Volume 65, Number 10

**Houston Geological Society** 

June 2023

**RENEW YOUR MEMBERSHIP** 

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# The Bulletin

**Houston Geological Society** 

Volume 65, Number 10

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# Renew your Membership



# Come Rock With Us



The Houston Geological Society is a professional society for petroleum, energy and environmental geoscientists. The HGS supports continuing education, networking, outreach to students, student scholarships and young professional activities. HGS will celebrate its 100th year in 2023!

The objectives of the Houston Geological Society are to stimulate interest and promote advancement in geology for the Houston area, to disseminate and facilitate discussion of geological information, relationships among geologists in the area, and to aid and encourage academic training in the science of geology. The Society strives to achieve these goals through regularly scheduled technical meetings, publication of a monthly Bulletin, a continuing education program, field trips, the publication of timely books, and two student scholarship funds.

#### Join the Houston Geological Society's wonderful group of volunteers!

The HGS is always looking for energetic members to become volunteers for the society. As the largest local geological society in the country, we depend on the support of our members to help us organize and execute our many activities.

#### HOW YOU CAN HELP

**Field trips**: Do you have an idea for a fun field trip? We are always interested in planning exciting trips for adults and kids! Add your name to our list of future field trip guides!

Monthly Technical Meetings: Have you recently heard a great speaker that you think the HGS should host? Let us know! You can also volunteer to help at any of our monthly technical meetings, such as: General Dinner, General Lunch, Environmental & Engineering Meeting, North American Dinner, International Dinner.

**HGS Committees**: Committees such as Educational Outreach, Continuing Education, and NeoGeos are always looking for extra helping hands!

**Annual Events:** Every year the HGS has annual social events, and we need volunteers to help us organize and set up on the day of the events. They include: Scholarship Night, Crawfish Boil, Skeet Shoot, Conferences, Golf Tournament.

If you are interested in adding your name to our list of volunteers, please contact the HGS Office at office@hgs.org



# It's Time to Renew Your Membership

YOUR MEMBERSHIP EXPIRES JUNE 30, 2023





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Ted Godo



Greetings fellow geoscientists and HGS Members! As we wrap up our fiscal year, I want to thank those members, board members and sponsors for their efforts in achieving our goals. We must continue our efforts to renew and build membership, improve attendance/participation in events, and remain vigilant to continue on the path of financial sustainability.

The newly elected board of directors, whose terms will begin July 1, will serve our society well. I have no doubt under Paul Britt's leadership they will be able to fine tune and continue building on the accomplishments of the past year.

We can all be proud to be members of The Houston Geological Society and that we will be celebrating the Society's 100th Anniversary this year.

#### **MEMBERSHIP**

As we start our new fiscal year, please renew your membership and continue to boost our membership roll by encouraging your work colleagues and service company contacts to become members. Logical service company sponsors include mudloggers, wireline companies, directional companies, log analysts, and rock labs. Remember, even if folks are not geologists, they can become HGS Associate Members.

#### **REBUILDING COMMUNITY**

#### A LOOKBACK AT THE MAY EVENTS AND BEYOND

• May 15 -Regular Dinner Meeting

Topic: Helium in North America

Presentation Title: "Once the Federal Helium Reserve is Depleted, will North America Be Able to Sustain Helium Self-Sufficiency"

Presented by: Tim Rynott - Four Corners Helium, LLC.

#### • May 22 - Continuing Education

Full-Day Core Workshop taught by Bob Lindsey was held at the fantastic Corelab facility. Thank you Corelab! This course was well attended we received instruction on how to describe cores. We had the opportunity to view and discuss several cores from active and historical objectives in the Permian basin. Thank you, Bob Lindsey! Thank you Cheryl Desforges and the Continuing Education Committee!

#### May 24 – Engineering Science and Technology Council of Houston

The Awards Banquet was held at the Forest Club. HGS is sponsoring 2 Summer Interns at the Houston Museum of Natural Science. ECH sponsors the annual Engineering and Science Fair of Houston and is an important outreach to science students in our community. I encourage you to learn more about this program by contacting Dorene West, Sue Pritchett, Jim Tucker or Patty Walker.

#### • June 1-8 - Grand Canyon Raft Trip

As I compose this letter 27 folks are attending this spectacular, once in a lifetime field trip this week. Look for stories and photos published in the monthly HGS *Bulletin* in the coming months.

#### **LOOKING FORWARD**

- August 8th is the official charter date (1923) and 100th Anniversary date of the Houston Geological Society. 1923 to 2023 ... 100 years! All past presidents will be invited to attend the annual Past President's Luncheon on this special day.
- October 7th (Saturday) is the date of our 100th Anniversary Gala celebration. This promises to be a spectacular event. Hold the date in your calendars and stay tuned for more details.

#### FINANCIAL SUSTAINABILITY

Although we have not closed the financial books for the year, all indications are we have achieved our goal of financial sustainability for the Houston Geological Society. This accomplishment could only have happened through the dedicated efforts of the Board, the committee chairmen and their committee members who shouldered this goal and did everything in their power to make it happen. Thank you!

As we move into a new fiscal year and celebrate the 100th Anniversary of the Houston Geological Society, I encourage every member to solicit sponsorship from their employers. In addition, please encourage your service company contacts to become HGS members and sponsors.

Advertising in our monthly HGS *Bulletin* is a great way to support the Houston Geological Society.

If you are a consulting geologist or have your own generating entity, please consider advertising in the bulletin or sponsoring an event to assist in securing consulting work or deal partners.

The Board members of the HGS and I thank you for your support of the Houston Geological Society with your membership and your participation. We also thank all the committee chairs and volunteers who helped us carry out our mission. We encourage you to renew your membership and get reconnected to your local geological community. Last, but not least, we thank our numerous sponsors that have generously supported HGS over the past year.

Please take the time to personally thank Andrea Peoples, the HGS office manager, for a job well done!

She has played a vital role in holding our Society together over the last several challenging years. As a reminder you may contact her at 713.463.9476 or andrea@hgs.org.

It has been an honor to serve you.

Walter S. Light, Jr. - President



President Walter S. Light Jr. and the HGS Board of Directors wish to recognize these individuals for their contributions to the Society.

Rising Star Award

Bryan Bottoms Alexandra Price Rachel Lishansky Bryan Ott Angel Callejon

Chairman's Award

Bill DeMis

President's Award

Paul Britt
Caroline Wachtman
Bill DeMis
Dianna Phu
Bruce Blake
Amanda Johnston
Lanette Marcha
Galen Threadgold
Michael Salazar

HGS Distinguished Service Award
Cheryl Desforges



A Huge Thank You to all HGS Sponsors, Contributors and Advertisiers from the 2022-2023 HGS President and Board of Directors.

