



THE
GEOLOGICAL
SOCIETY
OF AMERICA®

SOUTH-CENTRAL Section Meeting

13–14 March 2017

Omni San Antonio Hotel at the Colonnade
San Antonio, Texas, USA



Program
SOUTH-CENTRAL
51st Annual Meeting of the South-Central Section, GSA
San Antonio, Texas, USA
13–14 March 2017

Geosciences in the Heart of Texas



Local Program Committee

General Chair	Benjamin Surpless
Technical Program Chair	David Turner
Field Trip Chair.	Daniel Lehrmann
Student Volunteer Coordinators.	Gil Gomez and Sherry Wood
Exhibits Coordinator.	Benjamin Surpless
Sponsorship Coordinator	Robert Stern

GSA South-Central Section Officers for 2017–2018

Chair	Benjamin Surpless
Vice Chair	Jeffrey Connelly
Past Chair	Peter Clift
Secretary/Treasurer	Wm. Jay Sims
Management Board	Stephen Boss, Todd Halihan, Antony (Tony) Giles, Jonathan Sumrall, Antonio Cardona, Matthew Kirk, Elizabeth Catlos

NOTICE

By registering for this meeting, you have acknowledged that you have read and will comply with the GSA Code of Conduct for Events (full code of conduct listed on page 12). If you need to report unacceptable behavior, please contact:

GSA Executive Director, Vicki McConnell, vmccConnell@geosociety.org

GSA President, Claudia Mora, president@geosociety.org

You may also stop by registration or the GSA Bookstore to have them directly contacted via phone.



As President of Trinity University, it is a pleasure to welcome you to San Antonio for the annual meeting of the South-Central Section of the Geological Society of America, hosted by Trinity University and the Department of Geosciences. We are proud to host the 51st annual meeting, and we hope you will take advantage of all that San Antonio and the surrounding area has to offer.

It is exciting to see the breadth of professional activities at your conference. With field trips involving everything from water and energy resources to cave systems and karst topography, I can see opportunities for those from different geoscience backgrounds to interact on the outcrop, in the kayak, or in the cave. The variety of your technical sessions is also impressive, with topics ranging from the tectonic evolution of the south-central region to fostering cultures of inclusion in the geosciences. I expect this meeting to provide a venue for excellent scientific discussions across a range of geoscience disciplines.

I am especially pleased to see the range of student-focused activities at your meeting. I admire the clear focus of your mentor lunches, career-planning sessions, and student awards program. I am also impressed with the abundant opportunities for undergraduate and graduate students to interact with geoscience professionals; these interactions can be invaluable to young scientists. I think students will gain a great deal from this year's meeting.

Once again, welcome to San Antonio and the 51st annual meeting of the South-Central Section of the Geological Society of America. If you haven't visited Trinity University since we hosted the 2005 South-Central meeting, I invite you to take a campus tour while you're in town. Best wishes for an invigorating and fruitful meeting.

Sincerely,

Danny Anderson
President

General Information



LOCATION

The 51st Annual Meeting of GSA's South-Central Section, hosted by Trinity University, will take place at the Omni Hotel at the Colonnade in northwest San Antonio, Texas. This location offers convenient access to a variety of opportunities for entertainment, shopping, food, and drink, with many businesses in walking distance from the conference. San Antonio boasts a wide range of local attractions, including the Spanish Missions National Historic Park, the Riverwalk, Six Flags Fiesta Texas, world class museums, and a thriving culinary scene ranging from street food to five-star fare.

San Antonio, originally founded as Mission San Antonio de Valero in 1718, has a rich and varied history, from pre-colonial Native American settlements near the springs along the Balcones escarpment, to the arrival of Spanish colonists in the 17th century, to the vibrant, multi-cultural city that it is today. The Spanish established five missions along the San Antonio River, including the Mission San Antonio de Valero (later known as the Alamo). These missions are now part of a National Historic Park that winds along the San Antonio River to the south of downtown San Antonio, along the world-famous Riverwalk.

The Riverwalk now extends for more than 13 miles, thanks to recent expansions both north and south of Downtown. The Riverwalk is divided into "reaches," including the Museum Reach (with sites like the San Antonio Zoo, the Witte Museum, Brackenridge Park, and the San Antonio Museum of Art), the Downtown Reach (the Alamo, the Tower of the Americas, Hemisfair Park, and the Shops at Rivercenter), and the Mission Reach (including Mission Concepcion, Mission San Jose, Mission San Juan, and Mission Espada). The river itself, now fed primarily by recycled water, varies in its character as one walks or bikes from one reach to the next.

San Antonio owes its existence and growth to the Edwards aquifer system, which provides most of the city's water supply. The local area provides spectacular examples of aquifer dynamics, including surface karst features, artesian springs, and spectacular cave systems within a short drive of the Omni Hotel at the Colonnade. As the urban area has expanded over the past several decades, increasing demand for water has resulted in some of the more interesting and forward-looking water management agreements in the nation. However, because demand for water is expected to increase in the coming years, water management in the San Antonio area remains controversial and will be a topic of discussion at this year's meeting.

Visitors interested in local culture, history, and entertainment will find abundant and varied opportunities to satisfy their thirst for recreation in the San Antonio area. For more information about recreational opportunities in the area, visit: <http://visitsanantonio.com/>. Thanks to the B-cycle program, bikes are available to rent and can be returned at many locations along the Riverwalk and throughout San Antonio. When you have some time before or after the meeting, explore the city!

TRANSPORTATION

San Antonio is accessible by a number of different transportation methods (see map on page 5). From the west, it is readily accessible by interstates 10 and 90, from the north via interstate 281, from the northwest via interstate 35, from the east via interstate 10, and from the south via interstates 35 and 281. There are two loops around San Antonio, including an inner loop (interstate 410) and an outer loop (highway 1604). People preferring to fly will arrive at the San Antonio airport, near the intersection of highways 281 and 410 in north San Antonio. From the airport, it is just an 8-mile drive to the Omni Hotel at the Colonnade. If using Google Maps or other internet mapping software, use the address: 9821 Colonnade Blvd, San Antonio, TX 78230. Uber is available in San Antonio, if you wish to visit sites in the San Antonio area.

PARKING

The Omni Hotel at the Colonnade has valet parking available for US\$15, and self-parking is also available at no charge. Those staying at the hotel have complimentary parking.

EATING AND DRINKING

There are a number of restaurants within walking distance of the Omni Hotel that should suit all tastes and finances. There are also places to enjoy local microbrews, coffee, or other lighter fare. These include the following (please refer to the map on page 5 for locations). San Antonio has a wide variety of dining options within easy driving distance, too, so be sure to explore your options online or with your smartphone.

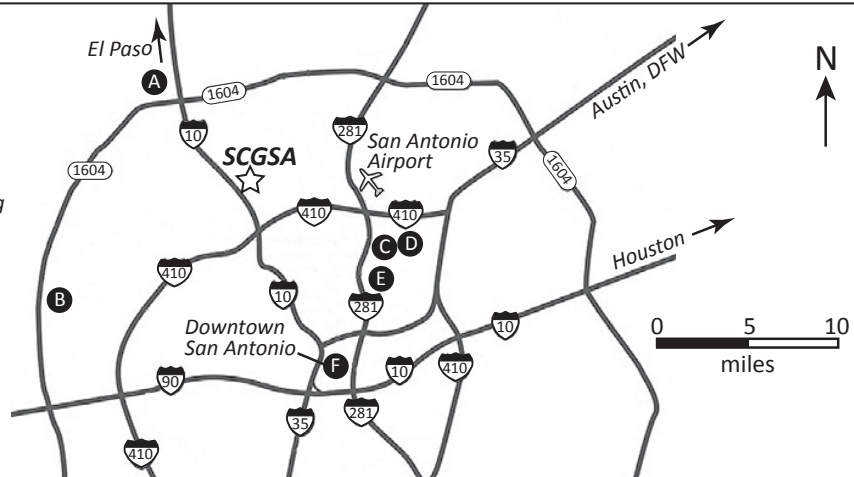
Alamo Café (\$\$), Classic Tex-Mex fare

Asian Star Buffet (\$), Chinese, Japanese, Asian-fusion buffet-style restaurant

Bolo's (\$\$\$), Classic American Cuisine (in the Omni Hotel)

**Map of the San Antonio area,
displaying the highway network
and sites of interest.**

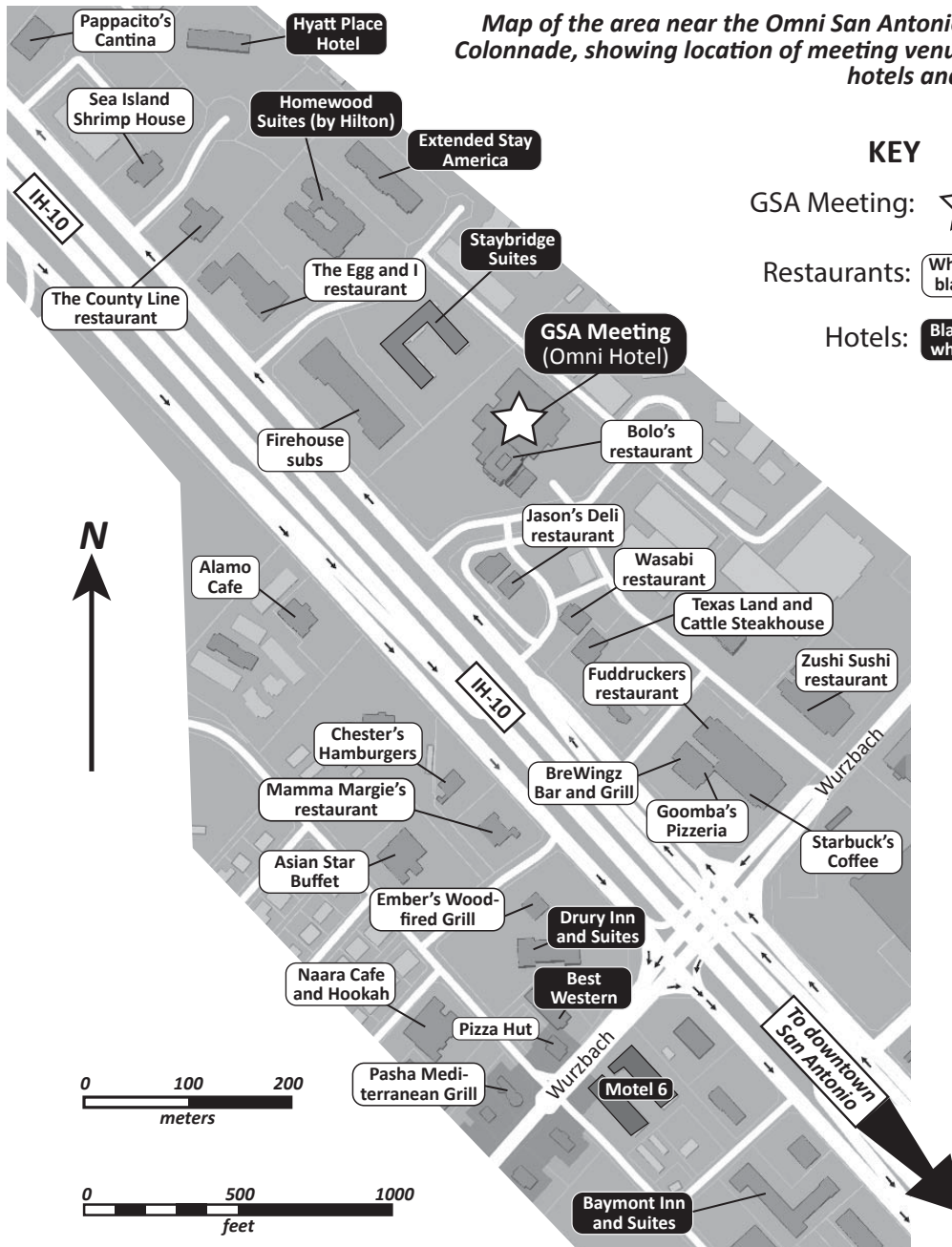
- ☆ Omni Hotel (meeting headquarters)
- ✈ San Antonio International Airport
- A 6 Flags Fiesta TX and La Cantera shopping
- B Seaworld
- C San Antonio Zoo and the Witte Museum
- D The McNay Art Museum
- E The Doseum (children's museum)
- F Downtown, including the Alamo, the Riverwalk, the Mission Trail, and much, much more)



**Map of the area near the Omni San Antonio Hotel at the
Colonnade, showing location of meeting venue and nearby
hotels and restaurants.**

KEY

- GSA Meeting: ☆
- Restaurants: White with black text
- Hotels: Black with white text



BreWingz Bar and Grill (\$\$), Wings, burgers, brews, and sandwiches
Chester's Hamburgers (\$), Burger joint
The County Line (\$\$), Texas BBQ
The Egg and I (\$\$), Traditional breakfast fare
Ember's Wood-fired Grill and Bar (\$\$), Wood-fired pizza, burgers, ribs, sandwiches
Firehouse Subs (\$), sub sandwiches
Fuddruckers (\$\$), Traditional American burgers and sandwiches
Goomba's Pizzeria (\$), Pizza, calzones, sandwiches
Jason's Deli (\$), Traditional American fare, sandwiches, salad
Mamma Margie's (\$), Mexican restaurant (open 24 hours)
Naara Café and Hookah (\$\$), Middle-eastern and Mediterranean fare
Pappacito's Cantina (\$\$), Classic Tex-Mex fare
Pasha Mediterranean Grill (\$\$), Mediterranean fare
Pizza Hut (\$), American pizzeria
Sea Island Shrimp House (\$\$), Seafood restaurant
Starbuck's Coffee (\$), coffeehouse
Texas Land and Cattle Steakhouse (\$\$), Traditional American Steak and Seafood
Wasabi (\$\$), Sushi bar
Zushi Sushi (\$\$), Sushi bar

VENUE

The meeting location is in northwest San Antonio at the Omni Hotel at the Colonnade. Pre-meeting field trips are departing from the lobby of the hotel, and workshops are being held in rooms inside the hotel complex.

WEATHER

In late March, south Texas experiences some of the best weather of the year, with daytime temperatures in the mid-70s, lows in the low 50s, spring breezes, and low humidity. Although March is a relatively dry month in San Antonio, rain is possible, so the well-prepared attendee will bring rain gear.

MEETING APP

A web-based app is available for this meeting. Please download the app at <https://gsa.confex.com/gsa/2017SC/meetingapp.cgi>.

REGISTRATION

Registration is required for anyone attending technical sessions, field trips, short courses, or exhibits. Check-in and on-site registration is in the Omni Hotel at the Colonnade, Foyer, on the following schedule:

Sunday, 12 March	3 p.m.–7:30 pm
Monday, 13 March	7 a.m.–4:30 p.m.
Tuesday, 14 March	7 a.m.–2 p.m.

Registration Fees

On-site registration fees are below and are shown in U.S. dollars. Professionals registering for the meeting are encouraged to add US\$15 to their registration fee to help a student attend the meeting.

	Standard Full Mtg.	One day
Professional Member.....	\$230	\$175
Professional Member 70+	\$160	\$110
Professional Nonmember	\$250	\$190
Early Career Professionals.....	\$170	\$120
Prof. Low Inc. Countries.....	\$85	\$60
Student Member	\$110	\$65
Student Nonmember	\$140	\$75
Student Low Inc. Countries	\$30	\$25
K–12 Professional.....	\$110	n/a
Guest or Spouse	\$55	n/a
Field Trip/Workshop Only	\$60	n/a

ABSTRACTS

To view abstracts for this meeting, please go to <https://gsa.confex.com/gsa/2017SC/webprogram/start.html>.

ACCOMMODATIONS

Reservations for the Omni Hotel at the Colonnade, can be made by calling +1-210 691-8888. Please mention that you are attending the South-Central meeting of the Geological Society of America. There is an additional 16.75% tax rate on San Antonio hotel rooms.

SPECIAL EVENTS

Welcome Reception. Sunday 12 March, 5–7 p.m., Colonnade Ballroom, 20th floor of the Omni Hotel at the Colonnade. Enjoy light snacks and a complimentary beverage while connecting with your colleagues and enjoying a beautiful view of San Antonio. Each participant receives a coupon for one free beer, wine, or non-alcoholic beverage in their registration packet.

