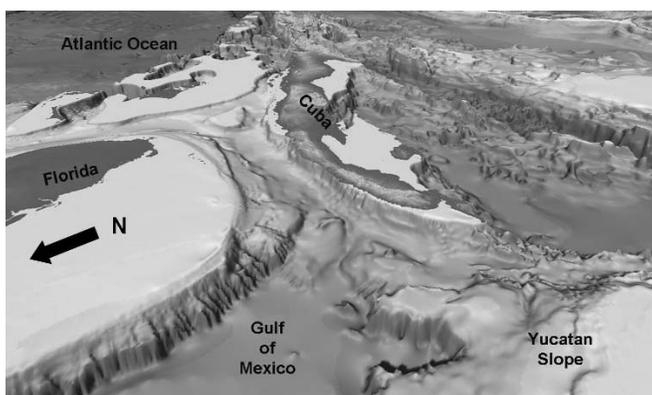
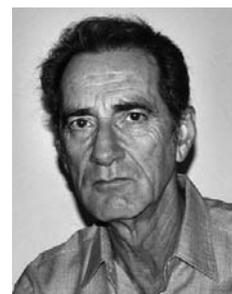


Figure 1: Map view of the bathymetry of the southern Gulf of Mexico. The Cuban Arc lies between Florida on the left (east) and the Yucatan slope on the right (west) in this view looking south.



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Cost: \$30 for SIPES Members and Chapter Affiliates who register by 12:00 Noon Tuesday; \$35 for new registrations at the door. The price for guests, non-members and walk-ins is \$35. *No-shows will be billed.*

*Dan Steward
Consulting Geologist
Republic Energy*

The Barnett Shale Play: Phoenix of the Fort Worth Basin, a History

Mitchell Energy completed its first Barnett Shale test well in 1982. The test well, C.W. Slay #1 in southeast Wise County, Texas, was a failed exploratory deepening for the Viola limestone. Many factors came together in a timely manner for the drilling of this first test to be completed. The limited gas recovered on the initial fracturing provided enough encouragement to pursue a better understanding of this source rock and the technology that would be required to make this almost slate-like rock a producing reservoir.

Production from the Bend Conglomerate had been a significant source of income for Mitchell Energy in the Fort Worth Basin. The leases, employees, and infrastructure associated with the conglomerate made up a large part of the company's assets. In 1982, the results from an evaluation of the Bend Conglomerate, the dominant producing formation in the Fort Worth Basin, suggested that the production base could be sustained through the early 1990s; but that it would decline after that time. The team was given a charge by George Mitchell to find something to take the place of the "Bend" and to maintain the company's existing assets. Many different exploration targets in the basin were reviewed including the Barnett Shale.

Over the next ten years, a database was compiled and technology was developed that would allow a small area of the Barnett Shale in eastern Wise and western Denton Counties to prove to be commercial under the favorable gas prices received through Mitchell's Natural Gas Pipeline (NGPL) contract. However, this contract was a two-edged sword, as it provided for a production ceiling that could not be exceeded except on demand.

While the contract pricing was economically necessary in the early years, the production ceiling was recognized as preventing growth. In 1995, Mitchell allowed NGPL to buy out of this

contract. This allowed for production growth if the economics could be improved. Many steps were taken to cut costs and improve productivity with implementation of the light sand fracture treatment adopted in late 1998 providing the necessary impetus. The resultant success spurred other experimentation and technology that led to a better understanding of the gas-in-place. Since the late 1990s, geological, geophysical, and engineering technology has improved driving this play to the boom it is today. ■

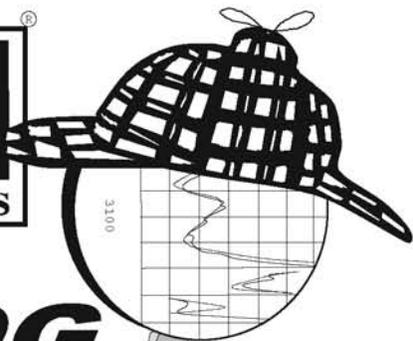
The limited gas recovered on the initial fracturing provided enough encouragement to pursue a better understanding of this source rock

Biographical Sketch

DAN STEWARD is a consulting geologist with Republic Energy, Inc. in Dallas, Texas. From 1981 to 2001, he was at Mitchell Energy where he was a member of the team responsible for recognizing, evaluating, and developing the Barnett Shale play in the Fort Worth Basin. During that 20 year period, he held a number of positions within company management, but in one capacity or another he was always involved in the play.

After the company's merger with Devon in 2002, Dan joined Republic Energy and continued his involvement with the Barnett Shale through their activities. This partnership has allowed him to apply his understanding of organic shales acquired from the Barnett Shale play to other shales across the United States. In 2005, Dan was asked by George P. Mitchell to write a history of the evolution of the Barnett Shale play. This history has been published and will be available for purchase at the SIPES meeting.

Dan was recently selected by the American Association of Petroleum Geologists for their 2007 Explorer of the Year Award for his role in establishing the Barnett Shale as one of the largest gas producing fields in the country.



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Joanna Ajdukiewicz, Geologist,
ExxonMobil Exploration Company
Houston, TX

Porosity Prediction in Deep Eolian Reservoirs from Early Diagenetic Process Models: A Modern Desert Study in Saudi Arabia, New Mexico, and Namibia

Favorable reservoir quality in deeply-buried sandstones is preserved by early-formed grain coats that inhibit the growth of high-temperature quartz cement during later burial. Deep eolian reservoirs with grain-coat-preserved porosity include the Norphlet and the Nugget/Navaho in the United States, the Rotliegendes in Europe, and the Unayzah in the Middle East. Porosity-preserving grain coats in these reservoirs are mainly composed of infiltrated and diagenetic clays. The effectiveness of the coat in preserving porosity increases with greater grain coat continuity. Reliable deep porosity prediction requires accurate models for the presence, continuity, and distribution of early grain coats.

A collaborative study was undertaken by Saudi Aramco-ExxonMobil to document the distribution and genesis of grain coats in modern eolian settings. Studies of coat formation in eolian settings with different climatic conditions were conducted in Saudi Arabia, New Mexico, and Namibia. Coat characteristics were

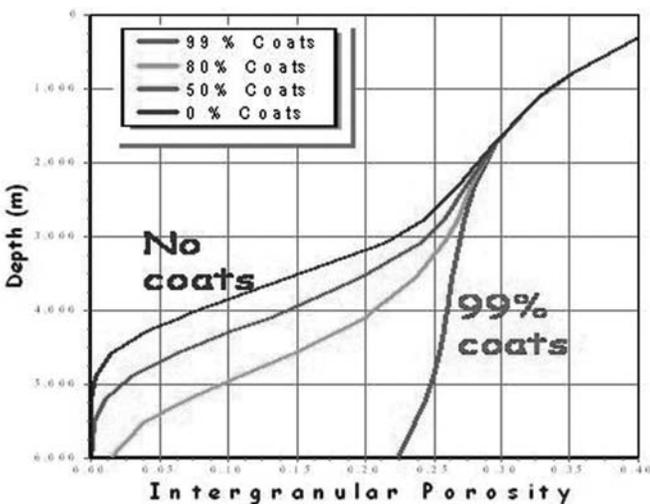
evaluated using petrographic analyses and laboratory experiments. The findings indicate that coat continuity and effectiveness in porosity preservation vary with the environment of deposition, as well as the depositional climate. Infiltrated clay coats form either by percolation of muddy water into wadi and nearby eolian sands after periodic flooding, or illuviation of airborne dust during early soil formation. Continuous diagenetic coats form early during sediment burial to the depth of the water table or

The effectiveness of the coat in preserving porosity increases with greater grain coat continuity.

below. Coated grains blown from these environments into active dunes lose their coats by abrasion during eolian transport, most likely in a multicyclic process of coat formation and destruction. In arid climates, dunes remain active, and grain coats are abraded more quickly than new ones can form. Wetter climates favor sediment stabilization and coat formation. Consequently, more continuous coats and the highest porosity preservation occur in dune sands prone to periodic wetter climate conditions, overbank and sheetflooding, and/or rising water tables. ■



Photomicrography of coated sand grains..



Coated grains maintain intergranular porosity with depth.

Biographical Sketch

JOANNA AJDUKIEWICZ has worked for Exxon and ExxonMobil in Reservoir Quality Assessment and Prediction since 1980. Her specialization is the prediction of preserved porosity in deeply buried reservoirs in the North Sea, Gulf of Mexico, and Middle East. She has degrees in geology from both Barnard College and Princeton University.



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Tuesday, October 21, 2008

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Social 11:15 AM, Luncheon 11:30 AM

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HGS Northsiders Luncheon Meeting

HGS Northsiders Luncheon Meeting

*Julia F. Gale, Bureau of Economic Geology,
University of Texas at Austin, Austin, TX
and Jon Holder, Petroleum and Geosystems
Engineering, University of Texas at Austin,
Austin, TX*

Natural Fractures in Shales: Origins, Characteristics, and Relevance for Hydraulic Fracture Treatments

Most shales contain natural fractures. This talk presents a review of common fracture types and their characteristics based on core and outcrop studies of several different shales, including Devonian Woodford shales from the Permian Basin and the Mississippian Barnett Shale of the Fort Worth Basin.

Our study measured the subcritical crack index of different shale facies. Geomechanical modeling using the crack index as an input parameter allows prediction of fracture clustering. To do this rigorously, however, requires an understanding of the diagenetic history of the rock as it relates to evolving mechanical rock properties, and the timing of the fracturing. Thus, it is necessary to integrate fracture information with other fundamental geologic knowledge. For example, there can be many different causes of fracturing of a shale. Some fracture sets in Woodford Shale cores have been deformed by compaction, whereas some other fractures sets occurred later. The mechanical properties of the pre-compaction rock at the time of early fracturing are likely to be very different from those prevailing at a later, post-compaction stages. The resulting fracture patterns and sealing characteristics for the different fracture sets are also likely to be different.

The relevance of natural fractures in potentially productive shale gas plays is that they are weak planes that reactivate during

hydraulic fracture treatments. Fracture planes are observed to be only half as strong as the host rock during tensile testing. The first step toward understanding whether hydraulic fractures will be effective in a given zone is to predict the natural fracture patterns and measure the *in situ* stress. ■

The relevance of natural fractures in potentially productive shale gas plays is that they are weak planes that reactivate during hydraulic fracture treatments.