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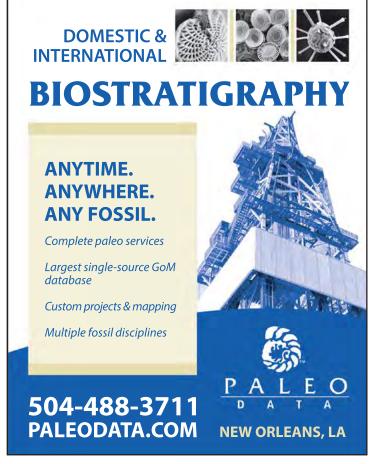
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Contact Walter S. Light Jr. President/Geologist

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From the





#### Sunrise or Sunset?

We are rapidly approaching the 100th anniversary of the HGS and a special *Bulletin* edition will be coming out soon to commemorate this historic event. As my last editor letter, I wanted to speak to some issues regarding our society.

Recent events like the COVID pandemic and the strong governmental and general public attitude regarding "Climate Change", and the accompanying knee-jerk blaming of American

oil companies for a global problem, have put real pressure on the hydrocarbon industry that employs or has employed much of our membership.

The HGS promotes education, and collaboration to make the challenges we face a little easier to deal with. But in response to the changing dynamics of late, in-person attendance at conferences, dinners and classes has dropped dramatically. Zoom meetings have not, in my opinion, filled the gap. Working from home makes collaboration difficult

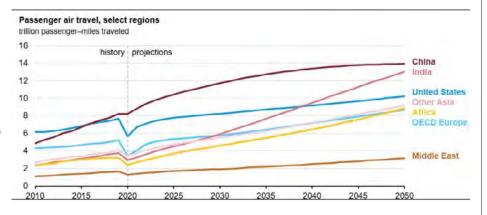
at best. While it may work for some occupations, face-to-face meetings communicate more than a one-way presentation.

As geologists, we have a great challenge to remotely measure and understand the subsurface to predict economic accumulations of fossil fuels. Even with all the new technology advances we have, the challenge does not get easier as we look farther and deeper and in more hostile environments for our precious commodities.

Nature and economics used to be our battle front. But now we are faced with a government and society that thinks fossil fuels are "evil" and wants our industry to go the way of the dinosaur.

But energy is the very basis of a modern society that the very critics of our industry take for granted. Think of Climate Emissary, John Kerry or self-appointed climate advocate, Leonardo DiCaprio flying around the world in their private jets to tell the world's poor to they need to stop using oil.

Protesters chanting "Stop oil now" might just as well be chanting "I am ignorant and have no understanding of how the world works." There are no societies that have low energy consumption and a high standard of living. And the demand for energy is only increasing. Computers use more energy than jet transportation. The Energy Information Agency estimates that jet travel will only increase by 2050. Oil is not going away no matter how many cans of tomato soup are thrown on Van Gogh's paintings.



Our industry needs to last until science comes up with better, cleaner, and cheaper ways of powering our economy and our society. That will not happen for half a century or more. In the meantime, unreasonable regulations and short-sighted mandates don't solve problems; they make it more difficult to elevate the impoverished of the world, and make energy less reliable and affordable in first-world countries.

On the subject of Climate Change, who decided that climate change is bad? A warming climate approximately 8,000 years ago allowed us to go from a hunter-gatherer or forager culture to an agrarian culture where we had time to create cities, societies and more than just food. Climate change in any direction promotes adaptation and evolution. Is that bad also?

My cover photo is either a sunrise or a sunset depending on your point of view. I'm hoping we are seeing a new sunrise for our profession rather than an impending sunset.

### GeoGulf23 Rewards Geoscientists with a Fast-Moving Program Featuring Gulf Coast Regional Plays, Invigorated with New Ideas

By Charles and Linda Sternbach (Co-chairs of the HGS 100th Anniversary Committee, HGS Past Presidents, and GeoGulf23 General Chair and Technical Program Chair)

Te are pleased to celebrate the 100th Anniversary of HGS (1923-2023). This year's centennial plans include GeoGulf23 at the Norris Conference Center on April 22-25, the special HGS August Centenary Edition, and a fall Gala planned for the evening of Saturday, October 7, 2023, at the Houston Petroleum Club.

GeoGulf23 welcomed 405 attendees to the premiere event of Gulf Coast geoscience. Our theme, "United We Explore the Gulf of Mexico and Beyond," reminded us that geography, geoscience, and heritage unite us. Gulf Coast Geoscience unites our Section with the AAPG global community. Our workflows unite geology, geophysics, and engineering to optimize commercial solutions.

HGS hosted the 13 affiliated society stars of the GCAGS constellation with 86 technical presentations, 40 poster sessions, 3 field trips, and 3 short courses taught by elite instructors on salt, tectonics, and sedimentary systems. Conference goals delivered the energy of now. We had a lively exhibition, social events, and 3 inspirational luncheons.



Our theme, featured on the GCAGS Transactions and the GeoGulf23 Program covers, shows the HGS logo prominently beaming like our planet's sun. If you look closely at the HGS logo, you see that the view from land to offshore was a new frontier in the middle of our First Century. We have purposely selected a theme and a logo that supports an elevated view of HGS's Second Century.

NASA Field Trip On Saturday, April 22, we featured a field trip to NASA. Apollo 17 moonwalker Harrison "Jack" Schmitt led a group of 30 geologists on a behind-the-scenes tour of the Lunar Vault, Mission Control, and Rocket Park. Doug Cook, a leading member



NASA Trip group in front of the Apollo 17 mural

of the AAPG Astrogeology Committee, described the field trip and a technical session in an article for the June 2023 AAPG Explorer.

Short Courses On Saturday and Sunday, we featured three short courses. We aimed to feature foundational geoscience of salt, sedimentary systems, and tectonics, which conference attendees could build from the technical program. The instructors were:

- Mark Rowan Salt Tectonics of the Gulf of Mexico
- John Snedden Gulf of Mexico Sedimentary Basin: Depositional Evolution and Petroleum Applications
- Jim Pindell Structural, Tectonics, and Paleogeographic Evolution of the GOM, Caribbean, and Northern South America.

In a post-conference Survey with 50 responses, short courses received a 4.9 out of 5.0 score. The program components were highly ranked, and short courses were at the top. Thanks to our short course chairs, Cheryl DesForges and Lauren Robinson.