Keynote Address and Reception. Monday, 13 March, 5–7 p.m., Grand Ballroom CDE. Enjoy light snacks and a complimentary beverage before and during the keynote presentation at 6 p.m., *Preparing Students for the Future Geoscience Workforce*, by Dr. Sharon Mosher, Dean of the Jackson School of Earth Sciences at the University of Texas at Austin. Each participant receives a coupon for one free beer, wine, or non-alcoholic beverage in their registration packet.

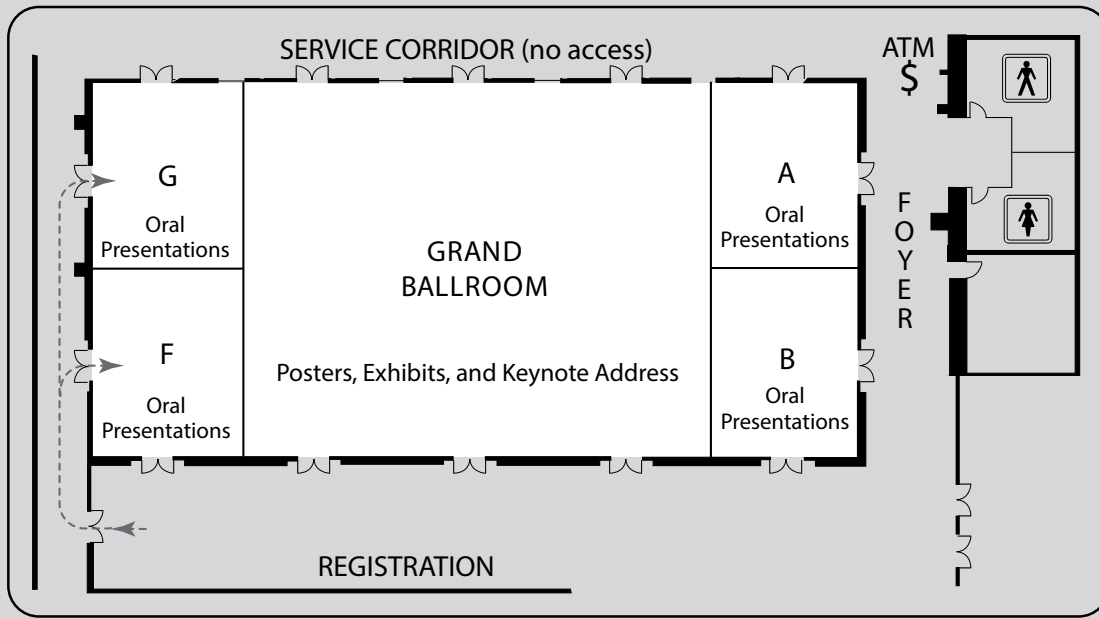
Student Award Ceremony. Sponsored by Trinity University. Tuesday, 14 March, 5–5:30 p.m., Grand Ballroom CDE. Come find out which undergraduate and graduate students won awards for their oral or poster presentations!

BUSINESS MEETING

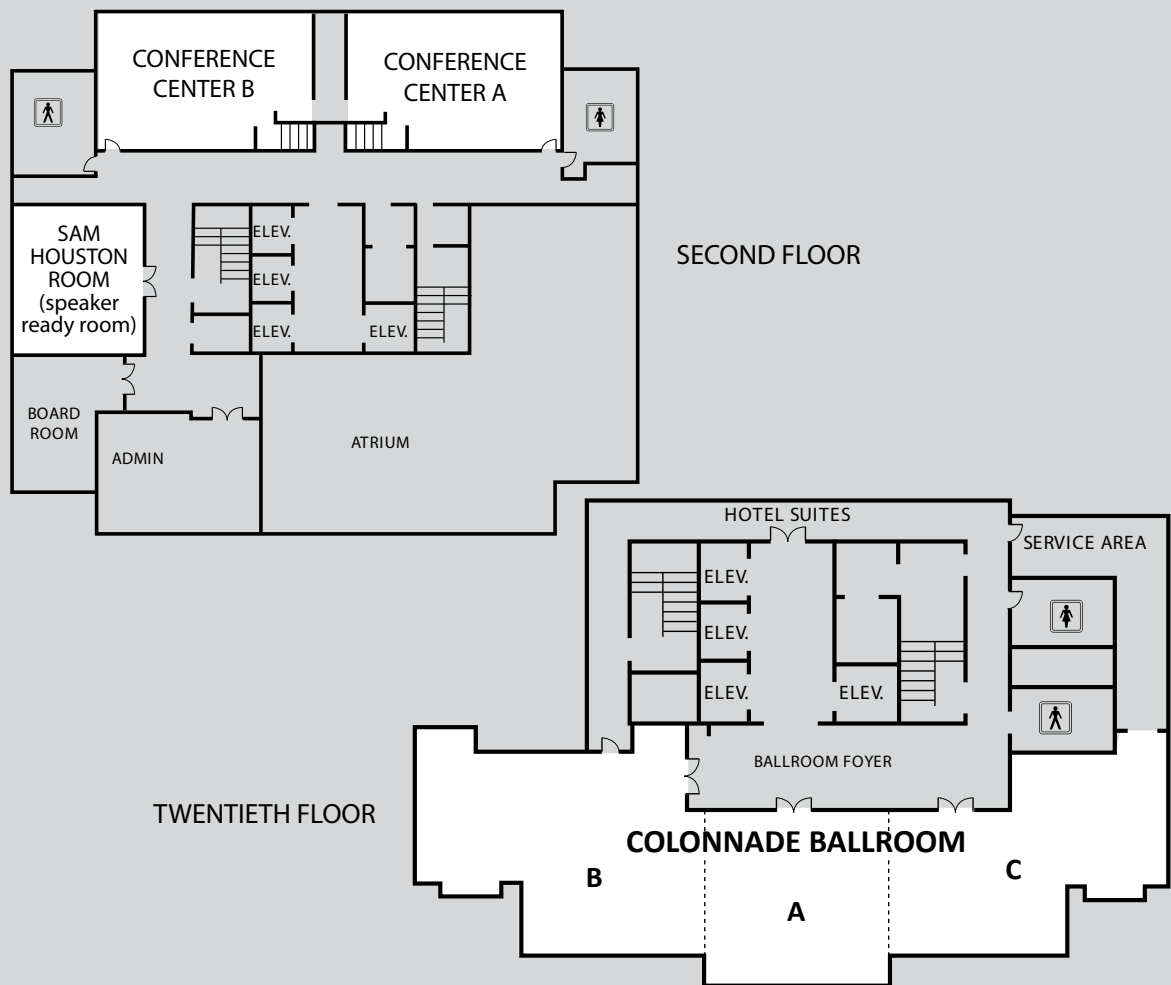
South-Central Section Management Board Meeting. Monday, 13 March, noon–1:30 p.m., Bolo's PDR.

South-Central Section Open Meeting. Tuesday, 14 March, 7–8 a.m., Bolo's PDR.

Floor plans of the Omni Hotel at the Colonnade



FIRST FLOOR



TECHNICAL PROGRAM

Speaker Ready Room

The Speaker Ready Room is located in the Sam Houston Room, second floor, and is available for use at the times listed below. Computers and assistance will be available to view presentations. All presentations will be displayed as PowerPoint presentations in technical sessions. The ready room can be used to check presentations prior to uploading files. We ask that oral presenters upload their presentations the night prior for morning sessions at least 2 hours prior to the beginning of their session for afternoon sessions.

Speaker Ready Room Hours

Sunday, 12 March 4–7 p.m.
Monday, 13 March 7–5:30 p.m.
Tuesday, 14 March 7 a.m.–noon

Theme Sessions

T1. Advances in Understanding Precambrian to Cenozoic Magmatic and Metamorphic Processes and their Bearing on Lithospheric Evolution of Southern Laurentia. Elizabeth Catlos, Univ. of Texas at Austin; ejcatlos@gmail.com; Michael DeAngelis, Univ. of Arkansas Little Rock, mtdeangelis@ualr.edu; Richard Hansen, Texas Christian Univ., r.hanson@tcu.edu.

T2. Advances in the Application and Development of Terrestrial Paleoclimate Proxies. Marina Suarez, Univ. of Texas at San Antonio, Marina.Suarezatutsa.edu; Steven Driese, Baylor Univ., Steven_Driese@baylor.edu; Dan Breeker, Univ. of Texas at Austin, breecker@jsg.utexas.edu.

T3. Advances in Sedimentology, Stratigraphy, and Geochemistry of Carbonates and Mixed Carbonate Clastic Systems. Dan Lehrmann, Trinity Univ., dlehrmann@trinity.edu; Andre Droxler, Rice Univ., andre@rice.edu.

T4. The Impact of Oceanographic Conditions, Oaes, and Volcanism on an Unconventional Reservoir System: The Late Cretaceous Eagle Ford and Austin Chalk Groups of the Gulf Coast. Alexis Godet, Univ. of Texas at San Antonio, Alexis.Godet@utsa.edu; Michael Pope, Texas A&M Univ., mcpope@tamu.edu; Robert Stern, Univ. of Texas at Dallas, rjstern@utdallas.edu; Jon Snow, Univ. of Houston, jesnow@uh.edu; Steve Bergman, Shell International Exploration and Production (Houston), sbergman@sbcglobal.net.

T5. Micro- to Macroscopic Evidence of Life and its Implications for the Evolution and Interpretation of the Biosphere in Earth Systems. Stephen Hasiotis, Univ. of Kansas, hasiotis@ku.edu; Thomas Adams, Witte Museum, thomasadams@wittemuseum.org; William Foster, Univ. of Texas at Austin, wfoster@jsg.utexas.edu; Sophie Warny, Louisiana State Univ., swarny@lsu.edu.

T6. Karst: From Sinkholes to Springs and Everything in Between. Geary Schindel, Edwards Aquifer Authority, gschindel@edwardsaquifer.org; Jon Sumrall, Sam Houston State Univ., karst@shsu.edu; Brian Hunt, Barton Springs/Edwards Aquifer Conservation District, brianh@bseacd.org.

T8. Subsurface Exploration Techniques in the South-Central U.S. Evelyn Mitchell, Saint Mary's Univ.,

emitchell1@stmarytx.edu; Ronald Green, Southwest Research Institute, ronald.green@swri.org.

T9. Fostering Cultures of Deliberate Inclusion in Geosciences. Boss, Stephen K., Univ. of Arkansas, sboss@uark.edu.

T10. Late Paleozoic Tectonic Framework of the South-Central Region and Evolution of the Permian Basin. Robert Stern, Univ. of Texas at Dallas, rjstern@utdallas.edu; Thomas Ewing, Frontera Exploration Consultants, tewing@fronteraexploration.com; Lowell Waite, Pioneer Natural Resources, lowell.waite@pxd.com.

T11. Petroleum and Water Interactions in Mexico's South-Central Region. Antonio Cardona, Oklahoma State Univ., antonio.cardona_benavides@okstate.edu; Todd Halihan, Oklahoma State Univ., todd.halihan@okstate.edu; Martin Carlos Vidal García, Mexican Geohydrologic Association and Universidad Nacional Autónoma de México, martincarlosv@yahoo.com.mx.

T12. Upper Crustal Deformation across Continental Interiors from the Mesozoic to the Present. Keith Gray, Wichita State Univ., k.gray@wichita.edu; M. McKay, Missouri State Univ., matthewpaulmckay@gmail.com; B. Surples, Trinity Univ., bsurples@trinity.edu.

T13. Texas Water Research Network: A Statewide Initiative to Integrate and Advance Water Research from Inception to Application I. Suzanne A Pierce, Texas Advanced Computing Center, spierce@tacc.utexas.edu; Kevin Wagner, Texas A&M Univ., kwagner@ag.tamu.edu; Suzanne Schwartz, Univ. of Texas at Austin, SSchwartz@law.utexas.edu; Jay Banner, Environmental Science Institute, Univ. of Texas at Austin, banner@jsg.utexas.edu.

T14. Groundwater Availability in Texas: Rule of Capture and Sustainable to Consensus Yield. Brian Hunt, Barton Springs Edwards Aquifer Conservation District, brianh@bseacd.org; Jack Sharp, Jackson School of Geosciences, Univ. of Texas at Austin, jmsharp@jsg.utexas.edu; Suzanne A Pierce, Texas Advanced Computing Center, sawpierce@gmail.com.

T15. Undergraduate Students (Posters). Elizabeth A. Heise, School of Earth, Environmental and Marine Sciences, Univ. of Texas at Rio Grande Valley, elizabeth.heise@utrgv.edu.

DISCIPLINE SESSIONS

- Recent Advances in Geoscience Research
- Research in Hydrogeology, Geochemistry, and Soils (Posters)
- Research in Sedimentology and Stratigraphy (Posters)
- Research in Structural Geology, Geomorphology, and Igneous Processes (Posters)

PRE-MEETING FIELD TRIPS

All trips depart from the Omni Hotel at the Colonnade unless otherwise noted. For additional information, please contact Field Trip Chair, Dan Lehrmann, dlehrmann@trinity.edu.

F1. The Edwards Aquifer—A Groundwater System Under Stress. Sat. 11 March, 8:30 a.m.–5 p.m. Cost: \$66 includes transportation, lunch, guidebook. *Cosponsored by GSA Karst Division.* Principal Organizer: Geary Schindel, Edwards Aquifer Authority, gschindel@edwardsaquifer.org.

This field trip will provide an overview of the Edwards Aquifer and include discussions on water-quality issues related to urbanization and competing demands for groundwater from agricultural, municipal, industrials, ecological, and recreational interests along the rapidly growing San Antonio–Austin corridor. Field trip stops will include cave entrances in an urban setting; a flood control/recharge dam; urban development; aquifer monitoring and research initiatives; a highly faulted outcrop of the Edwards Limestone; Comal Springs, the largest spring in the southwest; and saline monitoring wells.

F2. South-Central Texas Underground. Sun. 12 March, 11:30 a.m.–5 p.m. Cost: \$20 includes transportation and all lights, helmets, gloves, kneepads for the trip. *Cosponsored by GSA Karst Division.* Principal Organizer: Geary Schindel, Edwards Aquifer Authority, gschindel@edwardsaquifer.org. Co-organizers: Members of the Bexar Grotto of the National Speleological Society.

This trip visits Robber Baron Cave, a former commercial cave located near the San Antonio airport. The trip will see much of the mile-long cave and will include some crawling and climbing. You should be in moderate physical shape. We recommend wearing sturdy boots, long pants, and an old T-shirt for the trip as the cave temperature is approximately 70 degrees F and 100% humidity. We will discuss speleogenesis and management of cave and karst features in an urban environment. The cave is the only known location of the endangered Robber Baron Cave Spider. The cave also has a number of geologic features related to hypogenic speleogenesis and may be a paleospring related to the underlying Edwards Aquifer. The trip will last 3 to 4 hours.

F3. Hydrogeology of Major Trinity Aquifer Springs in the Blanco River Basin. Sun. 12 March, 8 a.m.–5 p.m. Cost: \$95 includes guidebook, transportation, refreshments, and lunch. *Cosponsored by GSA Karst Division.* Principal Organizer Marcus Gary, Edwards Aquifer Authority, mgary@edwardsaquifer.org. Co-organizer: Brian B. Hunt, Barton Springs/Edwards Aquifer Conservation District, brianh@bseacd.org.

The trip highlights recharge, flow, and discharge from the Trinity Aquifer and examines specific important hydrogeological features that have been the focus of recent studies. Stops will include faults, springs, and exposures of the lower Cretaceous stratigraphy. Topics covered include hydrology, karst, stratigraphy, and structure.

F4. The Eagle Ford and Austin Chalk Groups in and around San Antonio. Sun. 12 March, 8 a.m.–4:45 p.m. Cost: \$100 includes transportation in minibuses, field guidebook, breakfast, lunch box and refreshments (water, soda). *Cosponsored by GSA Sedimentary Geology Division.*

Principal Organizers: Alexis Godet, Univ. of Texas at San Antonio, alexis.godet@utsa.edu; John Cooper, Univ. of Texas

at San Antonio, jcgolf.cooper@gmail.com. Co-organizers: Michael Pope, Texas A&M Univ., mcpope@mu.edu.