Biographical Sketch

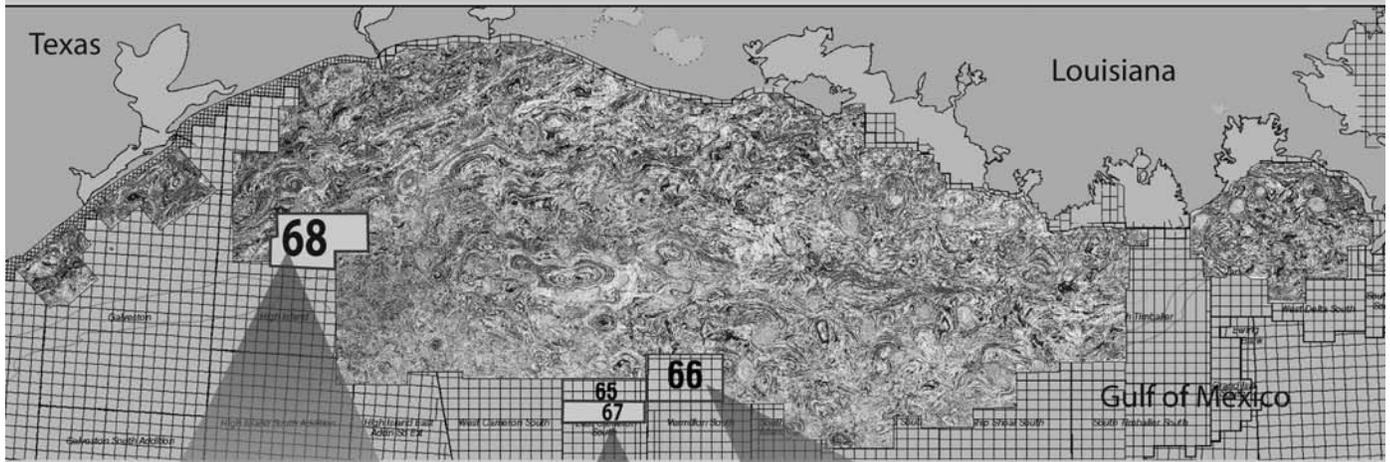
JULIA GALE is a Research Associate at the Bureau of Economic Geology in Austin, Texas. She has a background in structural-metamorphic history and shear zones in the Archean Block of Greenland and the Dalradian of northeast Scotland and has conducted quantitative studies of vein systems. The applications of this work are

particularly relevant in the characterization of fractured hydrocarbon reservoirs.

Previously, Dr. Gale was a research associate at the Department of Geological Sciences, The University of Texas at Austin from 1998 to 2000, a senior lecturer at the Division of Earth Sciences, University of Derby, UK from 1986 to 1998, and a research assistant at the University of Exeter, UK/Greenland Geological Survey from 1982 to 1985. She earned a BSc with Honors in geology from the Imperial College, London in 1982 and a PhD from the University of Exeter in 1987.



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HGS Environmental & Engineering Dinner Meeting

David Bardsley
District Manager,
WDC Exploration & Wells

HGS Environmental & Engineering Dinner Meeting

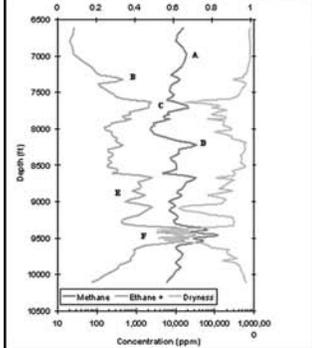
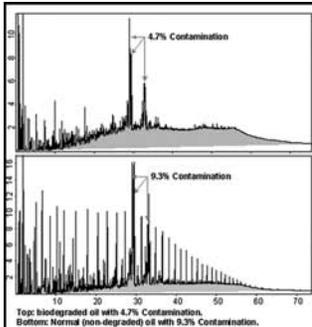
In-Situ Remediation Tools and Technologies

This talk presents an introduction to the considerations and logistics involved in planning and executing *in-situ* injection for groundwater remediation projects. The topics covered will include: tools and strategies for using temporary injection points and permanent injection wells; pump selection; mixing and batching systems; and product measurement in the field. The presentation takes a strictly technical approach to getting products into the ground at the desired target zones and is applicable to a wide range of remediation materials from powerful oxidation chemicals to food grade enhanced bio-remediation products. ■

Biographical Sketch

*an introduction to the
considerations and
logistics involved in
planning and executing
in-situ injection
for groundwater
remediation projects*

DAVID BARDSLEY received a BS in geology and geophysics from the University of Missouri, Rolla. Since 1984, David has focused on drilling applications for environmental investigations and remediation projects, including horizontal well installations. In his career, David has designed and managed hundreds of environmental drilling projects throughout the U.S. and internationally utilizing a variety of drilling methods. David is a PG in Texas, Missouri, and Tennessee and holds driller's licenses in both Texas and Louisiana.



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Please provide your name, phone number, membership ID number, and the name and date of the meeting you wish to attend.

HGS North American Explorationists Dinner Meeting

Hans Axel Kemna

Director of UCON Geoconsulting,
Cologne, Germany

Monika Majewska-Bell, Keith Mahon,
and Kristijan Kornpihl

Structural Restoration and Petroleum Systems Modeling of the Wyoming–Utah Thrust Belt

An approximately 160-kilometer (99 mile) long 2D section of the Wyoming–Utah thrust belt and the Wind River Basin, including the La Barge and Tip Top gas fields, has been modeled using the advanced technologies of structural restoration and petroleum systems modeling. The model is based on publicly-available data. Due to the highly complex tectonic history of the area, characterized by extensive thin-skinned thrusting as well as basement-

Detailed migration simulations with source rock tracking revealed that the occurrence of gas and condensate can only be explained with the presence of very effective sealing lithologies.

involved flexural movements, a detailed structural restoration was carried out using the software package 2DMove. The structural restoration accounts for lateral sediment transport, i.e., erosion and re-sedimentation, and flexural isostasy effects.

A petroleum-systems model was created using the paleo-geometries derived from the structural restoration. Modeling of the temperature/pressure

history, as well as maturation and petroleum migration, was carried out using the TecLink application of the PetroMod software package.

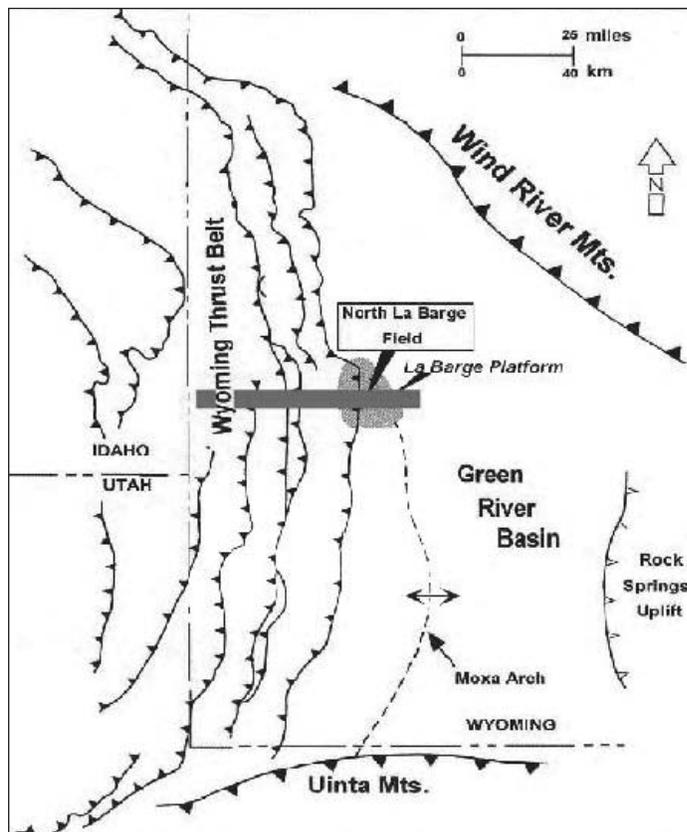
The resulting model provides detailed insight into the history of the petroleum systems in the area, with a special focus on the La Barge and Tip Top gas fields near the eastern margin of the Wyoming–Utah thrust belt. Several petroleum systems, and a source of CO₂, occur stacked in this area. Detailed migration simulations with source rock tracking revealed that the occurrence of gas and condensate can only be explained with the presence of very effective sealing lithologies.

The combination of structural restoration and petroleum systems modeling is a very powerful tool for the analysis of petroleum systems in tectonically complex environments. An approved workflow has been established for this purpose. ■

Biographical Sketch

DR. HANS AXEL KEMNA (email: hansa-ucon@web.de) is the Director of UCON Geoconsulting and an independent consultant in petroleum systems analysis in Cologne, Germany. Previously, he was a geologist and petroleum systems analyst with Integrated Exploration Systems GmbH in Aachen, Germany. He was a lecturer at the Institute of Geology,

HGS North American Explorationists Dinner continued on page 25



Map of the area with location of the section (after Knight et al., 2000, modified.).



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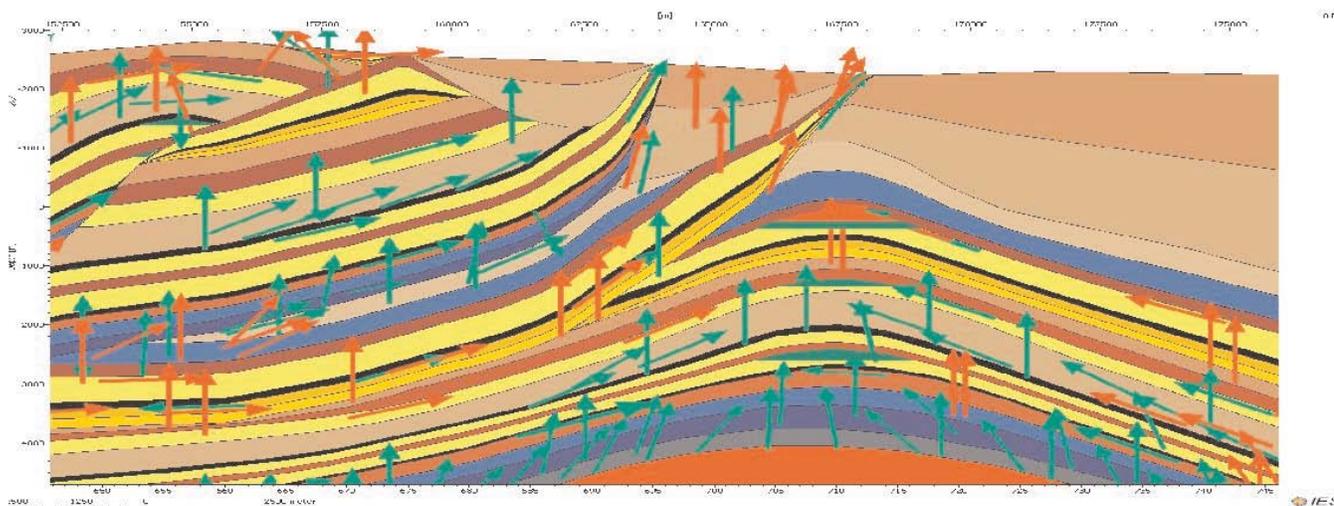
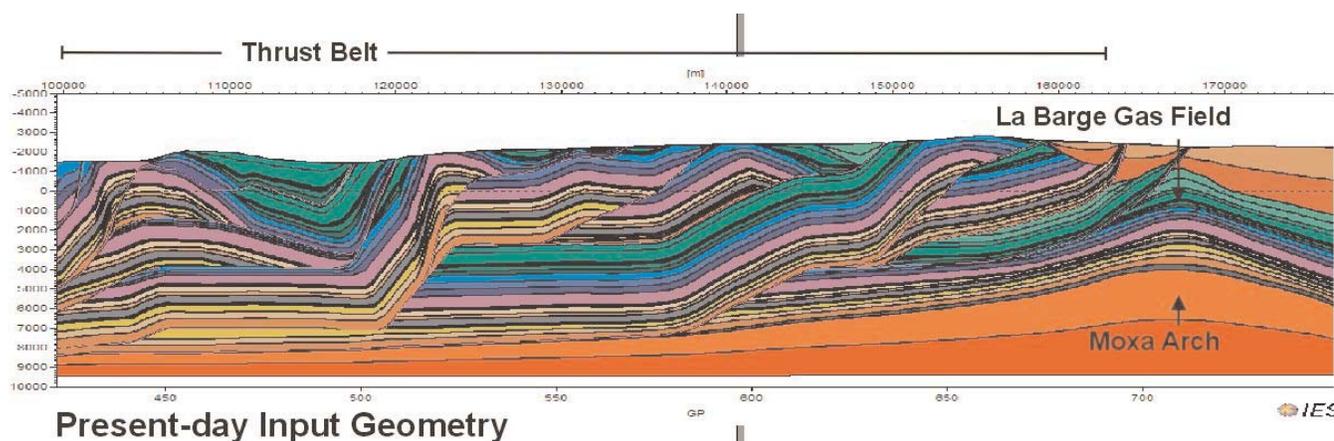
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University of Cologne, Germany and held positions as a geological consultant for Redco NV, Kapelle o.d. Bos, Belgium, a consultant with S & F Advisory Services in Bonn, Germany, and a geological consultant for M & P GmbH in Neuss, Germany.