Opening Ceremony On Sunday, we celebrated some of the best and brightest geoscientists of the GoM with technical and service awards and educational support. Charles Sternbach called the meeting to order and welcomed VIPs in the audience, including Charles Sternbach opens the AAPG President-Elect, Claudia Hackbarth; AAPG Section Vice President, Rebecca Dodge; the Host Society's HGS President Walter More" along with co-author Light, and HGS President-Elect Paul Britt, Charles thanked all the



conference calling for Big Thinking: "Giant Fields of the Gulf Coast Basins: Analogs and Lessons to Help us find Dick Bishop

GEOGULF23 continued on page 11

GeoGulf23 Welcomed HGS and AAPG Leadership. Local societies like HGS and GCAGS bring great geoscience to AAPG's global community.



Claudia Hackbarth AAPG President-Elect



Rebecca Dadge AAPG Sections Vice President



Walter Light HGS President



Paul Britt HGS President-Elect

volunteers, sponsors, and exhibitors, James Willis, editor of the GCAGS Transactions, and Bob Merrill, editor of the Journal. Linda Sternbach reviewed the conference highlights, short courses, field trips, posters, and technical program presenters. Linda especially thanked the Session Chairs for being the heart and soul of the meeting.

All-Convention Luncheon Invited speakers Harrison "Jack" Schmitt of Apollo 17 and current NASA International space station Artemis Program astronaut Jessica Watkins gave a joint presentation to an audience of 125 people. Charles Sternbach



Four Geologists Who Want(ed) to Go to the Moon: One Did, One Will, Two Bought Telescopes

said, "We are uniting generations through the All-Convention Luncheon where Apollo 17 moonwalker Harrison "Jack" Schmitt passes the rock hammer to Astronaut Jessica Watkins. Jack and Jessica inspire all geologists to Never Stop Exploring. By their example, geoscientists will continuously elevate geoscience to greater heights and new perspectives in the Next Century.

GOM Tectonics Jim Pindell (Tectonic Analysis), Carl Steffensen, Teunis Heyn, and Chris Piela Cox (bp) chaired a full-day series of talks, "Regional Setting of the Gulf of Mexico" which includes plate tectonics, clastic depositional trends, and Mexican basins, on Monday, April 24. It turns out there are a lot of unanswered questions, about the Gulf of Mexico basin formation, that were aired in an open discussion moderated by Brian Horn. How did the Jurassic-aged salt accumulate in the GOM? To answer these questions, scientists must model what happened at depth to reconstruct subsurface layers from the Mesozoic to Cenozoic.

CCUS and Resource Plays Austin Chalk, Eagle Ford, and Haynesville resource plays sessions attracted a full room of attendees. Said one attendee, "I don't know which one to go to. I enjoyed hearing about the latest developments in drilling the Austin Chalk trend and new insights on the Norphlet. We still have a lot of exciting geoscience work in the Gulf of Mexico." Allen Bertagne chaired the GeoGulf session on (CCUS) carbon capture and storage. Gordon Holmes of Denbury Resources won an outstanding oral presentation award for his talk called, "CO, Clearly Seen Using Time Lapse Seismic," which demonstrated modeled seismic response to CO<sub>2</sub> injection into a depleted offshore GOM oil field. CO, seismic expression is like hydrocarbons and gas. Holmes said, "time-lapse 3-D seismic is highly effective in documenting CO<sub>2</sub> distribution, which is mainly controlled by fluid buoyancy and facies distributions."

United We Celebrate Party On Monday Night, 116 entrepreneurs and young professionals of the Society of Independent Earth GEOGULF23 continued on page 12 Scientists (SIPES Houston chapter)



"United We Celebrate" GCAGS and SIPES Houston members network and enjoy the Fireside Bar at the Moran Hotel. What could be better after a full day of technical presentations than good people, a fire pit, an outdoor poolside patio, an open bar, food, a geology trivia quiz with prizes, and a roving T-Rex? Thanks to Sasha Gumprecht and Jeff Allen, Entrepreneur, and Society of Independent Professional Earth Scientists (SIPES) Houston Chairman, for serving as the master of Ceremonies.

united at our social event, "United we Celebrate," at the Moran Fireside lounge and patio. We thank David Tonner and Diversified Well Logging for their generous sponsorship. Jeff Allen was the Master of Ceremony for the evening and conducted an enjoyable geology-themed trivia contest (with prizes!) devised by Sasha Gumprecht. Mike Erpenbeck, GCAGS President, made opening comments, and we recognized HGS president Walter Light and President-Elect Paul Britt.

Panels and Special Sessions GeoGulf presented a series of highlevel and insightful panel discussions on the second day—the Deepwater Business Panel chaired by Mark Leonard. Richard Sears said, "Deepwater is the cheapest and greenest source of supply, and offshore technology is the enabler and the great effort multiplier. It's the oil business, and few things are more profitable than a properly developed, producing oil field!" Audience members brought up the need to have young geoscientists at regional meetings. One senior professional said, "We need to reach out to senior-level leaders at companies that can promote attendance of geoscientists with less than 15 years of experience. Managers must promote these conferences to their staff as educational and networking opportunities."

Deepwater fans (no pun intended) crowded the room to get involved with the Deepwater Sediments Symposium chaired by Jon Rotzien (Basin Analysis) with co-chairs Yuqian Gan (UT) and Diane Woodruff (Oxy). Ali Downard (Chevron) discussed the quantitative evaluation of deepwater fan hierarchy and showed results from the full physics-based forward-stratigraphic model. She said, "Aligning a geologic problem to a computational and quantitative solution leads to deeper insights." Dr. Sumit Verma (UT Permian) presented an award-winning talk on Seismic Attributes for Deep Water Depositional Systems.

Verma said, "Multi-attribute analysis helps interpret complex depositional features in deepwater settings". He illuminated different geomorphological features using coherence and coherent energy, spectral decomposition, and unsupervised clustering on a 3D seismic dataset. A young professional first-time attendee said, "I was grateful for the deepwater presentations. I get a lot out of being able to talk to the authors and question them about the various topics".

Tuesday's Salt Tectonics Session highlighted the role of salt as a trap for hydrocarbons and as a future project to mine critical minerals like lithium. Salt tectonics was hosted by David Lankford-Bravo (bp) and J Carl Fiduk. Speakers included Mark Rowan (who also taught a two-day short course on salt tectonics), Julie Bloxson (Stephen F Austin University), and Sharon Cornelius (University of Houston).

Geophysics Luncheon Jeff Nealon, Manager of Geophysics, (Chevron) united geology, geophysics, and business: "Refocusing on the Gulf: How New Seismic Methods Drive Investments" during the GeoGulf lunch session on Tuesday, April 25. Mike Forrest, who introduced Jeff at the luncheon, summarized the talk, "Jeff showed a seismic line in the deep water GOM, in a subsalt geology setting, with data acquisition and processing improvements from the early 90s to today. The first example was narrow azimuth streamer seismic (NAZ) data — a reliable interpretation was impossible. Later seismic with Wide Azimuth (WAZ) acquisition varying from partial to full azimuth showed considerable improvement in data quality but still with many interpretation questions. Finally, the current data with Ocean Bottom Node (OBN) acquisition and Full Wave Inversion (FWI) processing to build a velocity model generated a seismic line that best represented a geology cross section in the area, including the Jurassic age Louann Salt reflection."