During the Late Cretaceous, global oceanic anoxic events and oceanographic trends shaped the sedimentation style in the northern Gulf of Mexico by favoring the deposition of organic-rich marlstones (Eagle Ford Group) and thick muddy carbonates (Austin Chalk Group). We invite contributions that aim to (1) refine the Late Cenomanian–Early Campanian; (2) assess the driving mechanisms of regional trends in facies changes; and (3) assess the impact of global phenomena on the sediment production along the northern margin of the Gulf of Mexico.

F5. Cretaceous Sedimentary Succession, Dinosaur Tracksites, and Structural Geology of the Canyon Lake Gorge and Heritage Museum of the Hill Country. Sun., 12 March, 7 a.m.–5 p.m. Cost: \$80 includes guidebook, transportation, lunch, and entry fees. *Cosponsored by GSA Sedimentary Geology Division.* Principal Organizer: Marina Suarez, Univ. of Texas at San Antonio, Marina.Suarez@utsa.edu. Co-organizers: Thomas Adams, Witte Museum, thomasadams@wittemuseum.org.

This trip focuses on the processes involved in erosion of the gorge during a catastrophic flood; the marine sedimentary facies, fossils, sequence stratigraphy and depositional environments of the Glen Rose Formation; and the structure of the Hidden Valley fault system. We will also investigate what can be learned from the dinosaur trackways.

F6. Precambrian Geology of the Western Llano Uplift. Sat.–Sun., 11–12 March, 7:30 a.m.–3 p.m. Cost \$125 includes guidebook, transportation, Sat. lunch and dinner; Sun. breakfast, snacks, lodging on Sat. March 11th at a Texas Department of Parks and Wildlife ranch bunkhouse (bring own bedding /sleeping bag). Sun. lunch on own. Principal Organizer: Mark Helper, Jackson School of Geosciences, University of Texas at Austin, helper@jsg.utexas.edu.

Co-organizer: Sharon Mosher, Jackson School of Geosciences, University of Texas at Austin, smosher@jsg.utexas.edu.

This two-day trip examines Grenville-age deformational, metamorphic, and magmatic relationships at well-studied sites in the western Llano uplift, near Mason, Texas. The focus is on Packsaddle Schist marbles and gneisses that display polyphase folding, fabric development, and migmatization associated with early dynamic metamorphism and magmatism, and on the post-kinematic Katemcy pluton.

F7. Cambrian Microbialites and Associated Marine Facies, Llano River, Mason County. Fri.–Sun., 10–12 March, 5:30 p.m. departure Friday. Return 5 p.m. Sun. Cost: \$380 includes transportation, refreshments, guidebook, kayak rental, and lodging at the Honey Creek Ranch on the Llano River Fri and Sat nights. Meals are covered by participants at local restaurants. *Co-sponsored by GSA Sedimentary Geology Division.*

Principal Organizer: Andre Droxler, Rice Univ., andre@rice.edu. Co-organizer: Dan Lehrmann, Trinity Univ., dlehrmann@trinity.edu.

Microbialites are important components of marine depositional systems from Precambrian to recent. We will examine

large Cambrian microbialite buildups and oolitic-skeletal grainstones that are spectacularly exposed in cross section and plan view. Their architecture and genesis will be analyzed in the context of sequence stratigraphy and mixed carbonate-siliciclastic sedimentation.

WORKSHOPS

W1. Cutting Edge Mapping with Drones: Practical and Cost Effective! Sun., 12 March, 2–4 p.m., Conference Center A. Cost: \$10 includes workshop booklet. Principal Organizer: Robert Youens, Camera Wings Aerial Photography, CameraWings@aol.com.

Join Camera Wings Aerial Photography and learn about drone integration into geoscience research. You will get a unique opportunity to see the latest equipment and cutting-edge projects and discuss the regulatory environment surrounding this new technology. You can't afford to be left behind!

W2. Ethics Training Seminar for Texas Board of Professional Geologist Continuing Education. Sun., 12 March, 1–2 p.m., Conference Center B. Cost: \$5. Principal Organizer: T. Wesley McCoy, P.G., Texas Board of Professional Geoscientists, wmccoy@tbpg.state.tx.us.

This one-hour training session is designed to meet the annual ethics-training requirement for annual renewal of Texas Geoscientist Professional Geologist licensing.

EXHIBITS

Exhibits are located in the Grand Ballroom CDE and are open from 8 a.m. to 5:30 p.m., both Monday and Tuesday, 13–14 March.

EXHIBITORS

As of January, the following exhibitors have agreed to be part of the exhibits.

2018 SC Section Meeting—Little Rock, Arkansas
Beta Analytical Inc.
Eureka Water Probes
Geological Society of America Bookstore
Geological Society of America Foundation
International Chemical Analysis Inc (ICA)
National Association State Boards of Geology
North Central Instruments: Experts in Microscopy, Imaging and Histology (NCI/LEICA)
Raba Kistner, Inc.
Shimadzu Institute for Research Technologies, Univ of TX Arlington
St. Mary's University
Stephen F. Austin State University
Water Monitoring Solutions, Inc.

OPPORTUNITIES FOR STUDENTS

On To the Future (OTF). Stop by the GSA Foundation booth at the Welcome Reception or in the Grand Ballroom during the meeting to ask an onsite representative about applying to OTF, which provides travel support to students underrepresented in the geosciences to attend their first GSA

Annual Meeting (the next one is 22–25 Oct. 2017 in Seattle, Washington, USA).

Mentor Programs. Co-sponsored by the GSA Foundation. The Mentor Programs and the Career Workshops are located in the Colonnade Ballroom CA on the 20th floor of the Omni Hotel at the Colonnade. For more information on the mentor programs, go to www.geosociety.org/mentors/ or contact Jennifer Nocerino, jnocerino@geosociety.org.

Geoscience Career Workshop Part 1: 8–9 a.m., Monday, 13 March, Career Planning and Informational Interviewing. Your job-hunting process should begin with career planning, not when you apply for jobs. This workshop helps you begin this process and introduces you to informational interviewing. This section is highly recommended for freshman, sophomores, and juniors. The earlier you start your career planning, the better.

Geoscience Career Workshop Part 2: 9–10 a.m., Monday, 13 March, Geoscience Career Exploration. What do geologists in various sectors earn? What do they do? What are the pros and cons to working in academia, government, and industry? Workshop presenters and professionals in the field address these issues.

Geoscience Career Workshop Part 3: 9–10 a.m., Tuesday, 14 March, Cover Letters, Resumes and CVs. How do you prepare a cover letter? Does your resume need a good edit? Whether you are currently on the job market or not, learn how to prepare the best resume possible. You will review numerous resumes helping you to learn important resume do's and don'ts.

Roy J. Schlemmon Mentor Program in Applied Geoscience. Monday, 13 March, Lunchtime. Students have the opportunity to discuss career prospects and challenges with professional geoscientists from multiple disciplines over a FREE lunch. Learn more about this program at <http://www.geosociety.org/mentors/>.

John Mann Mentors in Applied Hydrogeology Program. Tuesday, 14 March, Lunchtime. Students interested in applied hydrogeology or hydrology as a career will have the opportunity to network with professionals in these fields over a FREE lunch. Learn more at <http://www.geosociety.org/mentors/>.

OTHER PROFESSIONAL OPPORTUNITIES

The Future Geosciences Job Market: A Faculty and K–12 Mentor Lunch. Colonnade Ballroom B on the 20th floor, noon–2 p.m., Monday, 13 March. \$5/ticket for lunch, available in advance or at the Meeting Registration table. Attendance limited to university/college professors and high school earth science teachers.

Early Career Professional Focus Group. Colonnade Ballroom CA on the 20th floor, 10:30–11:30 a.m., Tuesday, 14 March. Have you graduated in the last five years and are either a working professional or are still looking for a job? GSA would like to support you in pursuing your professional goals. During this 45-minute session, a series of questions will be asked of participants regarding potential programming and activities GSA could offer to help you reach your professional goals.

VOLUNTEER

The South-Central Section offers free meeting registration to student volunteers in return for two shifts of ~4 to 5 hours of work during the meeting. If you are a student interested in volunteering, please contact one of the Student Volunteer Coordinators, Gil Gomez (ggomez18@stmarytx.edu) or Sherry Wood (swood@stmarytx.edu).

Student Volunteer area (Foyer D). Students will meet with the Volunteer Coordinator before the meeting begins in the Foyer D area for their assignments and training, where needed.

Student Award Ceremony. *Sponsored by Trinity University.* This year, South-Central Section GSA is awarding cash prizes and plaques to the best graduate and undergraduate posters and oral presentations. Judging of student oral and poster presentations take place throughout the meeting, and award winners' names will be announced Tuesday, 14 March, 5–5:30 p.m., Grand Ballroom CDE.

SPOUSE & GUEST ACTIVITIES

The Omni Hotel at the Colonnade offers a wide variety of activities for both recreation and relaxation. These include a state-of-the-art fitness facility, indoor and outdoor pools, and the hotel concierge can arrange for a wide range of recreational activities, including billiards, boating, bowling, camping, fishing, hiking, horseback riding, racquetball, tennis, volleyball, water skiing, or almost anything you imagine in the San Antonio area. You might also take advantage of area lakes, parks, shopping, or golf. For a more complete range of San Antonio recreation options, visit: <http://visitsanantonio.com/>.

EMERGENCIES

For all emergencies dial 911.

Sponsors

Riverwalk Level



Mission Trail Level



Brackenridge Park Level



CODE OF CONDUCT AT GSA EVENTS

Approved by GSA Council on 25 September 2016

GSA is a premier, international scientific society whose goals and mission are to advance geoscience research and discovery, to provide service to society and to promote stewardship of Earth, within and beyond the geosciences profession. In fulfilling its goals and mission, and in keeping with its Diversity Position Statement, GSA meetings foster the exchange of scientific ideas, through open and respectful dialogues at oral and poster sessions, field trips, short courses, mentorships and other GSA-supported programs. GSA promotes, provides, expects and endorses a professional and respectful atmosphere and values a diversity of views and opinions.

All registrants, guests, volunteers, exhibitors, GSA staff, service providers, and others in attendance are expected to abide by this GSA Events Code of Conduct, which outlines specific expectations for participants at GSA-supported events and is in addition to the provisions of the GSA Code of Conduct.

Expected Behavior

All registrants, guests, volunteers, exhibitors, GSA staff, service providers, and others in attendance are to:

- Be treated with respect and consideration.
- Be considerate, collegial, and collaborative.
- Communicate openly, with civil attitudes, critiquing ideas rather than individuals.
- Avoid personal attacks directed toward other registrants, guests, volunteers, exhibitors, GSA staff, service providers, and others in attendance.
- Obey the rules and policies of the meeting venue, hotels, GSA contracted facility, or any other venue where your meeting badge and GSA affiliation is likely to be displayed.
- Alert meeting security personnel, GSA staff, or GSA leadership if you notice someone in distress, or perceive a potentially dangerous situation, or witness a dangerous situation.

Procedures to be followed in an emergency situation:

- Evaluate the situation and if appropriate call 911 or activate a local fire alarm.
- Do not endanger yourself. Follow the directions of building security, law enforcement, fire department, military personnel, or GSA staff.
- Initiate first aid if appropriate, so trained and necessary.
- Be as observant as possible in order to communicate to emergency staff.

Unacceptable Behavior includes but is not limited to:

- Harassment, intimidation, or discrimination.

- Physical or verbal abuse of any registrant, guest, volunteer, exhibitor, GSA staff, service provider, or other attendee.
- Disruption of presentations at oral or poster sessions, in the exhibit hall, on field trips, or at other events organized by GSA at the meeting venue, hotels, or other GSA-contracted facilities.
- Audio and video recording, or taking images of an individual's oral presentation without the presenters' permission, is expressly forbidden. Images of posters taken without permission are not allowed. Images of posters may be taken with the explicit consent of the presenter, and images may be acquired only in the presence of the presenter.

Examples of unacceptable behavior include but are not limited to:

- Verbal comments related to gender, sexual orientation, disability, physical appearance, body size, race, religion, national origin or any other identified characteristic outlined in the GSA Diversity Position Statement.
- Inappropriate use of nudity and/or sexual images in public spaces or in presentations.
- Intentional, uninvited physical contact of any form.
- Threats (implied or real) of, physical, professional or financial harm.
- Stalking registrants, guests, volunteers, exhibitors, GSA staff, service providers, or others in attendance.

Consequences of Unacceptable Behavior

- Anyone requested to stop unacceptable behavior is expected to immediately cease and desist.
- GSA staff, leadership, security, or law enforcement personnel shall take action(s) deemed necessary and appropriate. Actions may include immediate removal from the meeting or field trip without warning or refund.
- GSA reserves the right to prohibit attendance at any future GSA meeting or other GSA-sponsored event.

Reporting Unacceptable Behavior

If you are the subject of unacceptable behavior or have witnessed any such behavior, please immediately notify a GSA staff member on-site (see page 2 for contact information) or GSA member with a designated leadership position (i.e. GSA President, GSA Councilor, GSA Section Officer, GSA field trip leader).

Anyone experiencing or witnessing behavior that constitutes an immediate or serious threat to public safety, or a criminal act is expected to contact 911. Those witnessing a potential criminal act should also take actions necessary to maintain their own personal safety.

Schedule of Events

EVENT	TIME	LOCATION
FRIDAY, 10 MARCH		
F7. Cambrian Microbialites and Associated Marine Facies, Llano River, Mason County (Day 1) (Field Trip)	5:30–11:55 p.m.	Omni Colonnade San Antonio
SATURDAY, 11 MARCH		
F6. Precambrian Geology of the Western Llano Uplift (Day 1) (Field Trip)	7:30 a.m.–11:55 p.m.	Omni Colonnade San Antonio
F1. The Edwards Aquifer—A Groundwater System Under Stress (Field Trip)	8:30 a.m.–5 p.m.	Omni Colonnade San Antonio
SUNDAY, 12 MARCH		
F5. Cretaceous Sedimentary Succession, Dinosaur Tracksites, and Structural Geology of the Canyon Lake Gorge and Heritage Museum of the Hill Country (Field Trip)	7 a.m.–5 p.m.	Omni Colonnade San Antonio
F4. The Eagle Ford and Austin Chalk Groups in and around San Antonio (Field Trip)	8 a.m.–4:45 p.m.	Omni Colonnade San Antonio
F3. Hydrogeology of Major Trinity Aquifer Springs in the Blanco River Basin (Field Trip)	8 a.m.–5 p.m.	Omni Colonnade San Antonio
F2. South-Central Texas Underground (Field Trip)	11:30 a.m.–5 p.m.	Omni Colonnade San Antonio
W2. Ethics Training Seminar for Texas Board of Professional Geologist Continuing Education	1–2 p.m.	Conference Center B, 2 nd Floor
W1. Cutting Edge Mapping with Drones: Practical and Cost Effective!	2–4 p.m.	Conference Center A, 2 nd Floor
Registration Open	3–7:30 p.m.	Foyer ABCD
Speaker Ready Room	4–7 p.m.	Sam Houston Room, 2 nd Floor
Welcome Reception	5–7 p.m.	Colonnade Ballroom, 20 th Floor
MONDAY, 13 MARCH		
Registration Open	7 a.m.–4:30 p.m.	Foyer ABCD
Speaker Ready Room	7 a.m.–5:30 p.m.	Sam Houston Room, 2 nd Floor
Exhibits Open	8 a.m.–5:30 p.m.	Grand Ballroom CDE
Geoscience Career Workshop Part 1	8–9 a.m.	Colonnade Ballroom CA, 20 th Floor
Geoscience Career Workshop Part 2	9–10 a.m.	Colonnade Ballroom CA, 20 th Floor
Morning Oral Technical Sessions		
T1. Advances in Understanding Precambrian to Cenozoic Magmatic and Metamorphic Processes and their Bearing on Lithospheric Evolution of Southern Laurentia	8 a.m.–noon	Grand Ballroom G

EVENT	TIME	LOCATION
T2. Advances in the Application and Development of Terrestrial Paleoclimate Proxies	8 a.m.–noon	Grand Ballroom F
T6. Karst: From Sinkholes to Springs and Everything in Between	8 a.m.–12:05 p.m.	Grand Ballroom B
T13. Texas Water Research Network: A Statewide Initiative to Integrate and Advance Water Research from Inception to Application I	8 a.m.–12:05 p.m.	Grand Ballroom A