project related to petroleum systems analysis and risk assessment of offshore Brazilian basins. He has conducted basin/petroleum systems modeling, sensitivity and risk analysis for projects in Angola, Argentina, Australia, Brazil, Canada, China, Egypt, Japan, Malaysia, Sudan, USA, and Venezuela. He has published articles in *Eclogae Geologicae Helveticae*, *Quaternary International*, and *Netherlands Journal of Geosciences / Geologie en Mijnbouw*. Dr. Kemna earned his PhD in quaternary stratigraphy and undergraduate degree in geology from the University of Cologne.

Dr. Kemna has been involved in 2D and 3D modeling projects in numerous basins in Brazil and is currently working for a service company on a



Simulation Output: Petroleum migration (vectors).



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Strategies for Evaluating Unconventional Gas Resource Plays: Application to the Haynesville and Marcellus Shales

Unconventional resources currently account for approximately 34 percent of U.S. gas production, compared to 16 percent ten years ago. Per-well production performance from unconventional gas fields has been improving while production performance for conventional fields has been declining.

Unconventional resources are attractive because they present low to moderate risk, have costs comparable to conventional resources, can be produced as stable manufacturing operations, and are often located in areas with existing infrastructure. As companies assess entry into unconventional resource plays, they should look past the hype, and seek answers to the following questions:

- Where does this play currently fit in the play development cycle and what are the relevant risks?
- Where are the sweet spots located, and can we get a position there?
- How have new technologies affected play development and do we have the resources to apply them?
- What is the unit cost to produce an MCF of gas?
- What non-technical issues, such as infrastructure, topography, price volatility, or political climate, may impact future economic success?

These questions can be addressed using innovative tools, workflows, and data to obtain additional insight into making complex business decisions.

Two emerging plays, the Marcellus Shale with potential

recoverable reserves as high as 50 TCF of gas equivalent, and Haynesville Shale with recoverable reserves as high as 250 TCF of gas equivalent, have attracted widespread industry interest. Currently, bonuses for Haynesville Shale leases, located in the Arkla and East Texas Basins, exceed \$15,000 per acre, while bonuses for the Marcellus Shale leases, located in the Northern Appalachian Basin, average about \$2,500 per acre.

In the Haynesville Shale, horizontal wells have been drilled to vertical depths of 10,500 – 11,000 feet at an average cost of \$6 to \$7.5 million including the costs for multi-stage fracture stimulations. Well costs in the Marcellus Shale average \$3 to \$4.5 million to depths between 3,000 and 9,000 feet. Early test well gas production rates range from 8 to 17 MMCF per day for the Haynesville Shale and average 4.1 MMCF per day from the Marcellus Shale.

Both plays offer reasons for optimism, but there are also valid concerns about their commercial potential because of the high acreage costs and drilling costs. Since both are in the early stages of their development cycles, both technical and economic attributes should be compared to more established fractured shale plays to answer the critical questions raised above, and to determine the potential for commercial success. ■

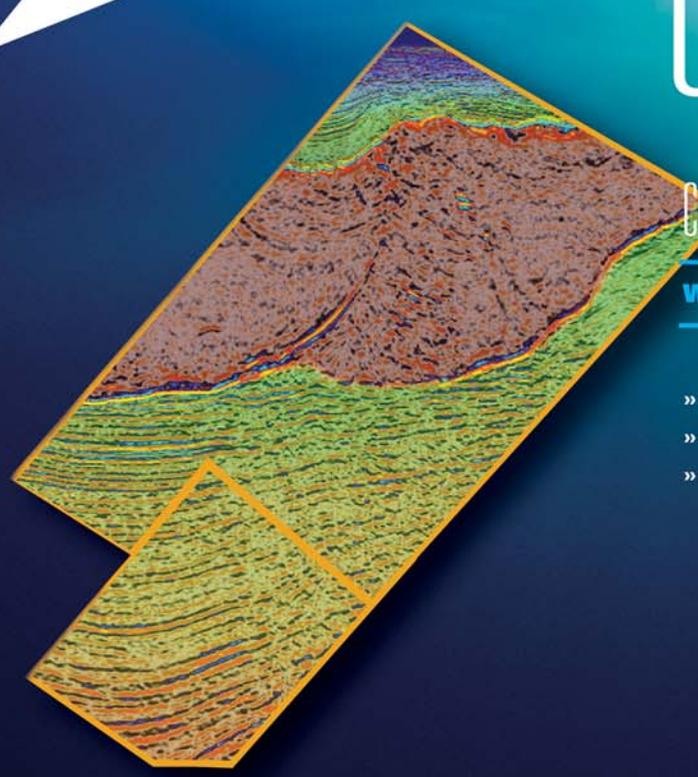
Biographical Sketch

CURTIS SMITH is Managing Geoscience Consultant at IHS Energy's Strategic Consulting Practice. He is responsible for oil and gas supply and forecasting, as well as other strategic projects

HGS General Luncheon continued on page 29

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HGS General Luncheon Meeting

continued from page 27

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Sedimentary Geology - Two Faculty Positions

The Department of Geology and Geophysics at Texas A&M University invites applications for two tenure-track faculty positions in sedimentary geology, broadly defined. Areas of interest include but are not limited to fundamental and applied problems in sedimentary processes ranging from pore to basin scale, depositional environments, sequence stratigraphy, basin architecture, sea level change and coastal evolution, and energy and natural resource science. At least one position will be offered to an individual working at the basin scale. We will consider applicants at all academic ranks. Successful applicants will be expected to develop and maintain vigorous, externally funded research programs and contribute to undergraduate and graduate teaching. We are a collaborative broad-based department within the College of Geosciences, which includes the Departments of Oceanography, Atmospheric Science, Geography, and the Integrated Ocean Drilling Program. Opportunities for collaboration also exist within the Department of Petroleum Engineering. Interested candidates should submit electronic versions of a curriculum vita, statement of research interests and teaching philosophy, the names and email addresses of at least three references, and up to four reprints by email attachments, to the Chair of the Sedimentary Geology Search Committee, sedsearch@geo.tamu.edu. Screening of applications will begin October 31, 2008 and will continue until positions are filled. A Ph.D. is required at the time of employment. The Department of Geology and Geophysics (geoweb.tamu.edu) is part of the College of Geosciences, which also includes the Departments of Geography, Oceanography, and Atmospheric Sciences, Sea Grant, the Geochemical and Environmental Research Group (GERG), and the Integrated Ocean Drilling Program (IODP). Texas A&M University, a land-, sea-, and space-grant university, is located in a metropolitan area with a dynamic and international community of 152,000 people. Texas A&M University is an affirmative action/equal opportunity employer committed to excellence through the recruitment and retention of a diverse faculty and student body and compliance with the Americans with Disabilities Act. We encourage applications from minorities, women, veterans, and persons with disabilities. Texas A&M University also has a policy of being responsive to the needs of dual-career partners (hr.tamu.edu/employment/dual-career.html).

including North American and international basin studies and play analyses, market studies, mapping and technical analyses, and workflow based client training. Mr. Smith has been with IHS Energy for 12 years and previously worked at Marathon Oil Company and ConocoPhillips. While his experience covers a wide range of technical and business related projects, his key strength is a knowledge of technical and business data and products and their use and application in the upstream oil and gas industry. Current projects include forecasting and costs of oil and gas production with an emphasis on unconventional resources. He has evaluated well performance, development cost, the use of technology and future potential for a number of important North American plays. Mr. Smith holds BS and MS degrees in geology from Brigham Young University.



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**Geological Society of America and the
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Earth Science Week activities in celebration of
the International Year of Planet Earth
October 11 - 18, 2008**

Annual Family Energy Festival **Houston Museum of Natural Science**

Saturday, October 11, 2008 11:30pm- 4:00pm

Join us for the annual Family Energy Festival at the Houston Museum of Natural Science celebrating the International Year of Planet Earth. The festival will include hands-on demonstrations, Scout badge activities, and other great programs. Please join us and bring your family and friends!

Cost: Included in the price of the regular museum admissions ticket. No need to sign up ahead of time.

General Information: please contact Martha McRae at: esw@hgs.org

Public Geology Field Trip: High Island, TX

Saturday, October 18, 2008 10:00am-3:00pm

Visit our beach location any time between 10am and 3pm to learn about salt domes, oil, beach processes, and ice age fossils. Birding and shell collecting are abundant. Free and open to public. Children welcome. No facilities. No need to sign up before hand.

General Information: please contact Neal Immega at: n_immega@swbell.net

For all the details on the Family Energy Festival or the High Island Field Trip, visit to the HGS website: <http://www.hgs.org>

Volunteers are needed to help with hands-on activities at the museum and to help with the field trip. If interested, please contact Martha McRae at esw@hgs.org.