GCSSEPM Luncheon GCAGS members united with GCSSEPM as Daniel Minisini (Shell) shares insights from interviewing dozens of brilliant geologists. Mike Sweet comments, "The GCSSEPM Luncheon speaker at this year's GeoGulf meeting was Dr. Daniel Minisini from Shell. The title of his talk was Wise Words from Celebrated Geologists. Should We Still Listen to Them? Since 2009 Daniel has compiled video interviews with many prominent geologists to understand the reasons for their success. Daniel's videos can be viewed at https://earthscience.rice.edu/minigeology/. During his talk, Daniel showed segments of these interviews to illuminate, in their own words, how these celebrated geologists see themselves and their careers. Several people he interviewed, like Dr. Robert Folk, have since died, giving their words an added poignancy."

The Entrepreneurial Panel Attendees loved the Tuesday Entrepreneurs Session. Our goal was to unite professional geoscientists with entrepreneurs, independents, consultants, and SIPES members. Bill Fairhurst led five panelists, Walter Light, Barry Rava, Bill Fairhurst, Debra Sacrey, and Dick Stoneburner, to share how they transitioned from geoscience employees to oil & gas industry entrepreneurs. GEOGULF23 continued on page 13



Bill Fairhurst chaired a panel of Entrepreneurs, including (from left to right) Barry Rava, Walter Light, Dick Stoneburner, and Deborah Sacrey. The Panel offered valuable business insights.

A packed audience riveted in their seats late on the conference's second day proves this session resonated. Bill Fairhurst wrote a separate article for the June AAPG Explorer, which described six critical cognitive processes or shared traits for entrepreneurial success. We expect much interest in these kinds of panels and discussions long into the future.



Field Trip Leader Andrew Roark leads a group to touch "Basement" at Enchanted Rock, see Cambrian Microbialites by raft, and Ellenburger Kasrst exposed in a quarry on the Llano Uplift.

Field Trip to the Hill Country Andrew Roark (Chevron), our field Trip chair, shared some comments: "The itinerary for this year's GeoGulf Conference Field Trip to Texas' Hill Country was ambitious: over four days, tour the "Greatest Hits" (the best exposures of every major formation) of the region's Precambrian to Lower Paleozoic strata. Current developments made the timing of this excursion prescient; in the more than ten years since GeoGulf organized a similar trip, unconventional resources, and associated



Linda Sternbach (Technical Program Chair) recognizes the Session Chairs as heroes of GeoGulf23 for inviting such high-quality panelists and speakers.

geohazards have become prominent, and carbon sequestration has emerged as a major investment focus. Rocks in the Llano Uplift host unique exposures that improve our understanding of these topics. The packed agenda paid dividends thanks to careful planning, generous sponsorship from Edge Systems, and nearly perfect springtime weather."



GCAGS President and HGS Past President Mike Erpenbeck speaks from the heart about honoring traditions and the "best of the best" at the Honors and Awards ceremony.

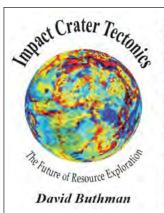
Celebration of the Volunteers The organizing committee chose the well-configured Norris Center, conveniently located (I-10 and Beltway 8) in lively City Center, to serve as a home base for this technically enriching, network-building, inspirational, and fun 2-day immersive experience.

And finally, we unite in a round of applause for attendees, exhibitors, and sponsors for their generous support. We appreciate the session chairs, the heart and soul of this meeting, and the many outstanding speakers they invited.

We built GeoGulf23 to leave a legacy and to set a standard of excellence. We hope best practices will pass to future GeoGulf conferences. The next GeoGulf conference will be April 10-12, 2024, in San Antonio, Texas. This meeting will pave the way for a continued series of excellent AAPG Gulf Coast Section designed to support the industry for many years. Thank you for contributing to this legacy. Please see our webpage for more information. https:// geogulf2023.org/

You Can Read a Complete Account Of Geogulf23 in the upcoming 100th-Anniversary Special Issue of the HGS Bulletin.

GEOGULF23 continued on page 14



Impact Crater Tectonics provides a universal geologic framework for the prediction of mineral resources, oil, gas, gold, rare earth minerals-a plethora of treasures underfoot. Based on solid scientific mathematic, and geologic principles, this work consecrates an imminent paradigm shift in the manner we interpret geologic structures. Impact Crater Tectonics will change your viewpoint of Earth forever

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# GEOGULF23 Thanks to our GeoGulf 2023 Volunteer Leadership Team





















Mike Erpenbeck

Jeff Lund

Sean Romito

**Andy Roark** 

**Ceri Davies** 







**Andy Pepper** 



**Cheryl Desforges** 



Lauren Robinson



Nawaz Bughti



Sandy Rushworth



**David Risch** Judging Co-Chile



**James Willis** 



Sasha Gumprecht













Lee Shelton





#### Thanks to our GeoGulf 2023 Session Chairs



























































#### GeoGulf 23 April 23-25, 2023 Oral and Poster Awards

The successful GeoGulf23 Meeting April 23-25, 2023 had many innovative and impressive talks and posters.

The Judging Committee co-chairs Sandy Rushworth and David Risch worked diligently to assess judges' responses and announce the winning oral and poster talks.

#### 20 Student Posters and 12 Professional Posters







































#### **STUDENT POSTER AWARDS**

#### First Place Student Poster

Juan Pablo Ramos Vargas and Paul Mann, University of Houston Hydrocarbon Provinces and Active Petroleum Systems in the Southern Caribbean: Basement types, Sources, Reservoirs, and Key Exploratory Plays in the Area of Offshore Panama and the Colombian Caribbean Margin

#### **Second Place Student Poster**

Maria A. Gutierrez, Eric Peavey, Arthur Donovan, and Michael C. Pope, Texas A&M University Chemostratigraphic Variability of the Wolfcamp Group Core in Winkler County, Texas. Insights from Geochemical Proxies and Mudstone Composition

#### **Third Place Student Poster**

Ruth Beltran and Paul Mann, University of Houston Comparing Early Cretaceous, Syn-rift Reservoir Rocks Underlying the Slope and Ultra Deepwater Areas of the Campos Basin, Offshore Brazil

#### **Honorable Mention Poster**

Luke Whittenburg and Mindy Faulkner, Stephen F. Austin University

Geologic Face Mapping Methodology Utilizing Global Positioning Systems and Drone Technology

#### A.I. Levorsen Award (AAPG) for Most Innovative Work

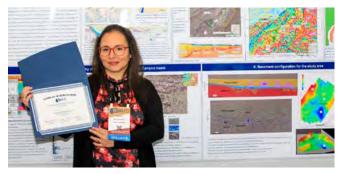
Sumit Verma, The University of Texas at Permian Basin, and Shuvajit Bhattacharya, The University of Texas at Austin Seismic Attributes for Deep Water Depositional Systems

**GEOGULF23 Poster Awards** continued on page 17

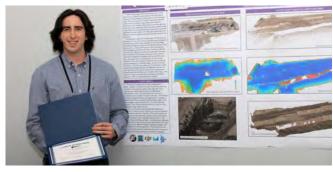


Thank you to Sandy Rushworth and David Risch, our judging chairs, and First Place Award winner Juan Pablo Ramos Vargas

#### GEOGULF23 continued from page 16



Thank you to Ruth Beltran for your award-winning poster.