Poster Technical Sessions

T1. Advances in Understanding Precambrian to Cenozoic Magmatic and Metamorphic Processes and their Bearing on Lithospheric Evolution of Southern Laurentia (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T2. Advances in the Application and Development of Terrestrial Paleoclimate Proxies (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T6. Karst: From Sinkholes to Springs and Everything in Between (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T15. Undergraduate Students (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE

Roy J. Schlemmon Mentor Program in Applied Geoscience	noon–1:30 p.m.	Colonnade Ballroom, 20th Floor
South-Central Section Management Board Meeting	noon–1:30 p.m.	Bolo's PDR
The Future Geosciences Job Market: A Faculty and K–12 Mentor Lunch	noon–2 p.m.	Colonnade Ballroom B, 20th Floor

Afternoon Oral Technical Sessions

Recent Advances in Geoscience Research	1:30–5:30 p.m.	Grand Ballroom G
T5. Micro- to Macroscopic Evidence of Life and its Implications for the Evolution and Interpretation of the Biosphere in Earth Systems	1:30–5:30 p.m.	Grand Ballroom F
T13. Texas Water Research Network: A Statewide Initiative to Integrate and Advance Water Research from Inception to Application II	1:30–5:30 p.m.	Grand Ballroom A
T14. Groundwater Availability in Texas: Rule of Capture and Sustainable to Consensus Yield	1:30–5:35 p.m.	Grand Ballroom B

Keynote Address and Reception	5–7 p.m.	Grand Ballroom CDE
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TUESDAY, 14 MARCH

South-Central Section Open Meeting	7–8 a.m.	Bolo's PDR
Speaker Ready Room	7 a.m.–noon	Sam Houston Room, 2nd Floor
Registration Open	7 a.m.–2 p.m.	Foyer ABCD
Exhibits Open	8 a.m.–5:30 p.m.	Grand Ballroom CDE

Geoscience Career Workshop Part 3	9–10 a.m.	Colonnade Ballroom CA, 20th Floor
Early Career Professional Focus Group	10:30–11:30 a.m.	Colonnade Ballroom CA, 20th Floor

Morning Oral Technical Sessions

T10. Late Paleozoic Tectonic Framework of the South-Central Region and Evolution of the Permian Basin	8–10:20 a.m.	Grand Ballroom A
T3. Advances in Sedimentology, Stratigraphy, and Geochemistry of Carbonates and Mixed Carbonate Clastic Systems	8 a.m.–noon	Grand Ballroom B

EVENT	TIME	LOCATION
T8. Subsurface Exploration Techniques in the South-Central U.S.	8 a.m.–noon	Grand Ballroom F
T12. Upper Crustal Deformation across Continental Interiors from the Mesozoic to the Present	10:35 a.m.–12:15 p.m.	Grand Ballroom A
Poster Technical Sessions		
Research in Hydrogeology, Geochemistry, and Soils (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
Research in Sedimentology and Stratigraphy (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
Research in Structural Geology, Geomorphology, and Igneous Processes (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T3. Advances in Sedimentology, Stratigraphy, and Geochemistry of Carbonates and Mixed Carbonate Clastic Systems (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T4. The Impact of Oceanographic Conditions, Oaas, and Volcanism on an Unconventional Reservoir System: The Late Cretaceous Eagle Ford and Austin Chalk Groups of the Gulf Coast (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T5. Micro- to Macroscopic Evidence of Life and its Implications for the Evolution and Interpretation of the Biosphere in Earth Systems (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T8. Subsurface Exploration Techniques in the South-Central U.S. (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T9. Fostering Cultures of Deliberate Inclusion in Geosciences (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T11. Petroleum and Water Interactions in Mexico's South- Central Region (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
T12. Upper Crustal Deformation across Continental Interiors from the Mesozoic to the Present (Posters)	9 a.m.–5:30 p.m.	Grand Ballroom CDE
John Mann Mentors in Applied Hydrogeology Program	noon–1:30 p.m.	Colonnade Ballroom CA, 20 th Floor
Afternoon Oral Technical Sessions		
T4. The Impact of Oceanographic Conditions, Oaas, and Volcanism on an Unconventional Reservoir System: The Late Cretaceous Eagle Ford and Austin Chalk Groups of the Gulf Coast	1:30–5:30 p.m.	Grand Ballroom A
T9. Fostering Cultures of Deliberate Inclusion in Geosciences	1:30–5:30 p.m.	Grand Ballroom F
T11. Petroleum and Water Interactions in Mexico's South- Central Region	1:30–5:30 p.m.	Grand Ballroom B
Student Award Ceremony	5–5:30 p.m.	Grand Ballroom CDE

Technical Sessions

Meeting policy prohibits the use of cameras or sound-recording equipment at technical sessions and poster sessions.



A no-smoking policy has been established by the Program Committee and will be followed in all meeting rooms for technical sessions.

NOTICE

In the interest of public information, the Geological Society of America provides a forum for the presentation of diverse opinions and positions. The opinions (views) expressed by speakers and exhibitors at these sessions are their own and do not necessarily represent the views or policies of the Geological Society of America.



NOTE INDEX SYSTEM

Numbers (3-4, 15-4) indicate session and order of presentation within that session.

*denotes speaker

MONDAY, 13 MARCH 2017

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 1

T1. Advances in Understanding Precambrian to Cenozoic Magmatic and Metamorphic Processes and their Bearing on Lithospheric Evolution of Southern Laurentia

8:00 AM, Omni Colonnade San Antonio Grand Ballroom G

Elizabeth J. Catlos, Michael T. DeAngelis and Richard Hanson, Presiding

8:00 AM INTRODUCTORY REMARKS

- 1-1 8:05 AM Stockli, Daniel F.*: **TEXAS THREE STEP – THE EXHUMATION AND EXPOSURE HISTORY OF THE LLANO UPLIFT ALONG THE LAURENTIA AND GULF OF MEXICO RIFT MARGINS**
- 1-2 8:25 AM Rodriguez, Edna*; Stockli, Daniel F.; Dickerson, Patricia W.: **NEW ZIRCON U-PB GEOCHRONOLOGY FROM THE DEVIL'S RIVER UPLIFT - INSIGHTS INTO THE NEOPROTEROZOIC AND EARLY PALEOZOIC EVOLUTION OF THE SOUTHERN MARGIN OF NORTH AMERICA**
- 1-3 8:45 AM Alemán Gallardo, Eduardo Alejandro*; Ramirez Fernandez, Juan Alonso; Rodriguez Diaz, Augusto Antonio; Jenchen, Uwe; Paz Moreno, Francisco A.: **EVIDENCES OF AN ORDOVICIAN MAGMATIC ARC IN THE BASEMENT OF THE SIERRA MADRE ORIENTAL: A NEW PIECE OF THE GEOLOGICAL PUZZLE IN NE MEXICO**
- 1-4 9:05 AM Ramirez Fernandez, Juan Alonso*; Loera Garcia, Eusebio Federico; Velasco Tapia, Fernando; Jenchen, Uwe; Cruz Gámez, Esther María: **EVIDENCES OF SYNSEDIMENTARY ACID VOLCANISM IN THE EVAPORITIC SEQUENCE OF THE JURASSIC MINAS VIEJAS FM. IN GALEANA, NE MEXICO**
- 1-5 9:25 AM Friesenhahn, Brody P.*; Economos, Rita C.; Ianno, Adam J.; Powell, Robert E.: **GEOLOGIC CONSTRAINTS ON MID-CRUSTAL MAGMATIC PROCESSES IN THE MOJAVE SEGMENT OF THE CRETACEOUS CORDILLERAN ARC**

- 1-6 9:45 AM Anthony, Elizabeth Y.*; Raye, Urmidola; Stern, Robert; Kimura, Jun Ichi; Chang, Qing; Hirahara, Yuka; Tani, Kenichiro; Hanyu, Takeshi; Miyazaki, Takashi; Lee, Cin-Ty A.; Griffin, W.L.: **MANTLE XENOLITH SAMPLES FROM THE BALCONES IGNEOUS PROVINCE, CENTRAL TEXAS: MESOPROTEROZOIC STABILIZATION OF LITHOSPHERIC MANTLE AND SUBSEQUENT SUBDUCTION- FLUID MODIFICATION DURING THE OUACHITA OROGENY**
- 10:05 AM **BREAK**
- 1-7 10:20 AM Li, Shimin*; Zhu, Di-Cheng; Stern, Robert; Wang, Qing; Zhao, Zhidan: **MAGMATIC RECORDS OF SOUTHWARD SUBDUCTION OF THE BANGONG-NUJIANG OCEAN LITHOSPHERE DURING THE EARLY CRETACEOUS IN CENTRAL TIBET**
- 1-8 10:40 AM Parker, Don F.*: **GEOCHEMICAL EVOLUTION OF THE PARADISE MOUNTAIN CALDERA COMPLEX, DAVIS MOUNTAINS, TRANS-PECOS TEXAS**
- 1-9 11:00 AM Price, Jonathan D.*; Klasse, Dillon S.; Stevenson, Alexandria M.: **THE WICHITA GRANITE GROUP TEXTURE BY THE NUMBERS: IMAGE ANALYSIS OF QUARTZ MICROSTRUCTURE**
- 1-10 11:20 AM Hanson, Richard E.*; Boro, Joseph R.; Eschberger, Amy M.; Toews, Chelsea E.: **CAMBRIAN A-TYPE RHYOLITE LAVAS, BASALTIC PHREATOMAGMATIC VENT CONDUITS AND BIMODAL HYPABYSSAL INTRUSIONS EMPLACED ALONG A RIFT-BOUNDING FAULT IN THE SOUTHERN OKLAHOMA AULACOGEN**
- 1-11 11:40 AM Puckett, Robert E.*; Hanson, Richard E.; Brueseke, Matthew E.; Eschberger, Amy M.; Toews, Chelsea E.; Boro, Joseph R.: **PHYSICAL VOLCANOLOGY OF CAMBRIAN BASALTS AND RHYOLITES IN THE SOUTHERN OKLAHOMA AULACOGEN FROM SURFACE EXPOSURES AND DEEP DRILLING PENETRATIONS**

SESSION NO. 2***T2. Advances in the Application and Development of Terrestrial Paleoclimate Proxies (GSA Soils and Soil Processes Interdisciplinary Interest Group; GSA Geobiology and Geomicrobiology Division; GSA Karst Division)***

8:00 AM, Omni Colonnade San Antonio Grand Ballroom F

Marina B. Suarez, Steven G. Driese and Dan O. Breecker, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 2-1 8:05 AM Suarez, Marina B.*; Ludvigson, G.; Gonzalez, Luis A.; You, Hailu: **PETROGRAPHIC, XRD, AND CLUMPED ISOTOPE STUDY OF A CRETACEOUS DOLOMITIC LAKE IN NORTHWEST CHINA**
- 2-2 8:25 AM West, Matthew A.*; Suarez, Marina B.; Hou, Juzhi; Gao, Yongli: **HOLOCENE PALEOCLIMATE INTERPRETED BY STABLE CARBON AND OXYGEN ISOTOPES OF OSTRACODS FROM XIADA CO LAKE ON THE TIBETAN PLATEAU**
- 2-3 8:45 AM Jonell, Tara N.*; Clift, Peter D.; Hoang, Long V.; Hoang, Tina; Carter, Andrew; Wittmann, Hella; Böning, Philipp; Pahnke, Katharina; Rittenour, Tammy: **INVESTIGATING DRIVERS OF EROSION IN A TECTONICALLY-QUIESCENT MONSOONAL RIVER BASIN, SONG GIANH, CENTRAL VIETNAM**
- 2-4 9:05 AM Zhou, Peng*; Clift, Peter D.; Blusztajn, Jerzy S.; Pandey, Dhananjai K.; Stockli, Daniel F.: **CLIMATE-TECTONIC INTERACTIONS RECORDED IN THE ARABIAN SEA: RESULTS FROM IODP EXPEDITION 355**
- 2-5 9:25 AM Obelcz, Jeff*; Xu, Kehui; Gonzalez Rodriguez, Suyapa; Bentley, Samuel J.; Caporaso, Alicia; Delong, Kristine L.; Harley, Grant; Reese, Carl Andy; Truong, Jonathan T.: **A 40,000 YEAR OLD BALD CYPRESS FOREST IN THE MIDDLE OF THE GULF OF MEXICO: HOW IT EXISTS, HOW WE FOUND IT, AND WHAT IT CAN TELL US**
- 2-6 9:45 AM Sekhon, Natasha*; Banner, Jay; Breecker, Dan O.; Carlson, Peter E.: **NEAR ENTRANCE SPELEOTHEMS: ARCHIVES OF SEASONALITY?**
- 10:05 AM **BREAK**
- 2-7 10:20 AM Stepchinski, Leanne*; Bertetti, F. Paul; Green, Ronald T.; Toll, Nathaniel J.; Nunu, Rebecca R.; Gulliver, Kirk D.H.: **INVESTIGATION OF DROUGHT INTENSITY AND PERIODICITY IN SOUTH TEXAS USING CHEMICAL AND BIOLOGICAL RECORDS IN BAT GUANO CORES**
- 2-8 10:40 AM Moore, Collin Scott*; Schubert, Brian A.: **SEASONAL TEMPERATURES IN THE ARCTIC DURING THE LATE PLEISTOCENE DETERMINED USING HIGH-RESOLUTION OXYGEN ISOTOPE MEASUREMENTS ACROSS FOSSIL WOOD**
- 2-9 11:00 AM Driese, Steven G.*; Medaris, L. Gordon; Stinchcomb, Gary: **APPLICATIONS OF TP₂O₅ AND TFE₂O₅ AS INDICATORS OF MICROBIAL BIOCYCLING AND REDOX PROCESSES IN PRECAMBRIAN PALEOSOLS AND PALEOSAPROLITES**
- 2-10 11:20 AM Wiest, Logan A.*; Lukens, William E.; Driese, Steven G.; Tubbs, Jack D.; Letourmy, Yohan; Leslie, Caitlin E.: **AN ICHNOLOGICAL PROXY FOR THE RESPONSE AND RECOVERY OF SOIL FAUNA ACROSS THE K-PG EXTINCTION INTERVAL: BIG BEND NATIONAL PARK**
- 2-11 11:40 AM Lukens, William E.*; Driese, Steven G.: **THE LATE MIOCENE CRITICAL ZONE AT COFFEE RANCH, TX: PALEOCLIMATE, PALEOVEGETATION AND PALEOSOLS**

SESSION NO. 3***T6. Karst: From Sinkholes to Springs and Everything in Between (GSA Karst Division)***

8:00 AM, Omni Colonnade San Antonio Grand Ballroom B

Geary M. Schindel, Jonathan B. Sumrall and Brian B. Hunt, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 3-1 8:05 AM Bobeck, Patricia*: **THE 21ST CENTURY ART OF FINDING GROUNDWATER IN KARST**