For more information about the organizing sponsors and more planned activities occurring through out the year:

<http://www.yearofplanetearth.org>

<http://www.geosociety.org/IYPE>

<http://www.earthsciweek.org/whatisesw/>



The International Year of Planet Earth (2007-2009): Earth Science for Society

HGS and the International Year of Planet Earth

The International Year of Planet Earth (IYPE) is an initiative founded by the International Union of Geological Sciences (IUGS) and sponsored by the United Nations Educational, Scientific and Cultural Organization (UNESCO), and 38 partner organizations including NASA, AAPG, SEG, AGI, AIPG, AGU, and GSA. Seventy-three countries are represented by national committees. IYPE was designed to foster outreach and research activities pertaining to earth science and will run from 2007 through 2009. Contributions such as funding of critical science projects, hosting Earth Awareness events, promoting the sustainable use of Earth materials, and making geological map data more accessible have helped to fulfill IYPE's goal of making the planet a better, safer, healthier, and wealthier place for our children and grandchildren. The HGS supports these worldwide efforts by publicizing the

organization and providing volunteers for joint IYPE events to be held in Houston.

More effective use of geoscientific knowledge can save lives and protect property. Such knowledge also enables us to satisfy, in a sustainable manner, the growing need for the earth's resources by an expanding human population.

Summary

Natural disasters like the 2004 tsunami and the 2008 Sichuan earthquake are evidence of the Earth's incredible power. More effective use of geoscientific knowledge can save lives and protect property. Such knowledge also enables us to satisfy, in a sustainable manner, the growing need for the earth's resources by an expanding human population. Such knowledge is readily available in the practical experience and publications of some half a million

earth scientists all over the world. This professional community is ready and willing to contribute if called upon by politicians and decision makers.

The International Year of Planet Earth *continued on page 32*

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The International Year of Planet Earth (2007-2009) continued from page 31

Professional guidance by earth scientists is needed in many aspects of everyday life including, for example, identification of the best areas for urban expansion, sites to avoid for waste disposal, the location of new underground fresh water resources, and ways to cleanup soil, groundwater, and air. The IYPE aims to build on existing geologic knowledge and to make this information more readily available for the improvement of everyday life, especially in the less developed countries.

Ambitious outreach and science programs are the backbone of the IYPE, now politically

endorsed by all 191 member states of the United Nations which has proclaimed 2008, the central year of the triennium, as the U.N.'s Year of Planet Earth.

Aims, Ambitions, and Target Groups of the IYPE

The IYPE is designed to foster outreach and research activities with the purpose of raising worldwide public and political awareness of the vast, but often under-used, potential of the earth sciences for improving the quality of life and safeguarding the planet.

The IYPE envisages a significantly expanded role for the earth sciences. Among the IYPE objectives are to:

- Reduce risks to society posed by natural and human-induced hazards through current knowledge and new research.
- Reduce health problems of mankind by improving understanding of the medical aspects of earth science.
- Discover new natural resources and make them available in a sustainable manner.
- Build safer structures and expand urban areas based on our understanding of natural subsurface conditions.
- Determine the non-human factor in climatic change.
- Improve knowledge concerning the occurrence of natural resources, such as groundwater, which are often sources of political tension between neighbouring countries.
- Improve our understanding the evolution of life.

Specific goals for the geosciences community are to:

- Stimulate interest in the earth sciences within society at large
- Expand the number of students in the earth sciences

- Increase budgets for earth science related research
- Promote exposure and application of geosciences
- Promote sustainable extraction of the earth's resources.

Target groups for the IYPE message include: (1) decision makers and politicians who need to be better informed about how earth science knowledge can be used for sustainable development (2) the voting public, who need to know how earth science knowledge can contribute to a better society, and (3) fellow geoscientists, who

are knowledgeable about various aspects of the earth but who need help in using their knowledge for the benefit of the world's population.

Outreach Program

Outreach lies close to the heart of the IYPE objective because of the prime aim is to generate interest and greater awareness among the general public, decision makers, and politicians about the effective application, for the benefit of human society, of the widely available wealth of information in the hands of the Earth science community. The publication of the IYPE's first brochure: Planet Earth in our hands was a step in that direction. The initial brochure was quickly followed by the brochure on Outreach, bringing earth sciences to everyone.

The outreach program will invite any interested party or group to submit international project proposals addressing the above-mentioned aims. For example, these proposals may involve public events, competitions, special magazine supplements, books, story ideas for TV documentaries or other media, and art commissioning.

Significant outreach activities were initiated at the onset of the IYPE triennium in January 2007. These included the launching of 4,567 biodegradable balloons, each representing 1 million years of Earth history, from the heart of London at Piccadilly (Figure 2) and in Chidambaram, India on the occasion of the Indian Science Congress with 5,000 participants.



Figure 1: Logo of the International Year of Planet Earth.

In 2002, the German Ministry of Education and Research instigated the very successful *Jahr der Geowissenschaften* (Year of Geosciences). The logo used in that national event forms the basis of the International Year of Planet Earth logo. The logo consists of an inner circle (red) representing the solid Earth, then the biosphere in green and the hydrosphere in dark blue, above which is the pale blue atmosphere, all constituents of the earth system.

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October 2008



Sunday

Monday

Tuesday

Wednesday

	<p align="center">Reservations:</p> <p>The HGS prefers that you make your reservations on-line through the HGS website at www.hgs.org. If you have no Internet access, you can e-mail reservations@hgs.org, or call the office at 713-463-9476. Reservations for HGS meetings must be made or cancelled by the date shown on the HGS Website calendar, normally that is 24 hours before hand or on the last business day before the event. If you make your reservation on the Website or by email, an email confirmation will be sent to you. If you do not receive a confirmation, check with the Webmaster@hgs.org. Once the meals are ordered and name tags and lists are prepared, no more reservations can be added even if they are sent. No shows will be billed.</p>		1
<p>5 Geological Society of America / Gulf Coast Association of Geological Societies / Gulf Coast Section of SEPM 2008 Joint Annual Meeting, Houston, Texas</p>	6	7	8
12	<p>13 HGS General Dinner Meeting "Early Paleogene Isolation of the Gulf of Mexico from the World Oceans; Drawdown and Refill" Joshua H. Rosenfeld, Westchase Hilton, Page 13</p>	14	15
19	<p>20 HGS International Explorationist's Dinner Meeting "Porosity Prediction in Deep Eolian Reservoirs from Early Diagenetic Process" Joanna M. Ajdukiewicz, Westchase Hilton Page 17</p>	<p>21 HGS Northsider's Luncheon Meeting "Natural Fractures in Shales: Origins, Characteristics, and Relevance for Hydraulic Fracture Treatments" Julia F. Gale, Page 19 HGS Environmental & Engineering Dinner Meeting "In-Situ Remediation Tools and Technologies" David Bardsley, Page 21</p>	22
<p>26</p> <p align="center">NOW you can make your reservations on-line at www.hgs.org</p>	<p>27 HGS North American Explorationist's Dinner Meeting "Structural Restoration and Petroleum Systems Modeling of the Wyoming-Utah Thrust Belt" Hans Axel Kemna, Westchase Hilton Page 22</p>	28	<p>29 HGS General Luncheon Meeting "Strategies for Evaluating Unconventional Gas Resource Plays: Application to the Haynesville and Marcellus Shales" Curtis Smith, Petroleum Club, Page 27</p>

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GEOEVENTS

Thursday

Friday

Saturday

2	3	4
<p style="text-align: center;">FYI If you have NOT PAID YOUR DUES this is your last issue.</p>		11
9		<p>Earth Science Week GSA-HGS-IYPE Event (11:30 AM – 4 PM) Annual Family Energy Festival Houston Museum of Natural Science</p>
16	17	18
<p>SIPES Luncheon Meeting “The Barnett Shale Play: Phoenix of the Fort Worth Basin, a History” Dan Steward, Petroleum Club Page 15</p>		<p>Earth Science Week GSA-HGS-IYPE Event (10 AM – 3 PM) Public Geology Field Trip High Island</p>
23	24	25
<p>Geoscience Day (GSH – HGS) BEG Houston Research Center Page 12</p>		
30	31	<p>Members Pre-registered Prices: General Dinner Meeting\$28 Nonmembers walk-ups. \$35 Env. & Eng.\$25 Luncheon Meeting\$30 Nonmembers walk-ups. \$35 International Explorationists\$28 North American Expl.\$28 Emerging Technology\$25</p>
<p>An Overview of Exploration Risk Analysis for Senior Management HGS Continuing Education BEG Houston Research Center Page 6</p>		



Upcoming GeoEvents

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Gulf Coast Section of SEPM - 28th
Bob F. Perkins Research Conference
*Answering the Challenges of
Production from Deep-water
Reservoirs: Analogues and Case
Histories to aid a New Generation*
Houston, Texas Page 55



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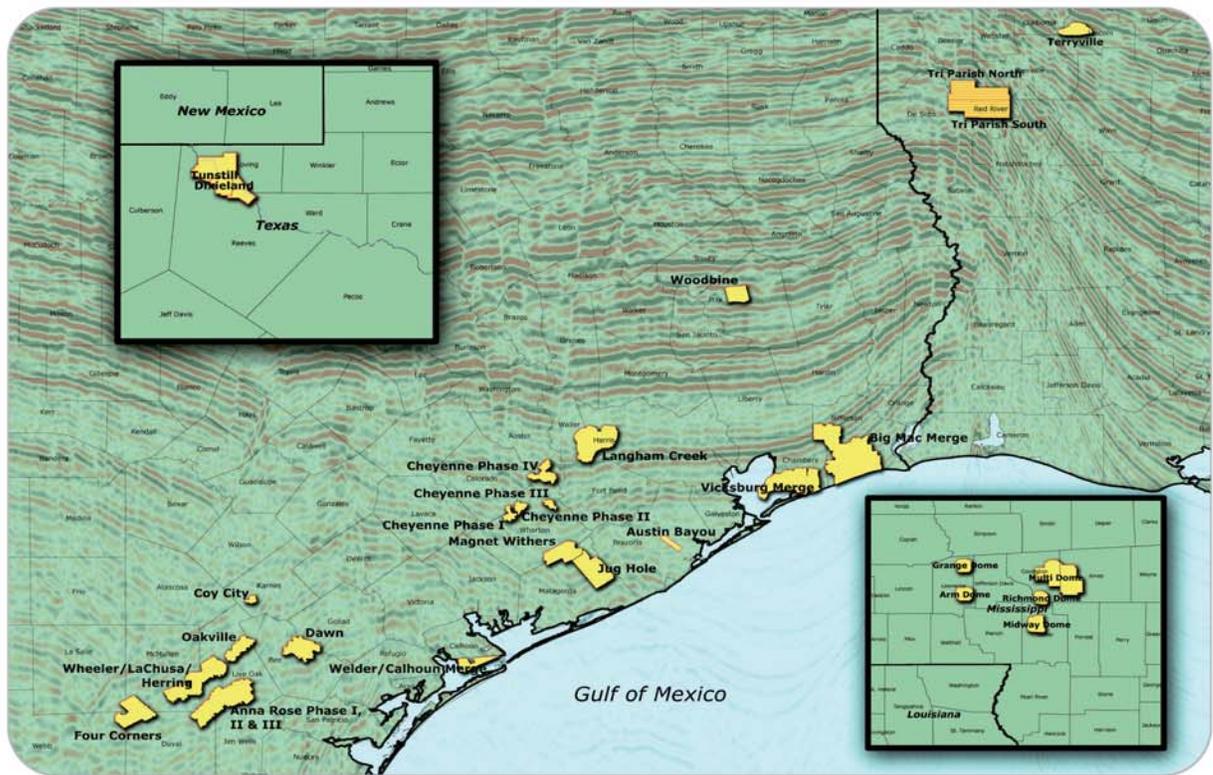
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Figure 2: Launch of 4,567 biodegradable, gas-filled balloons from Piccadilly, London in celebration of the start of the IYPE triennium and the bicentennial of the Geological Society of London on January 10, 2007.