Thank you to Luke Whittenburg for your award-winning poster.

#### PROFESSIONAL POSTER AWARDS

Thomas A. Philpott Excellence Award for Best Oral Presentations

#### First Place Talk

Lara Heister and Andrew Pepper, This Is Petroleum Systems LLC More from Less: Quantitative Models to Predict Fluid Properties (GOR) from Mud Gas Compositional Data

#### Second Place Talk

Gordon Holmes, Nic Bongiovanni, Tracy Wulf, Stephen Schneider, Scott Maxwell, Brian Chacka, and Hussain Sheikha, Denbury Resources Inc

Time Lapse Seismic in a CO, EOR Flood and Implications for CCS Reservoir Monitoring

#### **Third Place Talk**

Jean-Marie Laigle, XplorLab LLC

Interactive Framework for Prospect Volume Assessment in the Gulf Coast

#### Gordon I. Atwater Best Professional Poster Awards

#### First Place Poster

David A. Ferrill, Southwest Research Institute, Kevin J. Smart, SWRI, Daniel J Lehrmann, Trinity U., Alan P. Morris, SWRI, and Ronald N. McGinnis, SWRI

Synsedimentary Slump Folding in Cretaceous Eagle Ford Formation, Southwest Texas

#### Second Place Talk

Hongliu Zeng and Mariana I Olariu, Bureau of Economic Geology, The University of Texas at Austin

Mapping Massive (up to 500 m) Sandstones in Intraslope Subbasins with A Machine-Learning Enhanced Workflow: Guadalupe A Section, Lower Wilcox, South-Central Texas Coast

#### Third Place Talk

Wesley A. Brown, Lenora Perkins, and Kevin Stafford, Stephen F. Austin University

Characterization and Delineation of Potential Evaporite Geohazards Using Electrical Resistivity Methods along FM 2185, Culberson County, Texas

## **HGS Bulletin Special Advertising Opportunity Special 100th Anniversary Issue**



The HGS is publishing a special hard-copy issue of the *Bulletin* to commemorate the society's centennial in August 2023. Multiple ad spaces are available; chose from full-page, half page, quarter page, eighth page or a place in the business card listings. This opportunity will not occur for another hundred years! Contact the HGS office to reserve your space – office@hgs.org.

Thank you for your interest in advertising with us!

# Renew Your Membership

### HGS Science Fair Committee Report ECH Awards Banquet 5/24/23

Dorene West, HGS Science Fair Committee Chair

The Engineering Science and Technology Council of Houston (ECH) held their 2023 Awards Banquet Wednesday May 24 at the Forest Club. HGS is sponsoring 2 Summer Interns at Houston Museum of Natural Science (HMNS) this year:

- (HGS 2nd place Senior Division winner) Groundwater Prediction Model using Artificial Intelligence
- Abirami Balachandra The Effect of Compost Materials on Water Retention in Soil

Neither was able to attend the ECH Awards Banquet.

The banquet honored the scientific accomplishments of students at the Science and Engineering Fair of Houston (SEFH), those who progressed to the Texas Science and Engineering Fair (TXSEF), and those who progressed to the Regeneron International Science and Engineering Fair (Regeneron ISEF). Patricia Walker, Jim Tucker,

Sue Pritchett, and Dorene West represented HGS at the banquet.

- 13 Senior Division SEFH students were awarded Summer Research Internships at HMNS
- 29 students advanced to the TXSEF and Regeneron ISF (HGS hosted several of these students at our tables)

#### **SEFH Statistics**

- 6071 students were impacted by the opportunity to attend SEFH in 2023 from school district fairs
- 1031 participants competed in 18 STEM Categories along with the Poster and Technical Writing Contests
- 747 judges represented both special and place award
- 729 projects
- 93 Schools attend SEFH: 14 School districts, 11 Private, 6 home school, 7 Charter schools

#### Houston Museum of Natural Science Summer Research Assistant Interns

AIChE - Emmy Li

BEST - Cera Easterwood

Dilorio - Suhani Dave

Dilorio - Hannah Tom

Dilorio - Anitha Sajeesh

ECH - Lohitha Yedam

HGS - Verdant Sharma

HGS - Abirami Balachandra

IEEE - Arav Mehta

IEEE - Aayan Pattanayak

IEEE - Rohit Pillutia

SPE - Ada Wang

SPE - Olivia Ye

#### Sponsored by

American Institute of Chemical Engineers
Engineering, Science and Technology
Council of Houston
Institute of Electronic & Electrical Engineers
The Dilorio Foundation
Houston Geological Society
Society of Petroleum Engineers
Houston Museum of Natural Science
BEST Robotics

#### SEFH - TXSEF - Regeneron ISEF Finalist

Raj Mhetar Anshul Desai Ricardo Victorio Ayaan Javaid Dhuka Caiman Moreno-Earle Rich Wang Donovan Burke Rishab Ghosh Felix Li Rohan Dharia Rohan Mehta Henry Aceves Inu Baek Rohit Pillutla Roshan Mehta Jaagat Prashar Jaanak Prashar Shivani Mundra Jesse Miller Shreyas Vatts Siddhu Pachipala Landon Doughty Madelyn Puza Sohi Patel Videet Mehta Melina Esha Kumar Mihir Lal Relan Yash Veer Semlani Pranav Somani



The purpose of the ECH is to promote math and science education, enhance opportunities for professional development and discussion and to serve as a focal point for informing the public on engineering, science and technical matters.



#### HGS Core Description Class a Resounding Success

The HGS one-day course in Core Description and Interpretation was well-attended. Special thanks to Dr. Robert Lindsay for contributing his time, cores, and immense knowledge. Thanks also goes to Core Labratories for contributing an outstanding venue; both a conference room for lectures and their core layout room.