- 3-2 8:25 AM Croskrey, Andrea*: **BRACKISH RESOURCES AQUIFER CHARACTERIZATION SYSTEM (BRACS) FOR TEXAS GROUNDWATER**
- 3-3 8:45 AM Stafford, Kevin W.*: **NON-CONFINED HYPOGENE EVAPORITE KARST MANIFESTATIONS, GYPSUM PLAIN, SOUTHEASTERN NEW MEXICO AND WEST TEXAS**
- 3-4 9:05 AM Darling, Bruce K.*: **GEOCHEMICAL ANALYSIS OF THE DISTRIBUTION OF RECHARGE AREAS, THE RANGE OF APPARENT GROUNDWATER AGES, AND THE EVOLUTION OF HYDROCHEMICAL SIGNATURES ALONG FLOW PATHS IN THE EDWARDS AND TRINITY AQUIFERS OF CENTRAL TEXAS**
- 3-5 9:25 AM Hunt, Brian B.*; Smith, Brian A.; Gary, Marcus O.; Broun, Alex S.; Wierman, Douglas A.: **AN EVOLVING CONCEPTUAL MODEL OF THE MIDDLE TRINITY AQUIFER, HAYS COUNTY, CENTRAL TEXAS**
- 3-6 9:45 AM Watson, Jeffery A.*; Broun, Alex S.; Hunt, Brian B.; Wierman, Douglas A.; Smith, Brian A.: **MAPPING THE UPPER GLEN ROSE UNIT 3 AQUITARD: IMPLICATIONS FOR RECHARGE TO THE MIDDLE TRINITY AQUIFER, HAYS COUNTY, TEXAS**
- 3-7 10:05 AM Wong, Stephanie*; Yelderman, Joe C.: **A DETAILED HYDROLOGICAL ASSESSMENT OF THE DOWNTOWN SALADO SPRING COMPLEX**
- 3-8 10:25 AM Dedeaux, Lenee*; Schwartz, Benjamin; Dedeaux, Yihon; Green, Ronald T.; Toll, Nathaniel J.: **APPLYING DATA MINING TECHNIQUES TO MODEL HYDRAULIC HEAD IN THE EDWARDS AQUIFER**
- 3-9 10:45 AM Young, Holly A.*; Covington, Matthew D.: **QUANTIFYING CARBON DIOXIDE FLUXES IN THE AIR AND WATER OF BLOWING SPRINGS CAVE, ARKANSAS**
- 3-10 11:05 AM Gao, Yongli*; Cutler, Eric: **GEOCHEMICAL ANALYSIS OF CAVE SEDIMENTS AT THREE SOUTH CENTRAL TEXAS CAVES: POTENTIAL IMPLICATIONS FOR CAVE-AIR CO₂ PRODUCTION**
- 3-11 11:25 AM Macpherson, G.L.*: **GEOCHEMICAL MODELING OF DUST AS THE SOURCE OF SOLUTES IN A MEROKARST AQUIFER, KONZA LTER SITE, NORTHEASTERN KANSAS**
- 3-12 11:45 AM Thompson, Thomas J.*; Blackwood, Kevin: **SUMMARY OF CHERT GRAVEL DEPOSITS IN CAVES AND THEIR POTENTIAL IN PRESERVING CULTURAL AND FAUNAL MATERIALS IN THE ARBUCKLE MOUNTAINS, SOUTHERN OKLAHOMA**

SESSION NO. 4***T13. Texas Water Research Network: A Statewide Initiative to Integrate and Advance Water Research from Inception to Application I (GSA Hydrogeology Division; GSA Karst Division)***

8:00 AM, Omni Colonnade San Antonio Grand Ballroom A

Suzanne A. Pierce, Kevin Wagner, Suzanne Schwartz and Jay Banner, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 4-1 8:05 AM Banner, Jay L.*; James, Eric; Pierce, Suzanne A.; Shearer, Alan; Schwartz, Suzanne; Uddameri, Venkatesh; Wagner, Kevin; Nielsen-Gammon, John W.; Potter, Lloyd; Yang, Zong-Liang; Young, Michael H.; Lieberknecht, Katherine; Noronha, Alexandra: **THE TEXAS WATER RESEARCH NETWORK: ADDRESSING CHALLENGES FOR 21ST CENTURY TEXAS**
- 4-2 8:25 AM Yang, Zong-Liang*; Zhao, Long; Wei, Jiangfeng; Lin, Peirong; Li, Lingcheng; Caldwell, Todd G.; Das, Narendra; Hopper, Larry; Zeitler, Jon: **TOWARDS AN ADVANCED ANALYSIS, SIMULATION, AND FORECASTING CAPABILITY FOR THE WATER CYCLE IN TEXAS**
- 4-3 8:45 AM Nielsen-Gammon, John W.*: **NONPARAMETRIC ANALYSIS OF CHANGES OF HEAVY PRECIPITATION IN TEXAS**

SESSION NO. 4

- 4-4 9:05 AM Abolt, Charles J.*; Young, Michael H.; Uddameri, Venkatesh: **WATER SCIENCE NODE – FORECASTING WATER RESILIENCE ALONG THE NEW 100TH MERIDIAN**
- 4-5 9:25 AM Singaraju, Sreeram Gopal*; Nwankpa, Ifeanyichukwu; Uddameri, Venkatesh; Arsuffi, Tom; Hernandez, Elma Annette; Banner, Jay: **CLIMATE CHANGE IMPACTS ON HYDROLOGIC RESPONSES IN A SPRING FED WATERSHED NEAR THE 100TH MERIDIAN – LLANO RIVER WATERSHED**
- 4-6 9:45 AM Zarezadeh, Vahid*; Giacomoni, Marcio: **EFFECTS OF URBANIZATION AND LAND USE CHANGE ON HYDROLOGIC FLOW REGIME**
- 4-7 10:05 AM Ray, Ram L.*; Fares, Ali; Awal, Ripendra; Risch, Eric: **ASSESSING THE EFFECTS OF CHANGE IN IMPERVIOUS AREAS ON FLOODING IN TEXAS**
- 4-8 10:25 AM Chen, Jingyi (Ann)*: **THE USE OF SPACEBORNE INSAR FOR STATEWIDE MONITORING OF GROUNDWATER LEVELS IN CONFINED AQUIFERS**
- 4-9 10:45 AM Standen, Allan R.*: **MANAGING GROUNDWATER RESOURCES USING INTERACTIVE 3-D HYDRO-STRATIGRAPHIC MODELS IN TEXAS**
- 4-10 11:05 AM Khan, Tabish H.*: **DESIGNING AND TESTING A RELATIVE RESILIENCY FRAMEWORK FOR GROUNDWATER MANAGEMENT**
- 4-11 11:25 AM Holland, Derrick*; Callison, Coy: **HASHTAGS AND LIKES: AN ANALYSIS OF THE SOCIAL MEDIA CONVERSATION SURROUNDING WATER SCARCITY**
- 4-12 11:45 AM Rosen, Rudolph*: **BUILDING A ROADMAP FOR TEXAS WATER SECURITY, RESEARCH, OUTREACH, AND EDUCATION: THE TEXAS WATER ROADMAP FORUMS**

POSTER TECHNICAL SESSIONS

SESSION NO. 5

T1. Advances in Understanding Precambrian to Cenozoic Magmatic and Metamorphic Processes and their Bearing on Lithospheric Evolution of Southern Laurentia (Posters)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

- Booth #
- 5-1 1 Cains, Julie M.*; Chick, Jonathan T.; Kincade, Sean C.; McFarlin, Forrest D.; McKim, Sydney; Potra, Adriana: **SIGNIFICANCE OF TERMINATED AND DOUBLY TERMINATED QUARTZ CRYSTALS, LOWER MISSISSIPPIAN BOONE FORMATION, SOUTHERN OZARK REGION, ARKANSAS, OKLAHOMA AND MISSOURI**
- 5-2 2 Bailey, William*; Urbanczyk, Kevin M.: **MODAL MINERALOGICAL ANALYSIS OF ROCKS IN THIN SECTION USING STATISTICAL ANALYSIS OF X-RAY MAPS IN ARCGIS**
- 5-3 3 Ford, Mark T.*: **GEOCHEMICAL MODELING OF TRACE ELEMENTS AT THE BADU HILL PEGMATITE, CENTRAL TEXAS**
- 5-4 4 DeAngelis, Michael T.*; Harper, David R.: **EXAMINATION OF BIOTITE GARNET IJOLITE FROM THE MAGNET COVE ALKALINE INTRUSIVE COMPLEX, ARKANSAS**
- 5-5 5 Roark, Trevor*; DeAngelis, Michael T.: **GEOCHEMICAL EXAMINATION OF GARNETS FROM THE PRARIE CREEK LAMPROITE, MURFREESBORO, ARKANSAS**

SESSION NO. 6

T2. Advances in the Application and Development of Terrestrial Paleoclimate Proxies (Posters) (GSA Soils and Soil Processes Interdisciplinary Interest Group; GSA Geobiology and Geomicrobiology Division; GSA Karst Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

- Booth #
- 6-1 6 Li, Dong*: **HIGH-RESOLUTION SUMMER MONSOON INTENSITY VARIATIONS IN CENTRAL CHINA DURING 27-11 KA B.P. AS REVEALED BY STALAGMITE $\Delta^{18}\text{O}$**
- 6-2 7 Paige, Mark R.*; Suarez, Marina B.: **ISOTOPE GEOCHEMISTRY OF LACUSTRINE DEPOSITS IN THE CRETACEOUS CEDAR MOUNTAIN FORMATION, EASTERN UTAH**
- 6-3 8 Westgate, James W.*: **A MECO RAIN FOREST/MANGROVE COMMUNITY FROM LAREDO, TEXAS**
- 6-4 9 Ray, Christopher J.*; Gao, Yongli; Suarez, Marina; Schwartz, Benjamin; Rowe, Harry; Li, Yunxia; Cheng, Hai; Edwards, Lawrence: **LATE QUATERNARY STALAGMITE PALEOCLIMATE RECORDS OF HELICTITE CAVE, VA**
- 6-5 10 Haralson, Marlee D.*; Lukens, William E.; Martin, Robert A.; Fox, David L.: **PALEOCLIMATE AND PALEOENVIRONMENTAL RECONSTRUCTION AT THE EARLY PLEISTOCENE SHORT HAUL FOSSIL SITE, MEADE BASIN, SOUTHWEST KANSAS**
- 6-6 11 James, Christina*; Breecker, Dan O.; Charlton, Timothy C.; Banner, Jay; Koleszar, Alison M.; James, Eric; Edwards, Lawrence; Zhang, Pu: **USING CENTRAL TEXAS SPELEOTHEMS TO IDENTIFY REGIONAL MOISTURE DISTRIBUTION DURING THE LAST DEGLACIATION**
- 6-7 12 Bissaro, Marcos Cesar*; Hsiou, Annie Schmaltz; Ghilardi, Renato Pirani; Souza Filho, Jonas Pereira; Guilherme, Edson; Maciente, Andrea Aparecida da Rocha; Pollock, Erik D.; Suarez, Celina: **STABLE ISOTOPES, RARE EARTH ELEMENTS AND PETROGRAPHIC ANALYSIS OF VERTEBRATE FOSSILS FROM SOLIMÕES FORMATION (UPPER MIOCENE, ACRE BASIN, BRAZIL): EXPECTED INSIGHTS ON PALEOECOLOGY, PALEOENVIRONMENT AND TAPHONOMY**

SESSION NO. 7

T6. Karst: From Sinkholes to Springs and Everything in Between (Posters) (GSA Karst Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

- Booth #
- 7-1 13 Shaw Faulkner, Melinda*: **REMOTE SENSING CHARACTERIZATION OF STRUCTURAL CONTROL AND ORIGINS OF SINKHOLE DEVELOPMENT, FORT HOOD MILITARY INSTALLATION, TEXAS**
- 7-2 14 Rodriguez, Josue*; Covington, Matthew D.; Gibson, Kristen E.; Almeida, Giselle; Jackson, Jay M.: **COMPARATIVE MICROBIAL COMMUNITY DYNAMICS IN A KARST AQUIFER SYSTEM AND PROXIMAL SURFACE STREAM IN NORTHWEST ARKANSAS**
- 7-3 15 Nunu, Rebecca R.*; Bertetti, F. Paul; Green, Ronald T.: **CHARACTERIZATION OF HYDROCHEMISTRY OF THE EDWARDS-TRINITY (PLATEAU) AQUIFER IN SUTTON COUNTY, TEXAS**
- 7-4 16 Meinerts, Jacob A.*; Shaw Faulkner, Melinda: **DEPOSITIONAL ENVIRONMENT AND FACIES ANALYSES OF THE OWL MOUNTAIN PROVINCE, FORT HOOD MILITARY INSTALLATION, TEXAS**
- 7-5 17 Hiler, Mark Daniel*; Schwartz, Benjamin; Schindel, Geary: **DELINEATING THE SPRINGSHED OF CAVE WITHOUT A NAME: DYE TRACING IN THE LOWER GLEN ROSE LIMESTONE**
- 7-6 18 Tian, Lijun*; Sok, Soeuth; Gao, Yongli: **WATER QUALITY OF SPRINGS IN THE UPPER CIBOLO CREEK WATERSHED, KENDALL COUNTY, TEXAS**

- 7-7 19 Jenson, Aubri*; Schwartz, Benjamin F.; Gao, Yongli; Li, Yunxia: **SHALLOW SPELEOGENESIS IN A COASTAL KARST CARBONATE PLATFORM: QUINTANA ROO, MEXICO**
- 7-8 20 Woodard, Jonathan David*; Stafford, Kevin W.; Brown, Wesley: **CAPACITIVELY-COUPLED RESISTIVITY CHARACTERIZATION OF KARST GEOHAZARDS AND DELINEATION OF MEGAPOROSITY AND FLUID MIGRATION PATHWAYS WITHIN THE DELAWARE BASIN, CULBERSON COUNTY, TEXAS**
- 7-9 21 Shields, Jessica*; Stafford, Kevin W.: **EVAPORITE KARST SPELEOGENESIS OF EDDY COUNTY, NEW MEXICO**
- 7-10 22 Andrews, John R.*; Paine, Jeffrey G.; Young, Michael H.: **GEOMORPHIC CHARACTERIZATION OF THERMOKARST LAKES ON THE NORTH SLOPE, ALASKA**

SESSION NO. 8

T15. Undergraduate Students (Posters) (Council on Undergraduate Research Geosciences Division; GSA Geoscience Education Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