Science Program

The scientific themes selected for the IYPE were based on their relevance to society and include:

- Groundwater: reservoir for a thirsty planet?
- Hazards: minimizing risk, maximizing awareness
- Earth and Health: building a safer environment
- Climate change: the 'stone tape'
- Resources: towards sustainable use
- Megacities: going deeper, building safer
- Deep Earth: from crust to core
- Ocean: abyss of time
- Soil: Earth's living skin
- Earth and Life: origins of diversity.

Specific questions, identified within each of these themes, have been designed to attract project proposals with the potential to provide answers to a range of societal problems facing politicians and decision-makers. Scientists are invited to submit Expressions of Interest and later, full project proposals for work within these themes, addressing the special topics within them. Selection criteria for seed-money grants require the proposals to be: geoscience-based; truly international; holistic and multidisciplinary; have human impact; and have a potential for benefit in developing countries.

Implementation of the IYPE science program will involve close cooperation with the International Geoscience

Program (IGCP) and the global UNESCO-IUGS program that has run successfully for more than 33 years. Brochures for all science themes and downloadable from the website www.yearofplanetearth.org.

One of the IYPE flagship science programs is 'OneGeology' a collaborative worldwide effort by many geological surveys in the world to produce one digital, interoperable geologic map at a scale of 1:1,000,000 (www.onegeology.org).

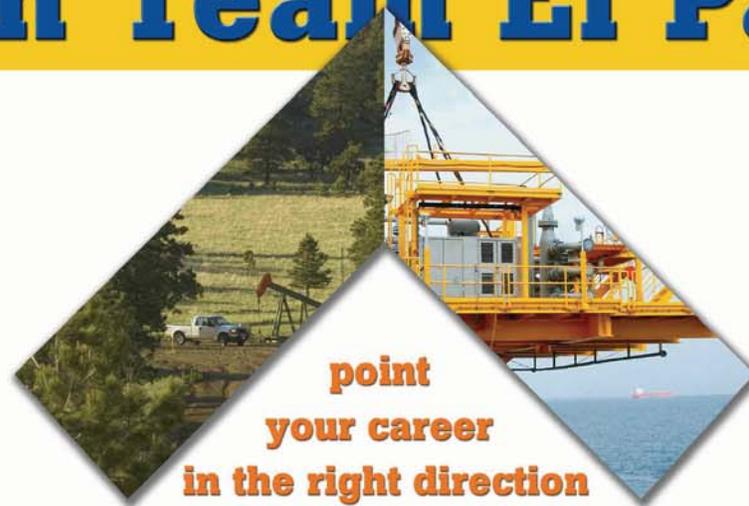
Relation to Other Science Years

The IYPE coincides with the 50th anniversary of the highly successful 1957-1958 International Geophysical Year (IGY). The U.S. Senate and House has designated

2007-2008 as IGY-2. Many scientific achievements were made 50 years ago at the time of the IGY. NASA was formed after Sputnik I was launched on October 4, 1957. DARPA, the U.S. Department of Defense agency that created the predecessor to the modern-day Internet was developed. "Doc" Ewing was surveying the oceans of the world onboard the R/V Vema and laying the ground work for a refinement and the confirmation of theory of plate tectonics. The Van Allen radiation belts were discovered. Geoscientists in over 70 countries joined to capture earth-science data from every continent simultaneously and under one management umbrella. In similar spirit, the IYPE 2007-2009 initiative is the largest international effort of its kind to promote the earth sciences.

Three other international science years, none of which has sought U.N.-Year status, will run concurrently with the IYPE. These are the International Heliophysical Year (IHY), the electronic Geophysical Year (eGY), and the International Polar Year (IPY). Each of the four international years has its own distinctive target groups, ambitions, and participants, though all share the view that a better understanding of the earth system is the key to sustainable development. The four initiatives have agreed to maintain close communication and to cooperate, coupling their science and outreach programs wherever possible and appropriate. This spirit of cooperation is formally stated in the Celimontana Declaration, which can be viewed on the IYPE website. ■

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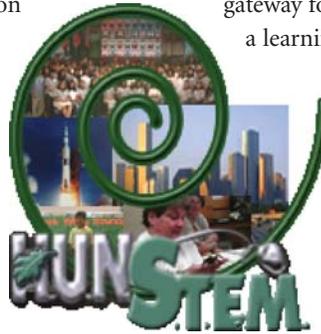


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Houston Area Initiative to Support K-12 Science Education

Brad Hoge, Academic Liason

The Houston Geological Society has a long history of educational outreach efforts that have including Earth Science Week, Maps in Schools, and providing speakers and materials for kindergarten through 12th grade (K-12) classrooms. For years, HGS has been working with other Houston area geological organizations to integrate these efforts. As the new chair of the HGS Academic Liaison Committee, I believe we have a unique opportunity to move forward by aligning HGS's efforts with a city-wide educational program called Houston Urban Network for Science, Technology, Engineering, and Mathematics (HUNSTEM).



HUNSTEM is a learning community linking thousands of students, parents, teachers, college and university faculty, local and national science, technology, engineering, and mathematics (STEM) experts, and area community/ civic/ educational/ industrial/ professional organizations. HUNSTEM's interactive multimedia website (<http://hunstem.uhd.edu>) was implemented

and designed and with the goal of promoting problem-based learning for K-12 students.

HUNSTEM has three main missions: 1) to serve as a resource gateway for STEM-related activities and resources; 2) to build a learning community centered on problem-based learning in STEM; and 3) to serve as a proactive liaison for urban resource collaborations in STEM. HUNSTEM is currently working closely with the Greater Houston Partnership (GHP), the Science, Technology and Engineering Council of Houston (ECH), the Houston Museum of Natural Science (HMNS) and the Science and Engineering Fair of Houston (SEFH) to identify, enhance, and promote the best STEM education available for the greater Houston area.

Professional science and engineering societies, informal science centers, industry and government groups, and grass roots

Houston Area Initiative to Support K-12 Science Education *continued on page 41*

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community organizations provide many quality educational resources for teachers in both formal and informal settings. However, a lack of communication between these groups and the teachers, as well as a lack of time available to the scientists and engineers committed to providing outreach opportunities, prevents many of these resources from being fully utilized. HUNSTEM serves as a bridge between Houston's expanding learning community and Houston's STEM professionals, thus facilitating a more effective and integrated learning community.



The HUNSTEM website is unique in its scope, providing links and gateways for students and educators organized by subject and grade-level. The homepage has separate age-level appropriate resources that are available via drop-down menus as well as through pathways within the visitor specific gateways. The gateways are designed for specific users within the larger learning community, with redundant pathways built in to help users find the most relevant resources regardless of how they enter or navigate through the page. Links on the HUNSTEM website connect users to specific pages within the target website so that

the user does not have to navigate through a target site's many layers to find the information the user is looking for.

This is especially helpful for links to industry, professional society, or grassroots websites that include education as part of their mission, but are not designed primarily for this purpose. Subject specific resources are also available through each gateway as well as through the lesson database, a topics map, and the site map.

One other way that the HUNSTEM website is unique is in the use of images and icons to identify links to organizations and topics of interest.

This format meets the challenge of appealing to both the technology shy and the experienced web surfer. The graphical format of the website is inviting, fun, and easy to use while maintaining a professional appearance with advanced search, navigation tools, and interactive features.

HUNSTEM and ECH are presenting a February 2009 conference called HUNCon with the theme: *Building a Better Learning Community for Houston*. HUNCon will focus on ways to bring

Houston Area Initiative to Support K-12 Science Education continued on page 43

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Houston Area Initiative to Support K-12 Science Education continued from page 41

together professional societies, informal science centers, government organizations and industry with schools, teachers, and families to improve STEM education. The conference will include speakers, presentations, workshops, and exhibits. Teachers and school administrators will participate with representatives of professional and scientific groups in round table discussions on topics in STEM education.

Houston has a vibrant learning community with broad and varied resources, but it is often difficult for the many members of this community to communicate and share resources. By coming together, we can find ways to build a better learning community for Houston. Please tell teachers and educators about the upcoming HUNCon and workshop. The conference website is <http://hunstem.uhd.edu/HUNCon>. HGS and HUNSTEM are working together to improve the quality and breadth of science educational outreach to the Houston K-12 community and beyond. ■

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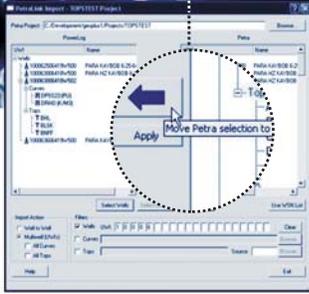
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Bureau of Economic Geology

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Michael Forlenza, PG

The Bureau of Economic Geology website has improved greatly over the last few years. The homepage has an appealing modern look with large photographs, clean graphics, pull down menus, and links to information repositories. Previously, the homepage was a rather uninteresting collection of lists that required the user to have some previous knowledge of the type of information being sought. The redesigned and updated website is more organized and more fun for browsing and exploring.

The Bureau was established in 1909 and is the oldest research unit at the University of Texas at Austin. The Bureau's mission is to provide research and advice related to energy and environmental issues and to perform the functions of the state geological survey for Texas as requested by the state legislature. As the state geological survey, the Bureau is involved in outreach efforts with the public, state agencies, federal agencies, private foundations, and industry. The Bureau conducts basic and applied research related to: energy resources including oil, natural gas, and coal; mineral resources; coastal processes; Earth and environmental systems; hydrogeology; carbon sequestration; nanotechnology; energy economics; and geologic mapping. The Bureau disseminates scientific knowledge by:

- (1) Publishing research results in scientific journals, in Bureau reports, and on the internet;
- (2) Conducting technology transfer workshops and schools;
- (3) Participating in professional meetings;
- (4) Training undergraduate, graduate, and postdoctoral students by providing hands-on research experience with modern datasets; and

- (5) Promoting learning in grades K through 12 and through public outreach.