Students learned how to interpret cores with a systematic methodology, and also the profound economic pay-back, i.e., more money to operators, gained by conducting a core analysis program because "the rock never lie." Core their analysis provides a better understand reservoir properties and architecture.









# Volunteer with HGS



#### **Annual Events**

Every year the HGS has annual social events, and we need volunteers to help us organize and set up on the day of!

These include events such as:

- Golf Tournament
- Shrimp Peel & Crawfish Boil
- Skeet Shoot
- Tennis Tournament
- Field Trips





#### Committees

HGS committees such as
Educational Outreach and
Continuing Education provide
geoscience learning resources
to students and the local
geoscience community. These
groups are always looking for
volunteers! If you or someone
you know is interested in
lending a hand, please contact
the HGS Office!

# Interested in Volunteering?

The HGS is always looking for energetic members to become volunteers for the society! As the largest local geological society in the country, we depend on the support of our members to help us organize and execute our many activities. Committees such as Educational Outreach. Continuing Education, and our annual social event committees are always looking for extra helping hands! Contact the HGS Office at office@hgs.org to learn more!

### **June 2023**

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	HGS Grand Canyon Field Trip 2023	3
HGS Grand Canyon Field Trip 2023	5	6	7	8	9	10
11	12	13	HGS E&E Dinner Meeting TBA https://www.hgs. org/civicrm/event/ info?id=2420	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

# RENEW YOUR HGS MEMBERSHIP HGS.ORG



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YOUR HGS MEMBERSHIP
HGS.ORG

# HGS ANNUAL GOLF TOURNAMENT 16 OCTOBER 2023 | STERLING COUNTRY CLUB





#### SPONSORSHIP FORM

Sponsorship deadline: October 9, 2023

#### Title Sponsorship \$2,250

- · Sponsor LOGO signs on courses
- Company LOGO prominently displayed on sponsor recognition board at registration and awards banquet
- Company LOGO displayed on driving range and practice putting green signs
- Company LOGO displayed on beverage carts
- · Set up on 2 holes (Meet & Greet, Swag and Food)
- Tournament entry for one team (4 people)

#### Beverage Sponsorship \$2,000

- (All beverages must be purchased from the Club)
- · Sponsor LOGO on HGS website and social media
- Company LOGO prominently displayed on sponsor recognition board at registration and awards banquet
- Company LOGO displayed on beverage carts
- Set up on 2 holes (Meet & Greet, Swag and Food)
- Tournament entry for one team (4 people)

#### Lunch Sponsorship \$2,000

- Can BBQ onsite, bring in caterer, or have HGS pick the food
- Sponsor LOGO on HGS website and social media
- Company LOGO prominently displayed on sponsor recognition board at registration and awards banquet
- Set up on 2 holes (Meet & Greet, Swag and Food)
- · Tournament entry for one team (4 people)

#### **Breakfast Sponsorship \$500**

- Breakfast Tacos
- Sponsor LOGO on HGS website and social media
- Company LOGO prominently displayed on sponsor recognition board at registration and awards banquet
- · Set up on 1 holes (Meet & Greet, Swag and Food)
- 1 complimentary Registration

#### Nicklaus Sponsorship \$1,000

- · Sponsor LOGO signs on courses
- Company LOGO prominently displayed on sponsor recognition board at registration and awards banquet
- Company LOGO displayed on driving range and practice putting green signs
- · Set up on 1 hole (Meet & Greet, Swag and Food)
- 2 Complimentary Registrations

#### Hogan Sponsorship \$500

- Sponsor LOGO signs on courses
- Company LOGO displayed on sponsor recognition board at registration and awards banquet
- Set up on 1 hole (Meet & Greet, Swag and Food)
- 1 complimentary Registration

#### Trevino Sponsorship \$250

- · Sponsor LOGO signs on courses.
- Company NAME displayed on sponsor recognition board at registration and awards banquet
- No Complimentary Registration

#### Individual Sponsorship \$150

- · Sponsor LOGO on HGS website
- Company NAME displayed on sponsor recognition board at registration and awards banquet
- · No Complimentary Registration

#### Raffle Swag Prize Sponsorships

- Par Sponsor \$250
- Birdie Sponsor \$500
- Eagle Sponsor \$700

Please submit company logo with form and payment. Payment by credit card or check. Please make checks payable to Houston Geological Society. Email form to office@hgs.org.

Company Name:		
Sponsorship Type:	Amount Enclosed:	
Contact Name:		
Billing Address:		
Phone:	Email:	
Card Number:	Expiration Date:	CVC:

# HGS ANNUAL GOLF TOURNAMENT



#### 16 OCTOBER 2023 | STERLING COUNTRY CLUB



#### TEAM APPLICATION

Early Bird Deadline: October 9, 2023 Entry Deadline: October 12, 2023

Come join us for golf, food, friends, and fun at the annual HGS Golf Tournament at Sterling Country Club and Houston National Golf Club ( www.sccathn.com ). There will be prizes awarded for closest to the pin and long drive, putting games before we start, as well as many great door prizes for participants.

Entry Fee: \$175.00/Golfer or \$700.00/Team.

Early Bird Special (Through October 9th): \$150.00/golfer or \$600.00/team

Entry Deadline: October 12th.

Individual entries will be grouped with other individual golfers to make a foursome. Entries are limited to and will be accepted on a first-in basis.

#### Schedule of Events

8:00am - 9:45am Registration, free use of driving range and mini games
10:00am Shotgun start
3:00pm Cash bar, open buffet
3:30pm Door prizes and awards presentation

Companies or individuals interested in sponsoring the event should contact the HGS Office at office@hgs.org or 713-463-9476. If paying by check, please make check payable to HGS or Houston Geological Society. Sponsorship deadline is October 9th.

Т	Feam Captain:	Phone:		Amoun	t Enclosed:
C	Company:	Email:			
C	Card Number:		Exp. [	Date:	CVC:
В	Billing Address:				
		Company			Email
4					

Please print and provide email addresses for ALL team members, as all communications will be done via email.



May 29, 1932 - May 21, 2023



**Burton Charles Bowen** passed away on May 21, 2023, just a week shy of his 91st birthday. Burt was born in 1932 in New Orleans, LA. He was preceded in death by his wife Charlotte, his parents John and Adele, and his siblings Ione, John and Donald. Burt had a strong work ethic that served him well in a Geology career that spanned over 60 years. He served our country as a 2nd Lieutenant in the US Air Force and served his community in various civic positions.

Burt loved a good debate, an old fashioned cocktail, and Louisiana cuisine. He loved the water, hunting, and exercising. He was every daughter's dream – the ultimate dad handyman.

He was an admired and accomplished man, but his legacy was his loyalty and commitment to family and friends. He is survived by his three daughters and his granddaughter. Burt was loved by many.