Booth #

- 8-1 23 Fearn, Mary K.*; Blackstock, Joshua M.; Hays, Phillip D.: **PRELIMINARY RESULTS OF BACK-TRAJECTORY ANALYSIS USING HYSPLIT AND ISOTOPIC VARIABILITY OF PRECIPITATION, NORTHWEST, ARKANSAS, USA**
- 8-2 24 Gu, Jesse T.*; Dygert, Nick: **³HE/²²NE VARIATIONS AMONG OCEAN ISLAND, MID-OCEAN RIDGE, AND BACKARC BASALTS**
- 8-3 25 Kernan, Rachelle*; Anthony, Elizabeth; Ricketts, Jason; Biddle, Julian; Garcia, Jose A.: **THERMAL ALTERATION HISTORY OF NEOPROTEROZOIC BASALT XENOLITHS IN THE PATAWARTA AND WITCHELINA DIAPIRS, FLINDERS AND WILLOURAN RANGES, SOUTH AUSTRALIA**
- 8-4 26 Quevy, Amber L.*; Price, Jonathan D.: **STREAKING ACROSS THE GABBRO: THE WICHITA MOUNTAINS' QUANAH GRANITE DIKES EXPOSED**
- 8-5 27 Heilman, Erin K.*: **ROLE OF THE MUGHESE SHEAR ZONE IN OBLIQUE RIFTING ALONG THE RUKWA-MALAWI SEGMENT OF THE EAST AFRICA RIFT**
- 8-6 28 Lambert, Kenneth James*; Smith, Tyson Michael; Saylor, Joel E.; Lapen, Thomas J.; Copeland, Peter: **HETEROGENEITY IN THE UNCOMPAHGRE UPLIFT REFLECTED IN PROXIMAL-DISTAL SEDIMENT MIXING IN THE PARADOX BASIN**
- 8-7 29 DeBone, Kristin*; Howard, J. Michael; Harris, J. Patrick; Cooper, Brian: **REE DISTRIBUTION IN THE V-INTRUSIVE OF CENTRAL ARKANSAS**
- 8-8 30 Francisco, Reagan N.*; Lao-Davila, Daniel; Atekwana, Estella A.; Abdelsalam, Mohamed G.; Pritt, Amy R.; Prater, Wesley T.; Salima, Jalf; Chindandali, Patrick R.N.; Chikalamo, Elias; Santiago-Torres, Alejandra; Velez-Rosado, Kevin Ian: **ORIENTATION OF PRECAMBRIAN STRUCTURES AND THE FORMATION OF BORDER FAULTS IN THE LAKE MALOMBE AREA, SOUTHERN MALAWI RIFT**
- 8-9 31 Vetter, Scott K.*; Greber, Austin; Kirk, Kaleb; Harrison, Zachary; Scates, Allison; Nelson, Spencer R.; Whan, Rylan; Bieler, David: **MITCHELL DAM AMPHIBOLITES: GEOCHEMISTRY AND PETROLOGY OF CORE HOLE SAMPLES, SENIOR CLASS PROJECT**
- 8-10 32 Alarcon-Canto, Felipe*; Quisenberry, James; Sanchez, Veronica: **STRUCTURAL ANALYSES OF LINEAMENTS IN THE CHRISTMAS MOUNTAIN RANGE AND THE EXTENT OF THE TASCOTAL MESA FAULT, TEXAS**
- 8-11 33 Jacobus, Andrew Mark*: **THE CRUSTAL ORIGIN OF THE SABINE BLOCK IN SOUTH CENTRAL UNITED STATES**
- 8-12 34 Stevenson, Alexandria M.*; Price, Jonathan D.: **DISTRIBUTION OF MARGINAL TEXTURES IN THE QUANAH GRANITE PLUTON, WICHITA MOUNTAINS, OKLAHOMA**
- 8-13 35 Alagbe, Tomisin*; Sanchez, Veronica: **ANALYSIS OF FOLD-THRUST BELT GEOMETRY IN THE ZAGROS MOUNTAINS**
- 8-14 36 Martinez, Sabrina*: **ACTIVE TECTONICS WITHIN PUERTO RICO: IDENTIFYING AREAS OF ACTIVE UPLIFT USING REGIONAL GEOMORPHIC INDICES**
- 8-15 37 Quisenberry, James*; Alarcon-Canto, Felipe; Sanchez, Veronica: **PREDICTING PALEOSTRESS ORIENTATIONS FROM FRACTURE PATTERNS IN THE CHRISTMAS MOUNTAINS**
- 8-16 38 Ryan, Allison Aileen*: **DETERMINING THE CHEMOSTRATIGRAPHIC RECORD OF THE CEDAR MOUNTAIN FORMATION USING $\Delta^{13}\text{C}_{\text{ORG}}$ ISOTOPES**
- 8-17 39 Jordan, Miranda M.*; Sumrall, Jonathan B.: **PETROGRAPHIC ANALYSIS OF VEGEMORPHS FROM ELEUTHERA, THE BAHAMAS**
- 8-18 40 Skipwith, Jordan J.K.*; Reece, Bobby; Christeson, Gail L.; Carlson, Richard L.; Estep, Justin; Bonnette, Grant J.; Fedotova, Anastasia: **GEOPHYSICAL ANALYSIS OF ANOMALOUS EXTRUSIVE VOLCANISM IN SOUTH ATLANTIC OCEANIC CRUST**
- 8-19 41 Graves, William*; Ramon, Isaac; Lehto, Heather L.: **USING MAGNETICS TO APPROXIMATE THE RELATIVE AGE OF MAFIC SILLS WITHIN DAGGER MOUNTAIN IN BIG BEND NATIONAL PARK, TX**
- 8-20 42 Enciso, Adolfo*; Sanchez, Veronica: **TECTONIC GEOMORPHOLOGY ANALYSIS OF SOUTH-CENTRAL TIBET RIFTS USING REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS**
- 8-21 43 Pease, Emily Camille*; Dygert, Nick; Catlos, E.J.; Brookfield, Michael: **NEW GEOCHEMICAL AND THERMOCHRONOLOGIC CONSTRAINTS ON THE TECTONIC AFFINITY, COOLING HISTORY, AND TIMING OF OBDUCTION OF THE SPONGTANG OPHIOLITE, NORTHWEST INDIA**
- 8-22 44 Jordan, Nicolas*; Jordan, Miranda M.; Hill, Joseph C.: **A PETROGRAPHIC INVESTIGATION OF BASALTIC ROCKS FROM THE UPPER CARRIZOZO LAVA FLOW, VALLEY OF FIRES, NEW MEXICO**
- 8-23 45 Crockett, Macey*; Khan, Shuhab D.; Alonso de Linaje, Virginia; Sun, Lei: **A COMPARATIVE HYPERSPECTRAL STUDY OF HYDROCARBON SEEPAGES NEAR UVALDE, TEXAS: AN ANALYSIS OF CLASSIFICATION METHOD ACCURACY**
- 8-24 46 Guimbi Nzoumba, Ghervy N.*; Yancey, Thomas: **DOCUMENTING DIATOM OCCURENCE IN LATE EOCENE MARINE COASTAL SEDIMENTS IN CENTRAL TEXAS**
- 8-25 47 Dunlap, Maigan*; Last, Fawn; Lehrmann, Daniel J.: **CARBONATE FACIES CHANGES FROM THE LATE PERMIAN TO THE EARLY TRIASSIC FOR THREE NEW LOCALITIES IN THE NANPANJIANG BASIN, SOUTH CHINA**
- 8-26 48 Passamano, Kylie*; Last, Fawn: **COLD WATER CARBONATE DEPOSITS OF QUATERNARY LAKE RUSSELL, EASTERN CALIFORNIA**
- 8-27 49 Riggs, Ryan Matthew*; Ellwood, Brooks B.: **CACO₃ AND MAGNETIC SUSCEPTIBILITY VARIABILITY THROUGHOUT THE PALEOCENE-EOCENE BOUNDARY INTERVAL**
- 8-28 50 Lofton, Connor James*; Reece, Robert S.; Gulick, Sean; LeVoor, Maureen; Haeussler, Peter J.; McCall, Naoma; O'brien, Nicholas; Saustrup, Steffen: **THE EFFECT OF GLACIAL RETREAT ON FJORD DEPOSITIONAL REGIMES, TAAN FIORD, ICY BAY, ALASKA**
- 8-29 51 Robinson, S.E.*; Rosscoe, Steven J.; Dose, Michelle M.: **PRELIMINARY ANALYSIS OF TOTAL GAMMA RADIATION, CONODONT ELEMENT ABUNDANCE, AND FINER THAN SAND FRACTION RELATIONSHIPS IN THE LOWER BARNETT SHALE, SAN SABA, TEXAS, UNITED STATES**
- 8-30 52 Wilson, Dustin*; Last, Fawn: **CONCRETIONS IN TERTIARY SANDS ALONG ECLETO CREEK IN SOUTHERN TEXAS**
- 8-31 53 O'Brien, Nicholas S.*: **NEW INSIGHT INTO GLACIAL VARIABILITY BASED ON SEISMIC IMAGING OF SEDIMENTARY PACKAGES IN ICY BAY, ALASKA**

SESSION NO. 8

- 8-32 54 Zafar, Maham*; Mitchell, Evelyn J.; Turner, David R.; Montes-Arredondo, Salma: **EVALUATING PRE-EXISTING SOIL CONDITIONS AT A REHABILITATED COMMUNITY GARDEN LOCATION ON THE WEST SIDE OF SAN ANTONIO, TEXAS**
- 8-33 55 Olaniyi-Sholanke, Oluwaseyifunmitan M.*; Marcantonio, Franco; Reimi, Maya: **BIARIUM CONCENTRATIONS AS A PROXY FOR EQUATORIAL PACIFIC PRODUCTIVITY DURING THE PAST 140,000 YEARS**
- 8-34 56 Dillon, Sarah Marie*; Ford, Mark T.; Liu, Jingbo Louise: **TESTING THE GEOCHEMICAL ACCURACY OF ANALYTICAL OPTICAL MINERALOGY**
- 8-35 57 Moore, Kimberly D.*; Sumrall, Jonathan B.: **PETROGRAPHIC ANALYSIS OF CHERT WITHIN THE MANISTIQUE GROUP OF THE MICHIGAN BASIN**
- 8-36 58 Gauvey, Kaitlyn L.*; Sumrall, Jonathan B.: **PETROGRAPHIC ANALYSIS OF SILICIFIED CORAL FROM THE MANISTIQUE GROUP OF THE MICHIGAN BASIN**
- 8-37 59 Kapayi, Kuzipa*; Suarez, Marina B.: **CARBON ISOTOPE CHEMOSTRATIGRAPHY FROM MID-CRETACEOUS LACUSTRINE IN NW CHINA**
- 8-38 60 Onyango, Evans*; Khan, Shuhab; Talbot, Robert; Sun, Lei: **APPLICATION OF AIRBORNE AND GROUND-BASED HYPERSPECTRAL IMAGING IN DETECTING METHANE**
- 8-39 61 Juenger, Jessica*: **ELECTRICAL RESISTIVITY SIGNATURES OF THE PAWNEE BILL MANSION CREEP, BLUE HAWK PEAK, OKLAHOMA**
- 8-40 62 Giles, Sarah*; Kernen, Rachelle; Lehrmann, Asmara; Giles, Katherine: **EVOLUTION OF A SUPRASALT MINIBASIN: NEOPROTEROZOIC (EDIACARAN) PATAWARTA SALT SHEET, FLINDERS RANGES, SOUTH AUSTRALIA**
- 8-41 63 Lehrmann, Asmara*; Kernen, Rachelle; Giles, Sarah; Giles, Katherine: **TIMING OF ALLOCHTHONOUS SALT EMPLACEMENT OF THE NEOPROTEROZOIC (EDIACARAN) PATAWARTA SALT SHEET, FLINDERS RANGES, SOUTH AUSTRALIA: EVIDENCE FROM THE SUBSALT MINIBASIN**
- 8-42 64 Sigl, Kristen E.*; Al Atwah, Ibrahim; Puckette, James O.; Quan, Tracy M.: **USING BIOMARKERS TO DETERMINE UNKNOWN ORIGINS OF OIL IN A MISSISSIPPIAN CARBONATE RESERVOIR, CENTRAL OKLAHOMA, USA**
- 8-43 65 Fattouh, Tara N.*: **CLIMATE CHANGE AND THE MAYAN COLLAPSE: HIGH RESOLUTION PALEOCLIMATE RECONSTRUCTION FROM SPELEOTHEM RECORDS IN BELIZE**
- 8-44 66 Morris, René Eren*; Sumrall, Jonathan B.: **COMPARISON OF THE PETROGRAPHIC CHARACTERISTICS OF NEOGENE AND PLEISTOCENE VOLCANICLASTIC-RICH CARBONATES FROM CURACAO, NETHERLANDS ANTILLES**
- 8-45 67 Humphreys, Jennifer*; Stern, Robert: **GEOSCIENCE SKETCHING IN THE CLASSROOM**
- 8-46 68 Tuttle, Larry*; Wernette, Phillippe A.; Houser, Chris: **MAPPING THE GEOLOGIC FRAMEWORK OF PADRE ISLAND NATIONAL SEASHORE USING GEOPHYSICAL SURVEYS**
- 8-47 69 Ricketts, Tyler Edward*; Gifford, Jennifer: **USING PHOTOGRAMMETRY AND 3D MODELING TO REPLICATE AND ENHANCE GEOSCIENCE FIELD EXPERIENCES**
- 8-48 70 Lankford-Bravo, David*; Mann, Paul: **DETAILED MAPPING OF THE JUNCTION OF THE LATE JURASSIC "STEP-UP" CONTINENT-OCEAN BOUNDARY OF THE NORTHERN US GOM WITH THE CONTINENT-OCEAN TRANSFORM ALONG THE EAST COAST OF MEXICO**
- 8-49 71 Teinert, Misti M.*; Faght, John E.; Giles, Antony N.: **AN INITIAL UPDATE ON RESEARCH INTO LOCALIZED FAUNAL POPULATION DECLINES FROM MICROFOSSIL AND MACROFOSSIL EVIDENCE IN THE CRETACEOUS EDWARDS GROUP AND THE ANTLERS SANDS, FLUVANNA, TX**
- 8-50 72 Manlove, Hunter Michelle*: **RARE EARTH ELEMENT GEOCHEMISTRY OF VERTEBRATE FOSSILS FROM THE CRETACEOUS MORENO FORMATION, CALIFORNIA**

- 8-51 73 Shackleton, Travis*: **MICROFOSSILS IN MARINE SEDIMENTS: THE INFLUENCE ON MACRO-SCALE MECHANICAL BEHAVIOR**
- 8-52 74 Martin, Camryn L.*; Georgiou, Ioannis: **PHYSICAL MODELING OF TIDAL CREEK MIGRATION DYNAMICS; IMPLICATIONS FOR DETACHED BAR DEVELOPMENT**
- 8-53 75 Wynn, Joshua C.*; Walsh, Tim R.: **COMPARISON OF CHERT GEOCHEMISTRY AND FLINT KNAPPING WORKABILITY**
- 8-54 76 Whaley, Carol Ann*; Ali, Hendratta; Christiano, Andrew W.; Karim, Muhammad; Tedesco, Steven A.: **USING GEOCHEMICAL DATA TO DETERMINE THE INFLUENCE OF ELEMENTAL CONTENT AND MINERALOGICAL COMPOSITION WITHIN THE CHEROKEE BASIN IN SOUTHEAST KANSAS**
- 8-55 77 Cantu, Ana*; Pierce, Suzanne A.; Rivera, Omar; Ramirez, Andrea; Lewis, Daniel Hardesty; Gentle, John; Fuentes-Pineda, Gibran: **BIG DATA ANALYSIS FOR CALCULATING SUSTAINABLE YIELD AND DEFINING THE FEASIBLE NEGOTIATION SPACE FOR AN AQUIFER SYSTEM**
- 8-56 78 Pippin, James*; Pierce, Suzanne A.; Gentle, John: **USING 3-DIMENSIONAL POINT CLOUD DATA TO MAP CAVE AND KARST FEATURES**

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 9

T5. Micro- to Macroscopic Evidence of Life and its Implications for the Evolution and Interpretation of the Biosphere in Earth Systems (GSA Geobiology & Geomicrobiology Division; GSA Karst Division)

1:30 PM, Omni Colonnade San Antonio Grand Ballroom F

Stephen T. Hasiotis, Thomas Adams, William J. Foster and Sophie Warny, Presiding

1:30 PM INTRODUCTORY REMARKS

- 9-1 1:35 PM Sprinkle, James*; Zachos, Louis G.: **NEW PARACRINOID (BLASTOZOAN ECHINODERM) FROM THE MCLISH FORMATION (DARRIWILIAN; LATE MIDDLE ORDOVICIAN), IN SOUTHERN OKLAHOMA**
- 9-2 1:55 PM Foster, William J.*; Danise, Silvia; Price, Gregory D.; Twitchett, Richard J.: **PALEOECOLOGY OF THE LOWER TRIASSIC SERVINO FORMATION, ITALY**
- 9-3 2:15 PM Yancey, Thomas E.*; Winter, Diane M.: **LATE EOCENE DIATOMITES IN TEXAS REVEAL GULF OF MEXICO BIOSILICEOUS SEDIMENTATION**
- 9-4 2:35 PM Adams, Thomas*; Noto, Christopher; Drumheller, Stephanie K.: **NEW DATA ON MID- CRETACEOUS ECOSYSTEMS AND FAUNAL DIVERSITY IN APPALACHIA: INSIGHTS FROM THE WOODBINE FORMATION (CENOMANIAN) OF NORTH TEXAS**
- 9-5 2:55 PM Van Vranken, Nathan*: **TEXAS CRETACEOUS ICHTHYOSAURS: A GLIMPSE OF THEIR LAST DAYS IN THE EARLY-LATE CRETACEOUS**
- 3:15 PM **BREAK**
- 9-6 3:30 PM Reistroffer, Maria Therese*; Foster, William J.; Martindale, Rowan C.; Twitchett, Richard J.: **TIMING OF OCEAN ACIDIFICATION AT THE LATEST PERMIAN MASS EXTINCTION: EVIDENCE FROM FOSSILS**
- 9-7 3:50 PM Esker, Don*; Forman, Steven L.; Butler, Dava K.: **THE CLIMATE IMPLICATIONS OF GIANT TORTOISES IN PLEISTOCENE NORTH AMERICA**
- 9-8 4:10 PM Macrini, Thomas E.*; Turner, David; Ramirez, Briana; Khan, Harun; Marrone, Tatiana; Perez, Samantha: **TAXONOMIC AND PROVENANCE ANALYSIS OF A LEGACY COLLECTION OF FOSSIL FISH BONES FROM LIVE OAK COUNTY, TEXAS**

SESSION NO. 10***T13. Texas Water Research Network: A Statewide Initiative to Integrate and Advance Water Research from Inception to Application II (GSA Hydrogeology Division; GSA Karst Division)***