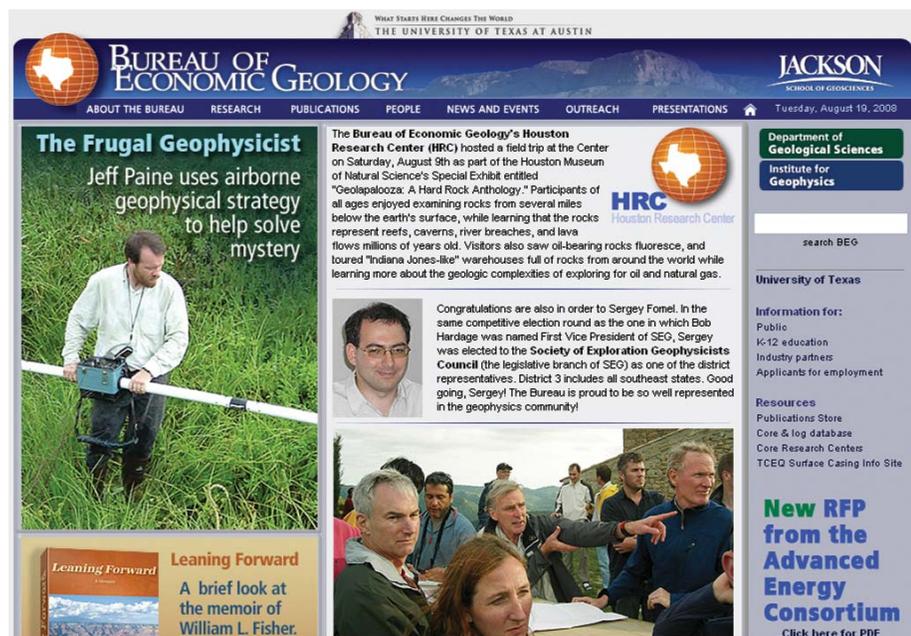
The Bureau, part of the John A. and Katherine G. Jackson School of Geosciences, not only curates the largest volume of subsurface core and cuttings in the United States at three world-class centers located in Houston, Austin, and Midland, but also runs a major Texas well log library, with nearly one million well records on file. The Bureau serves as the regional lead organization for the Petroleum Technology Transfer Council or PTTC (www.pttc.org) and as the managing organization for the Advanced Energy Consortium (www.beg.utexas.edu/aec).

The current Director of the Bureau, and State Geologist, is Dr. Scott W. Tinker, a professor holding the Allday Endowed Chair in the Jackson School of Geosciences. The Jackson School traces its origins to a Department of Geology founded in 1888 and subsequently became a separate unit at the college level only on September 1, 2005. The school's formation resulted from one of the most generous gifts in the history of higher education when the late John A. and Katherine G. Jackson bequeathed endowments and assets to the university that presently are valued at over \$300 million. Following the receipt of this gift, the Bureau website was upgraded and expanded.

On the homepage, the seven pull-down menus connect to the extensive geologic resources and information available through the website. The heart of these resources is found in the Research pull-down menu which has listings for Research Programs, Research by Region, Energy Research, Environmental Research,

Center for Energy Economics, and Industry Associates Programs. The Energy Research and Environmental Research menus have large sub-menus relating to specific areas of Bureau research. For example, the Clastics page under Energy Research describes five ongoing Bureau research projects and three recently completed projects.

Under the Publications pull down menu, the Publications-by-type page presents a list materials published by the Bureau including: books, reports, cross sections, maps, posters, digital data, open-file reports, and discontinued series. This page is reminiscent of the look of the Bureau homepage prior



Geologic Website of the Month continued on page 47



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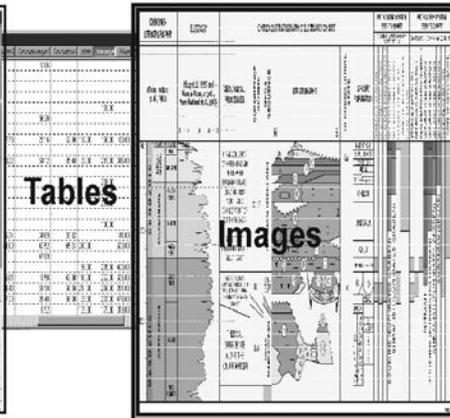
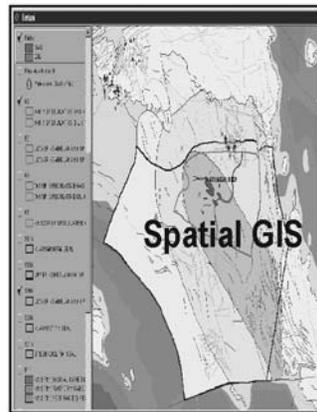
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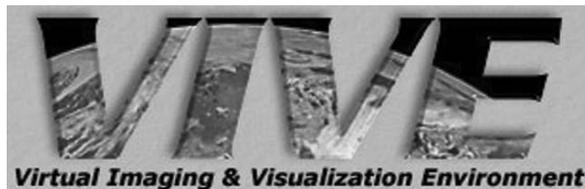


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to the website redesign. The list of printed publications includes puzzling two-letter abbreviations such as: Bestsellers [GA, GB, RI, RK, SM]. Only by going farther does the visitor realize that GA means geologic atlas. Also on this page, are links to geological societies including the HGS. Unfortunately, most of these links are broken and return errors.



The calendar, found on the pull down menu under “News and Events,” provides very little information related to Bureau events and activities. The calendar is heavily populated with the University of Texas geology course related items and recruiting schedule. Listings such as “Perkins #8” and “Tech Session 4 PM to 5 PM” mean nothing to the casual visitor. As of the end of August, the calendar listed only one Bureau event/activity for the period of September through December 2008.

The Outreach pull down menu has information and useful resources for students and teachers and is an interesting area for browsing. This area includes the Virtual Imaging & Visualization Environment (VIVE), online learning modules, and do-it-yourself experiments for environmental, geological, and energy projects. VIVE is a virtual reality visualization laboratory used to create

truly three-dimensional fly-overs of the Big Bend area, the Edwards Aquifer, or an oil reservoir. However, a visit to the Bureau headquarters or a special arrangement for a demonstration at another location is required to experience the three-dimensional effect.

The website has some navigational drawbacks. While on subordinate pages, a click on the banner at the top of the page does not, in most cases, return the visitor to the homepage. Also, annoyingly, many of the links, such as “Public” on the right side of the homepage, open new windows so that the “Back” button on the browser will not work.

The Bureau website is a good source for maps, reports, and information pertaining to Texas geology and resources. There is plenty of interest here. However, a telephone call to the Bureau may still be necessary to obtain specific or specialized information. The extensive sub-websites, such as the Center for Energy Economics and the Petroleum Technology Transfer Council, provide entire separate websites to explore. The Bureau website has come a long way and we can look forward to continued improvement. ■

Gulf Coast Association of Geological Societies TRANSACTIONS are now available on a single DVD.

This disk includes a fully searchable archive of the Transactions from the first meeting in 1951 through the recent conventions. It replaces the set of CDs that were previously available, updates through the more recent meetings (the CDs covered 1951 through 2003) and utilizes current search software. The DVD is available through the GCAGS Bookstore at the Bureau of Economic Geology or through AAPG-Datapages — purchase and contact information below.

The purchase price of the DVD is \$250.00, but for holders of the old CD set, a major discount is available if the DVD is purchased through Datapages (note — special discount NOT available through the Bureau of Economic Geology). If you send in a 1998 or 2001 Master Disc, your cost for the DVD is \$75.00. If you had the latest version of the CD set, send in the 2003 Master Disc and the DVD is free!

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Government Update

Henry M. Wise, P.G. and Arlin Howles, P.G.

If you'd like the most up-to-date information on Texas rules, regulations and notice of governmental meetings, we direct you to the HGS website to review "The Wise Report." This report, which comes out as needed but not more often than once a week, offers the most current information of interest to Texas geologists.

AGI Government Affairs Monthly Review (July 2008)

Water Measures Flow Through House Committee

Concerns about future water shortages prompted the passage of two bills from the House Science and Technology Committee. Chairman Bart Gordon (D-TN) said, "Dwindling water supplies across the United States continue to percolate as a major disaster on our nation's horizon. Despite tremendous spring rains in some states, the U.S. Drought Monitor shows that severe drought still grips the American Southeast, California, the Rocky Mountains, Oklahoma, and the Texas Panhandle. In an effort to protect the country from an impending water scarcity crisis, the Committee has begun to search out ways for the federal government to spur new technological innovations in water research and development."

H.R. 3957, the Water Use Efficiency and Conservation Research Act, introduced by Congressman Jim Matheson (D-UT) would

create a research and development program at the Environmental Protection Agency (EPA) to promote water use efficiency and conservation. The program would develop technologies and processes that enable the collection, treatment, and reuse of rainwater and gray water. The program would also examine the behavioral, social, and economic barriers to achieving greater water use efficiency.

About 2.3 billion gallons of water is produced each day in conjunction with natural resource extraction, but currently the water is not clean enough for reuse. The second bill, the Produced Water Utilization Act of 2007 (H.R. 2339), introduced by Ralph Hall (R-TX), would establish a program within the Department of Energy to improve technologies to allow for the reuse of water produced during oil and gas extraction for agriculture, irrigation, municipal, or industrial purposes. Similar legislation has not been introduced in the Senate for either bill.

The full text of H.R. 3957 is available from Thomas at: <http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.03957>:

The full text of H.R. 2339 is available from Thomas at: <http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.02339>.

Government Update continued on page 51



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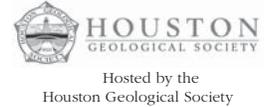
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2007-2008-2009

Celebrating the International Year of Planet Earth



The International Year of Planet Earth (IYPE) is a global initiative of the International Union of Geological Sciences (IUGS) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). IYPE aims to ensure wider use of the knowledge accumulated by the world's earth scientists. The goal of the Year is to recognize and draw attention to the benefits of the earth sciences for society.

The United Nations proclaimed the year 2008 as the official International Year of Planet Earth with science and outreach activities spanning 2007– 2009. The IYPE initiative is the largest international effort of its kind to promote the earth sciences. Education and outreach themes during the year include: human health and the environment, ocean and natural resource sustainability, mitigating hazards and community resilience, and effects of climate change.