The family has requested no flowers, but donations can be made to the Houston Geological Society Scholarship Funds in memory of Burton Bowen. www.hgs.org or call 713-463-9476

Published by Houston Chronicle May 22, 2023.

# **Volunteer Opportunities**

#### Interested in Volunteering?

The HGS is always looking for energetic members to become volunteers for the society! As the largest local geological society in the country, we depend on the support of our members to help us organize and execute our many activities. Committees such as Educational Outreach, Continuing Education, and our annual social event committees are always looking for extra helping hands. Contact the HGS Office at office@hgs.org to start volunteering today!

#### I.T. Specialist Needed

Do you specialize in I.T.? Would you be willing to donate your services to the Houston Geological Society? HGS is in need of an I.T. specialist who has experience with website building/coding and other computer technologies. If you or someone you know would be interested, please contact the HGS Office at office@hgs.org.

# Dinner Meeting

HGS is in search of volunteers to assist with our monthly dinner meetings. Volunteer responsibilities would include pickup/return of meeting materials to/from the HGS office, and managing the registration table at the meeting. Please contact the HGS Office at office@hgs.org if you are interested.

#### Exhibits Chairman

HGS is proud to participate in a number of exhibits each year such as NAPE, GCAGS, etc. We are in search of volunteers to help us at these events! Responsibilities include transportation of the HGS booth to and from conferences, manning the booth at these events, and signing up new or returning memberships. If you or someone you know is interested in lending a helping hand, please contact the HGS Office at office@hgs.org.

# Educational Outreach Committee Chairman

The Educational Outreach Committee provides geoscience learning resources to students, educators, and the general public of southeast Texas. Outreach activities include geoscientist visits to classrooms, scout troops, and other public assemblages, with presentations and hands-on activities about geology and careers in geoscience.

Interested? Please contact the HGS Office at office@hgs.org for more information.

#### Membership Committee

Houston Geological Society is 100 this year! Yes, HGS started in 1923. Just imagine how the organization thrived and has grown all these years. Purely by the volunteering efforts of Geoscientists. The Membership Committee is responsible for promotion of memberships and contribute to the growth of HGS! The Membership Committee needs two (2) student members to help process membership applications. Please contact: Sharma Dronamraju; Chair, Memberships at Sharma@akdpsi.com. The information on HGS membership criteria is HERE.

# **Advertise with HGS**

The Houston Geological Society has many advertising opportunities to help you promote your business. The money raised through advertising helps the HGS to be able to support continuing education, networking, outreach to students, student scholarships, and young professional activities. Check out some of our advertising opportunities below!



#### **Vendor Corner**

Promote your business with a booth at an in-person luncheon or dinner meeting. HGS will also post your logo, website/social link(s) and a brief company summary on the HGS website below the technical meeting's announcement and abstract.



#### **HGS Bulletin**

Published 10 months out of the year and available digitally on the HGS website, the HGS Bulletin is an outstanding technical journal sent electronically to all current members and to subscribing libraries around the world.



#### Virtual HGS Event Sponsorship

Promote your business at a virtual meeting. Along with the opportunity to reach a global audience, HGS will promote your business on the event page, on our social media, and at the technical talk.



#### GeoJobs

The HGS GeoJobs section provides a variety of employment information to interested HGS members and the geological and geophysical community at large. If your business has an employment opportunity, let us help you fill the position!



#### **HGS Weekly Newsletter**

The HGS Weekly Newsletter is published digitally every week, and reaches a global community of 8,000+ people. HGS will promote your business with an ad of your design or your logo and a link to your website or social media.

To learn more about advertising rates and how you can promote your business with us, visit our website or contact the HGS Office at 713-463-9476 or office@hgs.org.





#### **HGS** Bulletin Instructions to Authors

All materials are due by the 15th of the month, 6 weeks before issue publication. Abstracts should be 500 words or less; extended abstracts up to 1000 words; articles can be any length but brevity is preferred as we have a physical page limit within our current publishing contract. All submissions are subject to editorial review and revision.

Text should be submitted by email as an attached text or Word file or on a clearly labeled CD in Word format with a hard copy printout to the Editor.

Figures, maps, diagrams, etc., should be digital files using Adobe Illustrator or Adobe Photoshop. Files should be saved and submitted in .ai, .eps, .tif or .jpg format. Send them as separate attachments via email or CD if they are larger than 5 MEGs each, accompanied by figure captions that include the file name of the desired image. DO NOT EMBED them into your text document; they must be sent as separate files from the text. DO NOT USE POWERPOINT, CLIP ART or Internet images (72-DPI resolution) as these do not have adequate resolution for the printed page and cannot be accepted. All digital files must have 300-DPI resolution or greater at the approximate size the figure will be printed.

Photographs may be digital or hard copy. Hard copies must be printed on glossy paper with the author's name, photo or figure number and caption on the back. Digital files must be submitted in .tif, .jpg or .eps format with 300-DPI or greater resolution at the printing size and be accompanied by figure captions that are linked by the file name of the image. The images should be submitted as individual email attachments (if less than 5 MB) or on CD or DVD.

#### **HGS** Bulletin Advertising

The *Bulletin* is printed digitally using InDesign. Call the HGS office for availability of ad space and for digital guidelines and necessary forms or email ads@hgs.org. Advertising is accepted on a space-available basis. **Deadline for submitting material is 6 weeks prior to the first of the month in which the ad appears.** 

Random Inside Ad Placement Black & White Prices Shown – Color add 30% to prices below					Spec	cific Page Col	or Ad Placeme	ent		
No. of	Random	Random	Random	Random	Inside Front	Inside	Page 2 Full	Outside	Back of	Calendar
Issues	Eighth	Quarter	Half Page	Full Page	Cover	Back Cover	Page	Back Cover	Calendar	Quarter
	Page	Page			Full Page	Full Page		Half Page	Full Page	Page
10	\$950	\$1,350	\$2,550	\$4,750	\$8,000	\$7,500	\$7,050	\$6,850	\$6,650	\$3,000
9	\$800	\$1,300	\$2,500	\$4,700						
8	\$750	\$1,250	\$2,250	\$4,300						
7	\$600	\$1,100	\$2,200	\$3,850						
6	\$550	\$950	\$1,800	\$3,500						\$2,000
5	\$500	\$800	\$1,600	\$3,000	\$4,700	\$4,500	\$4,350	\$4,000		
4	\$450	\$650	\$1,300	\$2,500						
3	\$300	\$550	\$950	\$2,000						\$1,000
2	\$250	\$400	\$700	\$1,500						
1	\$150	\$250	\$450	\$1,000	\$1,500	\$1,400	\$1,250	\$1,000	\$1,250	\$850

Professional Directory Section Business Card Ad: 10 Issues - \$160 (\$30 for each additional name on same card)

#### Website Advertising Opportunities

There are currently 5 opportunities to help spread the word about your business or event and generate traffic to your website or campaign. Please submit all ad materials five (5) days prior to the go-live date for testing.