1:30 PM, Omni Colonnade San Antonio Grand Ballroom A

Suzanne A. Pierce, Kevin Wagner, Suzanne Schwartz and Jay Banner, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 10-1 1:35 PM Awal, Ripendra*; Fares, Ali; Janapana, Ram Sai Reddy: **DEVELOPMENT OF A NEW IRRIGATION SCHEDULING TOOL FOR AGRICULTURAL CROPS AND URBAN LANDSCAPE IN TEXAS**
- 10-2 1:55 PM Bayabil, Haimanote*; Fares, Ali; El Hassan, Almoutaz; Cherif, Yassine: **ASSESSING CLIMATE CHANGE EFFECTS ON SURFACE WATER RESOURCES IN THE LOWER BASIN WATERSHED OF THE COLORADO RIVER**
- 10-3 2:15 PM El Hassan, Almoutaz*; Awal, Ripendra; Bayabil, Haimanote; Ray, Ram; Risch, Eric; Fares, Ali: **MODELING THE EFFECT OF LANDUSE CHANGE ON HYDROLOGIC RESPONSE OF A SEMI URBANIZED WATERSHED USING A PHYSICALLY BASED DISTRIBUTED MODEL**
- 10-4 2:35 PM Yazbek, Lindsey D.*; Banner, Jay L.; Plenge, Megan F.: **TRACING CHANGES IN URBANIZING SOILS DUE TO IRRIGATION WITH MUNICIPAL WATER**
- 10-5 2:55 PM Vilcaez, Javier*: **TRANSPORT OF HEAVY METALS THROUGH SHALE ROCK FRACTURES DUE TO THE INJECTION OF FRACTURING FLUIDS: MODELING AND SIMULATION**
- 10-6 3:15 PM Brewer, Will*; Yelderman, Joe C.: **CARBON IN THE BRAZOS RIVER ALLUVIUM AQUIFER**
- 3:35 PM **BREAK**
- 10-7 3:50 PM Weathers, Zach*; Urbanczyk, Kevin M.: **GEOCHEMICAL MODELING OF SPRINGS IN BIG BEND RANCH STATE PARK, TEXAS**
- 10-8 4:10 PM Golab, James A.*; Smith, Jon J.: **USING WELL LOGS TO ASSESS THE EFFECTS OF THALASSINOIDES-DOMINATED ICHNOFABRICS ON THE SUBSURFACE FLUID PATHWAYS OF THE TRINITY AQUIFER IN NORTHERN BEXAR COUNTY**
- 10-9 4:30 PM Jarvis, Jacob C.*; Yelderman, Joe C.; Wong, Stephanie; Hamilton, Wayne; Radcliffe, Scooter: **THE IMPORTANCE OF DETAILED STRATIGRAPHY IN ASSESSING ALLUVIAL AQUIFERS**
- 10-10 4:50 PM Setlur, Neeraja*; Sharp, John M.; Hunt, Brian B.: **THE LLANO UPLIFT CRYSTALLINE ROCK AQUIFER**
- 10-11 5:10 PM Kwon, Nalbeat*; Gentle, John; Pierce, Suzanne A.: **REPRODUCIBLE GROUNDWATER SCIENCE WORKFLOWS FOR THE FUTURE: A CASE FOR TEXAS GROUNDWATER AVAILABILITY MODELS**

SESSION NO. 11***T14. Groundwater Availability in Texas: Rule of Capture and Sustainable to Consensus Yield (GSA Hydrogeology Division; GSA Karst Division)***

1:30 PM, Omni Colonnade San Antonio Grand Ballroom B

Brian B. Hunt, John M. Sharp and Suzanne A. Pierce, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 11-1 1:35 PM Sharp, John M.*: **GROUNDWATER RESOURCE SUSTAINABILITY: CONCEPTUAL EVOLUTION, OPPORTUNITIES, & CHALLENGES**
- 11-2 1:55 PM French, Larry*; Anaya, Roberto; Ballew, Natalie; Weinberg, Andrew: **REGIONAL GROUNDWATER MANAGEMENT: CONSIDERING FLOWS TO SPRINGS AND STREAMS**
- 11-3 2:15 PM Beach, James A.*: **FINDING THE BALANCING BETWEEN HIGHEST PRACTICABLE GROUNDWATER PRODUCTION AND CONSERVATION**

- 11-4 2:35 PM Green, Ronald*; Bertetti, F. Paul; Fratesi, Beth; Toll, Nathaniel J.: **SUSTAINABLE YIELD GROUNDWATER IN ARID AND SEMI-ARID LANDS IN TEXAS**
- 11-5 2:55 PM Hamilton, Mark*; Winterle, James: **THE EAA ACT: A SUCCESS STORY**
- 11-6 3:15 PM Dupnik, John T.*: **FINDING A BALANCE – A CASE STUDY FOR ADDRESSING GROUNDWATER MANAGEMENT CHALLENGES IN TEXAS**
- 11-7 3:35 PM Smith, Brian A.*; Hunt, Brian B.; Escobar, Vanessa; Bell-Enders, Kendall; Dupnik, John: **CONSIDERING UNREASONABLE IMPACTS IN THE GROUNDWATER PRODUCTION PERMITTING PROCESS**
- 11-8 3:55 PM Hunt, Brian B.*; Smith, Brian A.: **MODEL THEN MEASURE: ASSESSING AND MONITORING THE POTENTIAL FOR UNREASONABLE IMPACTS FROM A PUMPING WELL--EXAMPLE FROM THE MIDDLE TRINITY AQUIFER, HAYS COUNTY, TEXAS**
- 11-9 4:15 PM Oliver, Wade A.*; Pinkard, James; Deeds, Neil E.: **DEVELOPMENT OF AN ANALYTIC ELEMENT TOOL TO EVALUATE THE TRINITY AQUIFER IN HAYS COUNTY, TEXAS**
- 11-10 4:35 PM Gary, Robin*: **WATER WELL DRILLING TRENDS IN TEXAS GROUNDWATER WATER CONSERVATION DISTRICTS AND GROUNDWATER MANAGEMENT AREAS**
- 11-11 4:55 PM Weber, Thomas*; Kennedy, Vicky: **THE SAGA OF A GROUNDWATER CONSERVATION DISTRICT FOR THE WESTERN TRAVIS COUNTY PORTION OF THE HILL COUNTRY PRIORITY GROUNDWATER MANAGEMENT AREA**
- 11-12 5:15 PM Smith, Brian A.*; Hunt, Brian B.: **DESALINATION AND AQUIFER STORAGE AND RECOVERY POTENTIAL OF THE SALINE EDWARDS AQUIFER, CENTRAL TEXAS**

SESSION NO. 12***Recent Advances in Geoscience Research***

1:30 PM, Omni Colonnade San Antonio Grand Ballroom G

Richard L. Silver, Mollie Patzke and Sarah Thorne, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 12-1 1:35 PM O'Connell, Ryan L.*; Finkelman, Robert B.: **CAN COAL HELP U.S. TECHNOLOGY?**
- 12-2 1:55 PM Moothal, Rajeevan*: **MICROFACIES ANALYSIS AND SEQUENCE STRATIGRAPHY OF JHURIO FORMATION, MIDDLE JURASSIC OF KACHCHH MAINLAND, GUJARAT, WESTERN INDIA**
- 12-3 2:15 PM Stout, John E.*: **A SURVEY OF SALT PLAYAS ON THE LLANO ESTACADO**
- 12-4 2:35 PM Zewde, Awet Solomon*: **THE CHALLENGE ON PROTECTING HYGROSCOPIC EVAPORITES MINING IN DANAKIL DEPRESSION**
- 12-5 2:55 PM Elmore, Stephanie Nicole*: **DETERMINING THE DEPOSITIONAL SETTING OF A LIMESTONE UNIT IN BIG BEND RANCH STATE PARK, TEXAS**
- 12-6 3:15 PM Smith, Jon Jay*; Ludvigson, Greg A.; Layzell, Anthony L.; Möller, Andreas; Turner, Elijah: **SCIENTIFIC DRILLING IN CENOZOIC STRATA OF THE CENTRAL HIGH PLAINS AQUIFER: A DEVELOPING U-PB ZIRCON CHRONOSTRATIGRAPHY IN WESTERN KANSAS**
- 3:35 PM **BREAK**
- 12-7 3:50 PM De Hon, René A.*; Earl, Richard A.: **BLOCKY RIMMED PITS: A CRATER-LIKE LANDFORM PRODUCED BY COLLAPSE OF BASALT INFLATION PLATEAUS**
- 12-8 4:10 PM Turner, Elijah*; Smith, Jon J.; Möller, Andreas; Otto, Rick E.; Joeckel, R.M.; Tucker, S.T.: **THE FIRST U-PB ZIRCON AGES FOR THE ASHFALL FOSSIL BEDS AND GROVE LAKE VOLCANIC DEPOSITS IN NEBRASKA: TWO DIFFERENT YELLOWSTONE HOTSPOT TRACK SOURCES**

SESSION NO. 12

- 12-9** 4:30 PM Breeding, Alex*; Covington, Matthew D.; Thaler, Evan:
REMOVAL AND TRANSPORT OF SANDSTONE CAPROCK MATERIAL AS A RATE-LIMITING STEP IN LANDSCAPE EVOLUTION, BUFFALO RIVER BASIN, AR
- 12-10** 4:50 PM Garcia, Sandra*; Ma, Lin; Louvat, Pascale; Gaillardet, Jerome:
USING BORON ISOTOPES TO TRACE URBAN SALINITY INPUTS TO THE RIO GRANDE RIVER IN SOUTHWEST USA
- 12-11** 5:10 PM Poudel, Durga D.*: **CHALLENGES OF IMPROVING SURFACE WATER QUALITY IN BAYOU CHENE, LOUISIANA**

TUESDAY, 14 MARCH 2017

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 13

T3. Advances in Sedimentology, Stratigraphy, and Geochemistry of Carbonates and Mixed Carbonate Clastic Systems (GSA Karst Division; GSA Sedimentary Geology Division)

8:00 AM, Omni Colonnade San Antonio Grand Ballroom B

Daniel J. Lehrmann and André W. Droxler, Presiding

8:00 AM INTRODUCTORY REMARKS

- 13-1** 8:05 AM Harrison, Jemma*; Last, Fawn; Last, William: **DEVELOPMENT OF MODERN AND HOLOCENE LACUSTRINE MICROBIALITES FROM A CANADIAN GREAT PLAINS LAKE**
- 13-2** 8:25 AM Li, Zijian*; Griffith, Elizabeth M.; Gaines, Emma; Wronkiewicz, David J.; Paul, Varun; Fan, Majie: **GEOCHEMISTRY OF MICROBIALITES AND WATER IN STORR'S LAKE, SAN SALVADOR, BAHAMAS**
- 13-3** 8:45 AM Hopson, Heath Hilton*; Droxler, Andre W.; Khanna, Pankaj; Lehrmann, Dan; Harris, Paul M.; Dravis, Jeffrey; Droxler, Dylan A.: **MICROBIAL GROWTH PROCESSES AND FABRIC DEVELOPMENT IN UPPER CAMBRIAN MICROBIAL BUILDUPS; MASON COUNTY, CENTRAL TEXAS**
- 13-4** 9:05 AM Kelleher, Caroline*; Liu, Jingxuan; Lhemann, Adrien; Yazbek, Lindsey D.; Mercado, Lauren; Droxler, André W.; Khanna, Pankaj; Hopson, Heath Hilton; Lehrmann, Daniel J.: **ENVIRONMENTAL AND SEQUENCE STRATIGRAPHIC CONTROL ON MICROBIALITE MORPHOLOGY AND MICROFACIES IN A MARINE MIXED CARBONATE SILICICLASTIC SYSTEM, UPPER CAMBRIAN POINT PEAK FM., LLANO RIVER AND MILL CREEK, MASON COUNTY, CENTRAL TEXAS**
- 13-5** 9:25 AM Khanna, Pankaj*; Droxler, André W.; Harris, Paul M.; Lehrmann, Daniel J.: **QUALITATIVE AND QUANTITATIVE ANALYSIS OF UPPER CAMBRIAN MICROBIAL REEFS, MASON, TEXAS**
- 13-6** 9:45 AM Proctor, Jacob Michael*; Hopson, Heath Hilton; Droxler, André W.; Derzhi, Naum; Khanna, Pankaj; Lehrmann, Daniel J.: **GENETIC PORE TYPES AND A DIAGENESIS LOG FOR CARBONATES AND MICROBIALITE RESERVOIRS (UPPER CAMBRIAN MICROBIAL REEFS, MASON COUNTY, CENTRAL TEXAS)**
- 10:05 AM **BREAK**
- 13-7** 10:20 AM Li, Xiaowei*; Kelley, Brian M.; Minzoni, Marcello; Yu, Meiyi; Payne, Jonathan L.; Lehrmann, Daniel J.: **HIGH-RELIEF OOLITE PLATFORM MARGINS IN THE NANPANJIANG BASIN OF SOUTH CHINA RESULTED FROM EXTREME SEAWATER CARBONATE SATURATION IN THE EARLY TRIASSIC AFTERMATH OF THE END-PERMIAN MASS EXTINCTION**

- 13-8** 10:40 AM Scott, Robert W.*; Rush, Natalie K.; Hojnacki, Rachel; Campbell, Whitney R.; Wang, Yulun; Lai, Xin: **EARLY CRETACEOUS ANOXIC EVENTS 1C AND 1D ON TEXAS COMANCHE SHELF**
- 13-9** 11:00 AM Scott, Robert W.*; Steuber, Thomas; Mitchell, Simon F.; Skelton, Peter W.: **GLOBAL CHANGES IN RUDIST BIVALVE DIVERSITY AND EFFECTS ON EARLY CRETACEOUS GULF COAST COMMUNITIES**
- 13-10** 11:20 AM Kinsland, Gary L.*; Snedden, John; Virdell, Jonathan; Shellhouse, Kody Q.; Muchiri, Eric: **SEISMIC, WELL-LOG AND CORE DATA CHARACTERIZATION OF THE K/PG BOUNDARY, CRETACEOUS CHALK/PALEOGENE SHALE, IN CENTRAL LOUISIANA**
- 13-11** 11:40 AM Liu, Chang*; Clift, Peter D.; Carter, Andrew; Böning, Philipp; Sun, Zhen; Hu, Zhaochu; Pahnke, Katherina: **CONTROLS ON MODERN EROSION AND THE DEVELOPMENT OF THE PEARL RIVER BASIN SINCE THE EOCENE**

SESSION NO. 14

T8. Subsurface Exploration Techniques in the South-Central U.S. (GSA Archaeological Geology Division; GSA Geophysics Division)

8:00 AM, Omni Colonnade San Antonio Grand Ballroom F

Evelynn J. Mitchell and Ronald Green, Presiding

8:00 AM INTRODUCTORY REMARKS

- 14-1** 8:05 AM Mitchell, Evelynn J.*: **DETECTION OF SHALLOW KARST FEATURES WITH GEOPHYSICAL TECHNIQUES: GROUND TRUTHING THE RESULTS**
- 14-2** 8:25 AM Klar, Richard V.*; McCoy, Zaneta L.; Prikrýl, James D.: **REDUCING THE UNCERTAINTY OF SITE CHARACTERIZATION STUDIES IN KARST SETTINGS THROUGH THE USE OF NEAR-SURFACE GEOPHYSICS**
- 14-3** 8:45 AM Aboaba, Olanrewaju*; Liner, Christopher L.: **3D SEISMIC EXPRESSION OF PALEOKARST: AN EXAMPLE FROM OSAGE COUNTY, OKLAHOMA**
- 14-4** 9:05 AM Wernette, Phillipe A.*; Houser, Chris; Weymer, Bradley A.; Everett, Mark E.; Bishop, Michael P.; Reece, Robert S.: **ASSESSING THE ROLE OF FRAMEWORK GEOLOGY ON BARRIER ISLAND GEOMORPHOLOGY**
- 14-5** 9:25 AM Perilla-Castillo, Paula J.*; Murray, Kyle E.; Kroll, Kayla; Walker, Ella L.: **ROCK PROPERTIES DERIVED FROM CONTINUOUS PRESSURE MONITORING IN THE ARBUCKLE GROUP OF OKLAHOMA**
- 9:45 AM **BREAK**
- 14-6** 10:00 AM Nichols, Kristi Miller*: **INVESTIGATING SPANISH COLONIAL FEATURES USING GPR IN URBAN SETTINGS**
- 14-7** 10:20 AM Terry, Marcus D.*: **THE INFLUENCE OF SEISMIC ANISOTROPY ON THE LOCATION OF MICROSEISMIC EVENTS**
- 14-8** 10:40 AM Olson, Elizabeth D.*; Clift, Peter D.; Lorenzo, Juan M.; Lechnowskyj, Alexandra N.; Barbato, Allison K.; Buhyoff, Erinn; Babin, Daniel Paul: **COMBINING DOWNHOLE AND SEDIMENT LOGGING TO UNDERSTAND THE RESERVOIR CHARACTERISTICS OF A LARGE-SCALE MISSISSIPPI RIVER POINT BAR, FALSE RIVER, LOUISIANA**
- 14-9** 11:00 AM Barbato, Allison K.*; Clift, Peter D.; Olson, Elizabeth D.; Jones, Claire R.: **USING GRAINSIZE ANALYSIS TO REFINE INTERNAL CHARACTERISTICS OF THE FALSE RIVER POINT BAR; LOWER MISSISSIPPI RIVER, LOUISIANA**
- 14-10** 11:20 AM Wang, Guoquan*: **TWO DECADES GPS OBSERVATIONS IN THE GREATER HOUSTON AREA: A TESTIMONY TO THE COMPLEXITY OF LAND SUBSIDENCE AND UPLIFT**
- 11:40 AM **CLOSING REMARKS**