GOALS OF THE YEAR ARE:

- ◆ Reduce risks to society caused by natural and human-induced hazards
- ◆ Reduce health problems by improving the understanding of the medical aspects of earth science
- ◆ Discover new natural resources and make available in a sustainable manner
- ◆ Build safer structures and expand urban areas utilizing natural subsurface conditions
- ◆ Determine the non-human factors in climatic change
- ◆ Enhance the understanding of occurrences of natural resources in order to contribute to efforts to reduce political tension
- ◆ Detect deep and poorly accessible ground-water resources
- ◆ Improve the understanding of the evolution of life
- ◆ Increase interest in the earth sciences in society at large
- ◆ Encourage more young people to study the earth sciences at universities

JOINT MEETING EVENTS:

- GSA—GCAGS
Forum for Teachers: Teaching Evolution
Saturday, 4 October
- Joint Plenary Session:
The Impending Global Water Crisis
Sunday, 5 October
- All Conference Luncheon:
Former Apollo Astronaut and U.S. Senator
Harrison "Jack" Schmitt
Questions about the Earth
the Moon told us to ask
Monday, 6 October
- GSA
Public Forum: Understanding Evolution
George R. Brown Convention Center
Tuesday, 7 October
- HGS—GSA
Earth Science Week: Family Energy Festival
Houston Museum of Natural Science
Saturday, 11 October
- HGS
Earth Science Week: Geology Field Trip
Houston Museum of Natural Science
Saturday, 18 October



Carbon Capture and Storage Bill Surfaces in House

If passed, the Carbon Capture and Storage Early Deployment Act (H.R. 6258), a bill introduced in June 2008 by House Energy and Commerce Subcommittee on Energy and Air Quality Chairman Rick Boucher, would create a technology fund to accelerate the development and deployment of systems to capture and store carbon dioxide produced at electricity-generating facilities that utilize fossil fuels.

According to the bill, the Carbon Storage Research Corporation would be managed by members from various sectors of the utilities industry. The corporation's purpose would be to administer grants for private, academic, and government research projects related to the acceleration of the commercial demonstration and availability of carbon capture and storage technologies (CCS). Grant monies would be generated via taxes levied on the consumers of fossil-fuel based electricity, with different rates for different fuels depending on how much carbon dioxide they emit when burned.

At the July 10, 2008 hearing on H.R. 6258, Ranking Member Joe Barton (R-TX) predicted the bill is the only climate change-related legislation with a chance of passage in this Congress: "My guess is that this is the only bill that might actually become law

this year," he said. However, the fund would have no government oversight, which many members are at odds with. Boucher has asked for the issue of oversight to be addressed before the bill is marked up, or voted on by the subcommittee.

The full text of H.R. 6258 can be found here: <http://thomas.loc.gov/cgi-bin/bdquery/z?d110:h.r.06258>:

A summary of the hearing can be found here: http://www.agiweb.org/gap/legis110/climate_hearings.html

EPA Delays Greenhouse Gas Rules Until Next Administration

On July 11, 2008, the EPA announced it would delay consideration of using the Clean Air Act to regulate greenhouse gases and would instead seek public comment on the feasibility of such regulations for the next 120 days. This decision will leave the possible regulation of greenhouse gases by the EPA to the next Administration to decide. The 588-page rulemaking notice summarizes the EPA's work over the past 15 months, but it excludes a controversial December 2007 draft endangerment finding. EPA has been working on this issue because a Supreme Court ruling last year mandated that EPA must determine if such emissions endanger public health and if so, the agency must regulate green-

Government Update continued on page 53

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house gases. Proponents of regulations are calling the EPA actions just another effort to stall regulation of greenhouse gases.

USGS Releases Assessment of Oil and Gas in the Arctic

On July 23, 2008, the U.S. Geological Survey (USGS) released an assessment of undiscovered oil and gas resources north of the Arctic Circle. The estimates of 90 billion barrels of oil and 1,669 trillion cubic feet of natural gas were determined using a geology-based probabilistic methodology. These amounts, 84 percent of which occur in offshore areas, are equal to 13 and 30 percent of the world's undiscovered oil and gas resources, respectively. The study included resources considered technically recoverable using existing technologies, but did not include economic factors related to the presence of permanent sea ice or oceanic water depth in the determination.

Brenda Pierce, a USGS scientist involved in the assessment, indicated that after the release of the World Petroleum Assessment in 2000, the USGS realized that a large part of the world, the Arctic, which covers about 6 percent of the Earth's surface, was missing from the estimate. The four-year effort, resulting in the first map of Arctic sedimentary basins, drew upon research and data from Canada, Denmark, Norway, the United Kingdom, and the United

States. The Arctic assessment presented challenges due to a lack of data for the region and as Donald Gautier, USGS geologist and lead for the assessment project, said the study would not have been possible if not for the "generous help from a number of international organizations and individuals."

USGS officials noted that this assessment is an inventory of resources and not a call for increased drilling activities. "Before we can make decisions about our future use of oil and gas and related decisions about protecting endangered species, native communities, and the health of our planet, we need to know what's out there," said USGS Director Mark Myers. "With this assessment, we're providing the same information to everyone in the world so that the global community can make those difficult decisions."

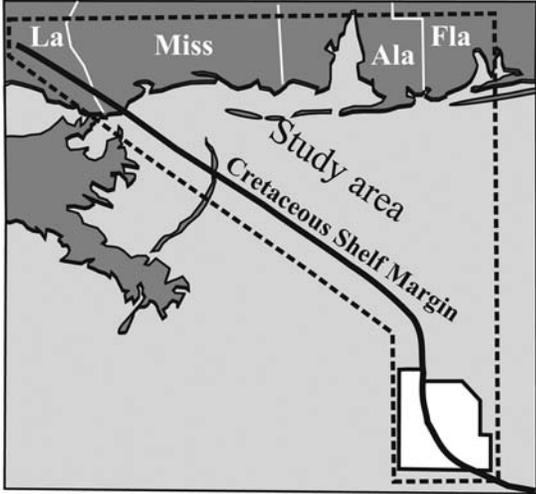
For more information on the USGS Circum-Arctic Resource Appraisal and to see the results of the assessment, please visit <http://energy.usgs.gov/arctic>.

BLM Lifts Moratorium on New Solar Projects

On July 2, 2008, the Bureau of Land Management (BLM) announced that it will continue accepting applications for new

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solar development projects. The announcement came barely a month after BLM banned any new permits in six Western states pending an agency conducted Environmental Impact Statement (EIS) in the area. The EIS was projected to take two years to complete, but public and congressional concern that the ban would halt solar development led BLM to rescind their decision. Instead, the BLM will continue processing applications received before the ban and will accept new applications while completing the EIS.

Solar energy advocates are pleased with the announcement, but feel the BLM still needs to be pressured to accelerate permitting for solar projects on public land. Representative Mark Udall (D-CO), an advocate for lifting the ban, said in response to BLM's reversal: "This decision sends the right message to the renewable energy industry that we are committed to working with them to reduce our reliance on foreign oil and increase our energy independence in an environmentally sound way."

New Earth Science Agency Proposed

In the July 4, 2008 issue of *Science*, seven former federal government leaders in the Earth and environmental sciences called for the formation of a new federal agency, an Earth Systems Science Agency (ESSA). The authors proposed that ESSA be created

from the fusion of the USGS and the National Oceanic and Atmospheric Administration (NOAA).

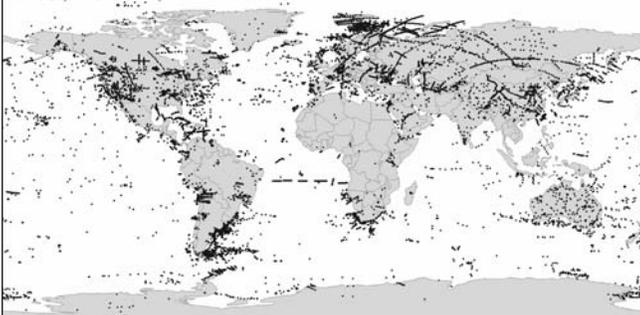
Cooperation between these existing agencies is not maximal at present and, because the U.S. faces extraordinary challenges that are in the purview of both agencies, the challenges would be more effectively confronted by an integrated, central agency, the authors claimed. Climate change, sea level rise, altered weather patterns, declines in freshwater supplies and quality, and loss of biodiversity were the challenges specified.

According to Charles Groat, former USGS Director, "The USGS, in bringing not only its geologic, biologic, hydrologic, and geospatial expertise to the understanding of natural systems, but also its research capabilities in energy, mineral, water, and biologic resources, would give the new organization a comprehensive perspective on both environmental and resource systems. If we effectively link these capabilities with those of NOAA, we will have a powerful research institution."

While the authors recommend the uniting of NOAA's atmosphere and oceans programs and the USGS's freshwater and terrestrial environment programs, they believe NASA's Earth observation

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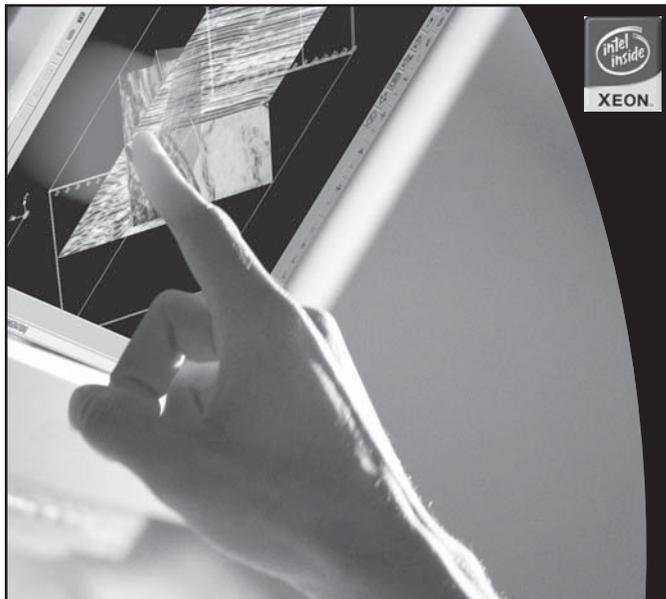
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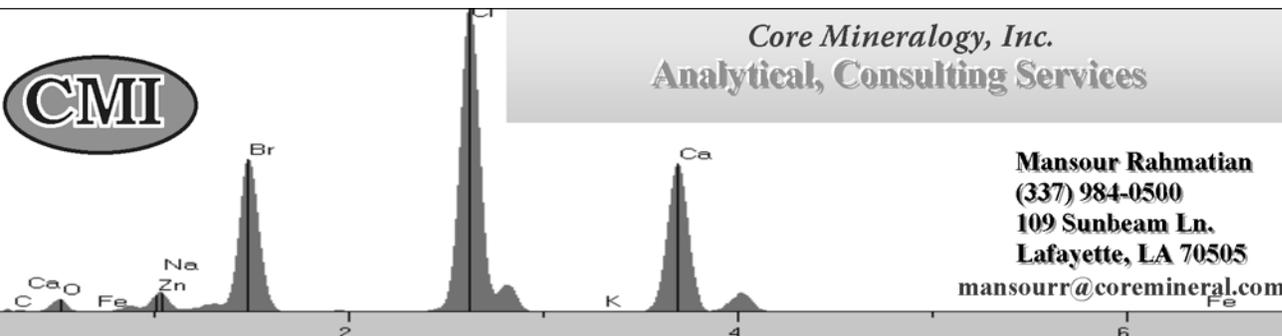
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and remote sensing research should remain under NASA's authority. The authors are optimistic that the new ESSA and NASA could work together successfully.

ESSA's mission, the authors say, should be "to conduct and sponsor research, development, monitoring, educational, and communications activities in Earth system science."