Placement	Rate	Specifications/Description				
HGS Website Home Page Banner Ad	\$800 – Monthly \$1800 – 3 Months \$2800 – 6 Months	275 x 875 pixels; home page top banner ad. All Home Page Banner Ads rotate every 10 seconds.				
	\$3600 – 12 Months					
	\$700 – Monthly					
HGS Website Home Page	\$1500 – 3 Months	200 x 400 pixels; home page right column ad				
Column Ad	\$2400 – 6 Months	200 x 400 pixels, nome page right column ad				
	\$3600 – 12 Months					
	\$600 – Monthly					
HGS Website Event Page Ad	\$1200 – 3 Months	200 x 400 pixels; calendar page left column ad. All Event Page Ads rotate every				
11G3 Website Event Fage Au	\$1600 – 6 Months	10 seconds.				
	\$2600 – 12 Months					
	\$50 – 14 days					
	\$100 – 30 days	Docting of ich amountsmities on IICS website Cliefs the Coo Ishe tak to get stanted				
Geo-Jobs	\$300 – 3 Months	Posting of job opportunities on HGS website. Click the Geo-Jobs tab to get started Must be filled out completed and the dates set appropriately.				
	\$600 – 6 Months					
	\$1200 – 12 Months					
Vendor Corner	\$250 *4 Pack option with 1 FREE bonus event for \$1000.00 available. Send request to vendorcorner@hgs.org.	Company logo, company website, and company description will be highlighted on HGS Calendar website event. This is an opportunity to display company wares, gain personnel exposure and hand out product information at HGS dinner meetings.				
Event/Short Course Calendar Ad	\$100 – Monthly	An event ad posted within the HGS website calendar under the Events tab.				
Bundle & Save!	• 20% off website ads when	combined with print ads in all 10 HGS <i>Bulletin</i> issues. combined with print ads in 5 HGS <i>Bulletin</i> issues. combined with print ads in 3 <i>Bulletin</i> issues.				



Houston Geological Society 14811 St Mary's Lane Suite 250 Houston TX 77079 Phone: (713) 463-9476 Email: office@hgs.org

#### **Active Membership**

In order to qualify for Active Membership you must have a degree in geology or an allied geoscience from an accredited college or university or, have a degree in science or engineering from an accredited college or university and have been engaged in the professional study or practice of earth science for at least 5 years. Active Members shall be entitled to vote, stand for election, and serve as an officer in the Society. Active Members pay \$36.00 in dues.

#### **Associate Membership**

Associate Members do not have a degree in geology or allied geoscience, but are engaged in the application of the earth sciences. Associate Members are not entitled to vote, stand for elections or serve as an officer in the Society. Associate Members pay \$36.00 in dues.

#### **Student Membership**

Student membership is for full-time students enrolled in geology or an allied geoscience. Student Members are not entitled to vote, stand for elections or serve as an officer in the Society. Student Member dues are currently waived (free) but applications must be filled out to its entirety. Student applicants must provide University Dean or Advisor Name to be approved for membership.

#### Membership Benefits

#### Digital HGS Bulletin

The HGS Bulletin is a high-quality journal digitally published monthly by the HGS (with the exception of July and August). The journal provides feature articles, meeting abstracts, and information about upcoming and past events. As a member of the HGS, you'll receive a digital copy of the journal on the HGS website. Membership also comes with access to the online archives, with records dating back to 1958.

#### Discount prices for meetings and short courses

Throughout the year, the various committees of the HGS organize lunch/dinner meetings centered around technical topics of interest to the diverse membership of the organization. An average of 6 meetings a month is common for the HGS (with the exception of July and August). Short courses on a variety of topics are also planned throughout the year by the Continuing Education Committee. These meetings and courses are fantastic opportunities to keep up with technology, network, and expand your education beyond your own specialty. Prices for these events fluctuate depending on the venue and type of event; however, with membership in the HGS you ensure you will always have the opportunity to get the lowest registration fee available.

#### Networking

The HGS is a dynamic organization, with a membership diverse in experience, education, and career specialties. As the largest local geological society, the HGS offers unprecedented opportunities to network and grow within the Gulf Coast geological community.

# Please fill out this application in its entirety to expedite the approval process to become an Active/Associate member of Houston Geological Society.

Full Name		Type (Choose	e one): Active
Associate Student Current Email (for digital Bulletin &			
Phone Preferred Address for HGS mail			
This is my home address bu			
		Job Title (required)	Will you
volunteer? (Y/N) Committee			
	Annual dues	Active & Assoc. for the one year (July 1st-J	<i>June 30th)</i> \$36.00 Student \$0.00
OPTIO	NAL Scholarship C	ontributions- Calvert/HGS Foundation-Unc	lergraduate \$5.00
			Total remittance
Payment:			
Check # Credit card: V MC AE Discover			
Credit Card#			
CVV code (req'd): Expirat	ion: (mm	/yy)	
Signature:	Date:		
To the Executive Board: I hereby apply Constitution & Bylaws.	for membership in i	the Houston Geological Society and pledge	to abide by its
Company(required, mark 'in transition' if t			
City (Work)St	ate (Work)	Postal Code (Work)	
School (required)			
Major (required) Year Graduated		Degree (required)	
School (optional)			
Major (optional) Year Graduated		Degree (optional)	
Years Work Experience (required)		ence in the practice or application of earth se	cience or an allied
AAPG Member Number	OR_		
HGS Sponsor's Name			
Signature:	D	ate:	

#### Professional **Directory**

Consulting, Evaluate Prospects: USA and International

Seeking Prospects: Coastal Texas

#### Victor H. Abadie III

Consulting Geologist

650.201.0528 • vic@montara.com Post Office Box 81, Montara CA 94037-0081 AAPG/DPA, SIPES, Calif. Reg. Geologist, Tex. Reg. Geologist



#### Paul W. Britt

Geologist, P.G., C.P.G.

Houston, Texas

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Zach Arasteh Business Manager

2703 Highway 6 S, Suite 280A Houston, TX 77082 Tel 713-664-7916

Cell 832-287-8320 Fax 832-415-0358

zach@metarocklab.com www.metarocklab.com

#### Mustafa Touati

Digital Rock Physics - Numerical Geology Geomodeling - Geostatistics and the Road To Geoexploration Robots.

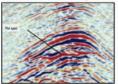
Mailing address: P.O. Box 3401

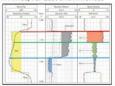
Sterling, VA, 20167

E-mail: mustafa touati@yahoo.com

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