Report Calls for Attention to Groundwater Issues

The Groundwater Protection Council (GWPC) released a report to the Congressional Water Caucus on July 9, 2008 concerning the importance of establishing comprehensive groundwater policy. The report entitled Groundwater Report to the Nation: A Call to Action, examines nine groundwater policy areas suggesting action items for Congress, the EPA and state governments. The areas covered include: use and availability, resource characterization and monitoring, source water protection, land use planning and development, storm water management, underground storage tanks, onsite wastewater treatment systems, underground injection control, and abandoned mines.

The report notes that, although groundwater makes up about 90% of available freshwater and is the drinking water source for half the U.S. population, it is often "an overlooked and under-

valued resource." In 1996, the report recounts, "most EPA regional offices experienced moderate to major reorganizations that resulted in the fragmentation or disinvestment in groundwater protection staff resources." Groundwater has increased susceptibility to rates of depletion, saltwater intrusion, contamination, and stresses associated with land use changes. Population growth, climate change, and energy demands can further compound the groundwater problems.

Among its specific suggestions, the report asks that groundwater be clearly defined as covered in the Clean Water and Safe Drinking Water Acts. The Clean Water Restoration Act of 2007 (H.R. 2421, S. 1870) could answer this call. The bill would replace the phrase "navigable waters" in the Clean Water Act of 1972 with the phrase "waters of the United States." The latter phrase includes a much broader scope of federal jurisdiction and would encompass groundwater, marshes, and wetlands as well as surface waters.

Draft legislation for a National Water Research and Development Initiative, proposed by Bart Gordon (D-TN) this month could also help. The bill, discussed in a hearing on July 23, 2008, recommends an interagency committee designed to "coordinate

Government Update continued on page 59

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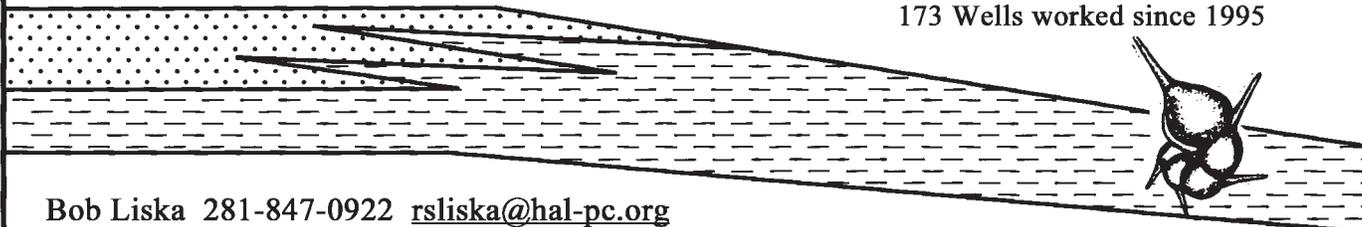
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all federal activities pertaining to water.” It includes the implementation of a National Water Census to “create a comprehensive water database that includes information about the availability and quality of groundwater and surface water resources.” Those at the hearing unanimously attested to the need for better and more consistent monitoring and modeling. They also noted the federal government would serve best at collecting and disseminating information on successful technology and programs that could be widely applied.

Groundwater is too often used without being understood the GWPC report concluded and “unless we employ more effective ways to manage the way we use groundwater, current practices of withdrawing groundwater at unsustainable rates will ultimately have significant social, economic, and ecological costs.”

The GWPC report can be accessed at: <http://www.gwpc.org/calltoaction/>

An AGI summary of the hearing is available at: http://www.agi-web.org/gap/legis110/water_resources_hearings.html

The full text of the National Water Research and Development Initiative can be accessed at: http://democrats.science.house.gov/Media/File/Commdocs/hearings/2008/Energy/23july/Draft_Legislation.pdf

Key Reports and Publications

Congressional Research Service

Speculation and Energy Prices: Legislative Responses [Posted July 8, 2008] (<http://openocr.cdt.org/document/RL34555>)

This report provides basic information and analysis on the issue of commodity speculation and summarizes the numerous legislative proposals for controlling excessive speculation.

National Academy of Sciences

Science Professionals: Master's Education for a Competitive World (http://www.nap.edu/catalog.php?record_id=12064)

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in the natural sciences contribute in the workplace? How do master's programs meet or support educational and career goals? The book examines the answers to these and other questions regarding the role of master's education in the natural sciences. The book also focuses on student characteristics and what can be learned from efforts underway to enhance the master's programs in the natural sciences, particularly as a professional degree.

Key Federal Register Notices

The EPA is proposing requirements under the Safe Drinking Water Act for underground injection of carbon dioxide (CO₂) for the purpose of geologic sequestration (GS). If finalized, this proposal would help ensure consistency in permitting underground injection of CO₂ at GS operations across the U.S. and provide requirements to prevent endangerment of underground sources of drinking water in anticipation of the eventual use of GS to reduce CO₂ emissions. Comments are requested by November 24, 2008 on the proposal identified by Docket ID No. EPA-HQ-OW-2008-0390 at www.regulations.gov. A public hearing will be held during the public comment period in September 2008. Contact Lee Whitehurst (202) 564-3896, whitehurst.lee@epa.gov.

[*Federal Register*: July 25, 2008 (Volume 73, Number 144)]

The EPA has issued an advanced notice of proposed rulemaking and is soliciting public comment on how the agency should respond to last year's Supreme Court Case Massachusetts vs. EPA, in which the Court ruled that greenhouse gases (GHG) are air pollutants under the Clean Air Act and may be regulated. The notice not only asks for input on petitions the agency has received regarding GHG emissions reductions from ships, aircraft, and non-road vehicles, but discusses issues that may be raised if GHGs are regulated under the Clean Air Act and outlines regulatory and technological proposals for GHG emission reduction. Submit comments by November 28, 2008 online at a-and-rDocket@epa.gov. Comments should be identified by Docket ID No. EPA-HQ-OAR-2008-0318. Contact Joe Dougherty at Dougherty.Joseph-J@epa.gov for further information.

[*Federal Register*: July 30, 2008 (Volume 73, Number 147)] ■



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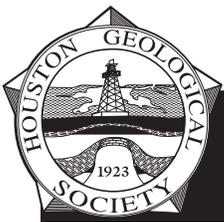
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Address: _____ Degree _____ Major _____ Year _____

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Endorsement by HGS member (not required if active AAPG member)

Name: _____
Signature _____ Date _____

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Houston Geological Auxiliary/Houston Petroleum Auxiliary Council News

Norma Jean Jones, HGS Liaison

October will be a busy month beginning with the GSA-GCAGS Convention on October 5 – 9 at the George R. Brown Convention Center. Hopefully, all members of Houston Geological Auxiliary/Houston Petroleum Auxiliary Council (HGA/HPAC) interested in volunteering in the Hospitality Room or in some other capacity have been able to find that perfect “niche” in which to serve. Carol Rensink and her Co-chair Sally Blackhall are in charge of the planning of the Hospitality Room and Guest trips and have been diligently working to make these venues enjoyable for all who attend. Alice Weiser, handwriting analyst extraordinaire, will be appearing in the Hospitality Room and always brings a measure of intrigue to her sessions.

The last business performed by the 2007-2008 HGA Board before the integration of the various Petroleum Auxiliaries was to vote on a motion made to donate the balance of monies in the HGA bank account to the HGS Undergraduate Scholarship Fund. A check in the amount of \$1,495.53 was presented to HGS President, Kara Bennett, on behalf of all the members of HGA, for the Scholarship Fund.

The first event held by the fully integrated HPAC was held at the Lakeside Country Club on September 25. Event chairpersons, Sheri McQuinn and Paige Moore, are to be commended for a very successful “Getting to Know You” brunch. The Lakeside Country Club always serves great food, and this event was no exception. Pat Austin and her “Classical Jazz” were delightful. Our next event will be held in December. There is plenty of time to mail in the HPAC membership form found in this *Bulletin* before the next event, if you are not presently a member.

GeoWives has a very interesting trip to Katy, Texas planned for October 23, in which they will meet for lunch at the Cottage Charm Tea Room and then browse or shop at Katy Antique Shops and/or Katy Mills Mall. By the end of the month, the weather may begin to be a little cooler making a very enjoyable outing for everyone. All events on the Geo Wives calendar for 2008-2009 year will be reported in this section of the HGS Bulletin the month prior to the date of each event. All members of HGA/HPAC are invited to join GeoWives. Please contact Daisy Wood at 713-977-7319 for information and a membership form.

The following are the GeoWives Officers for 2008-2009:

President	Sara Parr
First Vice President	Lois Matuszak
Second Vice President	Daisy Wood
Secretary	Sandra Pezzetta
Treasurer	Anne Rodgers
Historian/Parliamentarian	Sally Blackhall
Past President	Sholeh Huber

Committee Chairpersons:

Notification	Vicky Pickering
Courtesy	Linnie Edwards
Telephone	Jackie Smith (Assistants: Mary Jane Berryman and Virginia Moore)
Yearbook	Naomi Watson

See you at something geological! ■

You are invited to become a member of

HGA/HPAC

2008–2009 dues are \$20.00

Mail dues payment along with the completed yearbook information to **Nan Pye**, 18219 Longmoor, Houston, TX 77084

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Please choose a Committee Assignment

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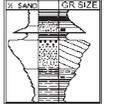
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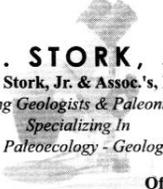
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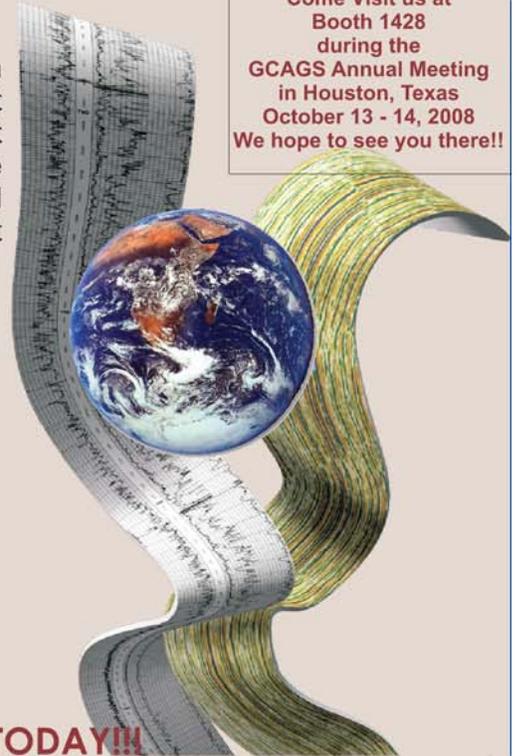
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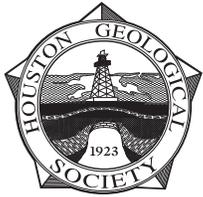
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