SESSION NO. 15

T10. Late Paleozoic Tectonic Framework of the South-Central Region and Evolution of the Permian Basin (GSA Structural Geology and Tectonics Division)

8:00 AM, Omni Colonnade San Antonio Grand Ballroom A

Robert J. Stern, Thomas E. Ewing and Lowell Waite, Presiding

- 15-1 8:00 AM Keller, G. Randy*: **REGIONAL CRUSTAL STRUCTURE OF THE SOUTH-CENTRAL US AND ITS TECTONIC EVOLUTION: A REVIEW**
- 15-2 8:20 AM Gao, Zihui*; Perez, Nicholas: **LATE PALEOZOIC TECTONIC FRAMEWORK OF THE SOUTH-CENTRAL REGION AND EVOLUTION OF THE PERMIAN BASIN**
- 15-3 8:40 AM Stern, Robert J.*; Waite, Lowell; Moecher, David; Fan, Majie; Greb, Stephen F.: **THE GREAT PENNSYLVANIAN RIVER: A LINK BETWEEN PERMIAN BASIN HYDROCARBONS AND LATE PALEOZOIC COLLISION?**
- 15-4 9:00 AM Ewing, Thomas E.*: **LATE PALEOZOIC STRUCTURES IN THE ANCESTRAL ROCKY MOUNTAINS OF THE WEST TEXAS AREA - PRODUCT OF NORTHEAST-DIRECTED COMPRESSION**
- 15-5 9:20 AM Waite, Lowell*; Stern, Robert; Laughland, Matthew: **THE PERMIAN BASIN OF WEST TEXAS AND SOUTHEAST NEW MEXICO: A WORLD-CLASS PETROLEUM PROVINCE**
- 15-6 9:40 AM Mickus, Kevin L.*; Stern, Robert; George, Mark; Woller, Kevin: **GRAVITY AND MAGNETIC MODELING OF THE SOUTHERN PERMIAN BASIN, W. TEXAS**
- 15-7 10:00 AM Ewing, Thomas E.*: **THE PERMIAN BASIN - INTRACRATONIC SUBSIDENCE IN WESTERN PANGAEA TRIGGERED BY COMPRESSION**

SESSION NO. 16

T12. Upper Crustal Deformation across Continental Interiors from the Mesozoic to the Present (GSA Structural Geology and Tectonics Division)

10:35 AM, Omni Colonnade San Antonio Grand Ballroom A

Keith Gray, Matthew P. McKay and Benjamin Surpless, Presiding

- 16-1 10:35 AM Sharman, Glenn R.*; Covault, Jacob A.; Flaig, Peter P.; Stockli, Daniel F.; Miranda Berrocales, Viridis M.: **TECTONIC STRATIGRAPHY OF THE LARAMIDE DENVER BASIN FORELAND: INSIGHTS FROM DETRITAL ZIRCON U-PB GEOCHRONOLOGY**
- 16-2 10:55 AM Ewing, Thomas E.*: **SAN MARCOS ARCH AND SABINE ARCH - FLEXURES RELATED TO MEXICAN LARAMIDE (HIDALGOAN) COMPRESSION**
- 16-3 11:15 AM McKay, Matthew P.*; Jackson, William T.: **TECTONIC STRESS REGIMES RECORDED IN ZIRCON GEOCHEMISTRY**
- 16-4 11:35 AM Helesic, Jacob*; Petronis, Michael; Kelsch, Jesse M.; Dickerson, Patricia W.; Urbanczyk, Kevin M.; Rohr, David: **A PALEOMAGNETIC ANALYSIS OF VERTICAL AXIS ROTATION ALONG THE TASCOTAL MESA FAULT IN FAR WEST TEXAS**
- 16-5 11:55 AM Thorne, Sarah*; Surpless, Benjamin: **TESTING A PREDICTIVE MODEL OF FAULT SEGMENTATION USING STREAM PROFILE ANALYSIS: A CASE STUDY FROM THE WASSUK NORMAL FAULT SYSTEM, NEVADA**

**POSTER
TECHNICAL SESSIONS**

SESSION NO. 17

T3. Advances in Sedimentology, Stratigraphy, and Geochemistry of Carbonates and Mixed Carbonate Clastic Systems (Posters) (GSA Karst Division; GSA Sedimentary Geology Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

Booth #

- 17-1 1 Liu, Jingxuan*; Singh, Pulkit; Zhou, Yuanquan; Hopson, Heath Hilton; Proctor, Jacob Michael; Khanna, Pankaj; Droxler, André W.; Lehrmann, Dan; Harris, Paul M.; Dravis, Jeffrey: **"BREAD LOAF" MOUNDS: MICROBIAL REEFS ON A MIXED CARBONATE SILICICLASTIC INBOARD SHELF, UPPER CAMBRIAN WILBERNS FORMATION (MASON COUNTY, CENTRAL TEXAS)**
- 17-2 2 Zhou, Yuanquan*; Trotta, Roberto P.; Hopson, Heath Hilton; Khanna, Pankaj; Droxler, André W.; Lehrmann, Daniel J.; Harris, Paul M.: **NATURE OF THE OVERLYING STRATA, OR "COVER" OF AN UPPER CAMBRIAN MICROBIAL REEF COMPLEX (MASON COUNTY, CENTRAL TEXAS): POTENTIAL CLUES TO THE MICROBIAL DEMISE**
- 17-3 3 Singh, Pulkit*; Droxler, Andre W.; Hopson, Heath H.; Khanna, Pankaj; Lehrmann, Dan; Droxler, Dylan A.; Jovane, Luigi; Harris, Paul M.; Dravis, Jeffrey; Rodelli, Daniel: **AN INVESTIGATIVE STUDY INTO THE DEMISE OF THE UPPER CAMBRIAN MICROBIAL REEFS (MASON COUNTY, TEXAS)**
- 17-4 4 Vaughan, George C.*: **PRELIMINARY CHARACTERIZATION OF PERMIAN WORD FORMATION CLASTICS AND CARBONATES FROM THE NORTHWEST GLASS MOUNTAINS OF WEST TEXAS**
- 17-5 5 Thorne, Sarah*; Kelleher, Caroline; Foster, William J.; Payne, Jonathan L.; Yu, Meiyi; Lehrmann, Daniel J.: **UPPER PERMIAN REEF AND SHELF FACIES OF THE SOUTHERN MARGIN OF THE YANGTZE PLATFORM, SOUTH CHINA PROVIDE INSIGHT INTO REEF ECOLOGY AND ENVIRONMENTS PRIOR TO THE END-PERMIAN MASS EXTINCTION**
- 17-6 6 Stepchinski, Leanne*; Li, Xiaowei; Minzoni, Marcello; Payne, Jonathan L.; Lehrmann, Daniel J.: **CONTROLS ON CARBONATE FACTORIES IN THE TRANSITION FROM RAMP TO REEF-RIMMED PLATFORM IN THE HONGYAN SECTION OF THE TRIASSIC YANGTZE PLATFORM**
- 17-7 7 Li, Xiaowei*; Lehrmann, Daniel J.; Minzoni, Marcello; Yu, Meiyi; Payne, Jonathan L.: **DOLOMITE HOSTED IN THE MIDDLE TRIASSIC CARBONATE PLATFORM OF THE NANPANJIANG BASIN, SOUTH CHINA: EFFECTS OF DOLOMITIZATION PROCESSES ON PORE TYPES**
- 17-8 8 Kelleher, Caroline*; Thorne, Sarah; Minzoni, Marcello; Yu, Meiyi; Lehrmann, Dan: **MECHANISMS CONTROLLING GIANT SECTOR COLLAPSE (SCALLOPED MARGIN) OF THE YANGTZE PLATFORM MARGIN, NANPANJIANG BASIN, SOUTH CHINA**
- 17-9 9 Dailey, Sarah*; Clift, Peter D.; Calves, Jerome: **THE SEDIMENTOLOGY AND ORIGINS OF THE NATARAJA SLIDE, ARABIAN SEA: A GIANT MASS TRANSPORT DEPOSIT**
- 17-10 10 Bruce, David*; Parcell, William C.: **ELEMENTAL AND MINERAL STRATIGRAPHY OF MIXED CARBONATE-CLASTIC SYSTEM: MIDDLE JURASSIC GYPSUM SPRING FORMATION, BIGHORN BASIN, WYOMING**
- 17-11 11 Diehl, Brian C.*: **SEQUENCE STRATIGRAPHIC RELATIONS OF THE FREDERICKSBURG AND WASHITA GROUPS, LOWER CRETACEOUS CARBONATE SHELF, TEXAS**
- 17-12 12 Wehner, Matthew*; Grosskopf, Jacob: **ANTONIO CREEK SECTION MILANKOVITCH CYCLE DETECTION AND OAE 2 CORRELATION TO OTHER LOCATIONS IN THE WESTERN INTERIOR SEAWAY DESPITE HIATUSES**
- 17-14 14 Green, Hunter*; Walsh, Tim R.: **A STATISTICAL APPROACH TO ASSESSING HANDHELD GAMMA RAY SPECTROMETERS ON OUTCROP DATA**

SESSION NO. 18

T4. The Impact of Oceanographic Conditions, Oaes, and Volcanism on an Unconventional Reservoir System: The Late Cretaceous Eagle Ford and Austin Chalk Groups of the Gulf Coast (Posters) (GSA Sedimentary Geology Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

- | | Booth # | |
|------|---------|--|
| 18-1 | 15 | Lohr, Celeste D.*; Valentine, Brett J.; Hackley, Paul C.: THERMAL MATURITY IN THE TUSCALOOSA MARINE SHALE PLAY AREA: PRELIMINARY OBSERVATIONS FROM STUDIES TO SUPPORT OIL AND NATURAL GAS RESOURCES |
| 18-2 | 16 | Deluca, Michael J.*; Wehner, Matthew P.; Miller, Brent V.; Pope, Michael C.: U-PB ZIRCON DATING OF VOLCANIC ASH BEDS IN THE EAGLE FORD SHALE: IMPLICATIONS FOR REGIONAL CORRELATION AND OAE2 IN THE SOUTHERN CRETACEOUS WESTERN INTERIOR SEAWAY |
| 18-3 | 17 | Slabic, Ane*; Lapen, Thomas J.: U-TH-PB CHRONOLOGY OF FISH BONE IN PETROLEUM SOURCE ROCKS: AN EXAMPLE FROM THE EAGLE FORD GROUP, TEXAS |
| 18-4 | 18 | Quante, Nicolas*; Weissling, Blake; Godet, Alexis; Xie, Hongjie: INVESTIGATION OF A CRETACEOUS VOLCANIC CENTER IN MEDINA COUNTY, TEXAS VIA MAGNETIC & GRAVITY SURVEYING |

SESSION NO. 19

T5. Micro- to Macroscopic Evidence of Life and its Implications for the Evolution and Interpretation of the Biosphere in Earth Systems (Posters) (GSA Geobiology & Geomicrobiology Division; GSA Karst Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

- | | Booth # | |
|------|---------|---|
| 19-1 | 19 | De La Garza, Randolph Glenn*; Gonzalez, Juan L.: REFINING THE CHRONOLOGY OF A UNIQUE MASS GRAVE OF GIANT TORTOISES WITHIN THE LATE PLEISTOCENE RAYMONDVILLE FLUVIAL SYSTEM, WILLACY COUNTY, TEXAS |
| 19-2 | 20 | Brame, Hannah-Maria R.*; Ettinger, Nicholas P.; Martindale, Rowan C.; Bodin, Stéphane: ABERRANT BIVALVES AND TENACIOUS CORALS OF THE EARLY JURASSIC, MOROCCO: SURVIVORS OF EXTINCTION AND OCEANIC ANOXIA |
| 19-3 | 21 | Wiest, Logan A.*; Esker, Don; Driese, Steven G.: WACO MAMMOTH NATIONAL MONUMENT (WACO MAMMOTH SITE) WAS NOT BURIED RAPIDLY |
| 19-4 | 22 | Weiss, Anna M.*; Martindale, Rowan; Košir, Adrijan: A HIGH RESOLUTION ANALYSIS OF FAUNAL AND ENVIRONMENTAL CHANGE IN A SHALLOW –WATER BENTHIC COMMUNITY DURING THE PALEOCENE-EOCENE THERMAL MAXIMUM (SLOVENIA) |

SESSION NO. 20

T8. Subsurface Exploration Techniques in the South-Central U.S. (Posters) (GSA Archaeological Geology Division; GSA Geophysics Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

- | | Booth # | |
|------|---------|--|
| 20-1 | 23 | Valentine, Leslie*; Costigan, Katie H.: USING AERIAL IMAGERY TO DETERMINE VARIOUS EFFECTS OF ANTHROPOGENIC STRUCTURES AND RESTORATION EFFORTS ON THE HYDROLOGIC REGIME IN THE UPPER REGION OF THE ATCHAFALAYA RIVER BASIN |
| 20-2 | 24 | Willis, Jennifer Ann*: MODELING FLUVIAL CHANGES USING LIDAR, 2006-2011, CAMERON COUNTY, TEXAS |
| 20-3 | 25 | Burch, Samuel*; Urbanczyk, Kevin M.: AN ASSESSMENT OF AERIAL LIDAR FOR GEOMORPHIC CHANGE DETECTION |

WITHIN BOQUILLAS CANYON, BIG BEND NATIONAL PARK, TEXAS

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|-------|----|---|
| 20-4 | 26 | Okocha, Francis*; Brown, Wesley: GRAVITATIONAL STUDY OF THE HASTINGS SALT DOME AND ASSOCIATED FAULTS IN BRAZORIA AND GALVESTON COUNTIES, TEXAS |
| 20-5 | 27 | Aggarwal, Juhi*; Khan, Shuhab D.; Wellner, Julia S.: APPLICATION OF GEOPHYSICAL TECHNIQUES TO STUDY THE INTERNAL ARCHITECTURE OF COASTAL DUNE MORPHOLOGY, NORTH PADRE ISLAND, TEXAS |
| 20-6 | 28 | Eaves, Aaron Allen*; Stafford, Kevin W.: APPLYING GROUND PENETRATING RADAR TO IDENTIFY EVAPORITE KARST GEOHAZARDS ASSOCIATED WITH RM 652 IN CULBERSON COUNTY, TEXAS |
| 20-7 | 29 | Estrada, Monica M.*: HYDROGEOLOGY OF THE HYE, TEXAS AREA DETERMINED FROM CORE CHIPS, THIN SECTIONS, AND GEOPHYSICAL DATA |
| 20-8 | 30 | Karim, Muhammad*; Ali, Hendratta: CHARACTERIZING DEFORMATION IN SEDIMENTARY STRUCTURES OF OIL FIELDS USING 2D PROFILES FROM WELL LOGS AND POTENTIAL FIELD DATA IN PARTS OF SOUTH CENTRAL KANSAS |
| 20-9 | 31 | Filkins, Ashley*; Gottardi, Raphaël: IMPACT OF STRATIGRAPHY ON RESERVOIR QUALITY AND HYDROCARBON PRODUCTION: ANALYSIS OF LOWER MISSISSIPPI LIME SEDIMENTS IN NORTHERN OKLAHOMA (GRANT, GARFIELD, AND ALFALFA COUNTIES) |
| 20-10 | 32 | McIntosh, Duncan*; Willis, James J.; Gottardi, Raphaël: QUANTIFICATION OF SHALE DISTRIBUTION TYPES USING TOTAL POROSITY VERSUS SHALE VOLUME CROSSPLOTS FROM TRIPLE-COMBINATION LOG DATA |

SESSION NO. 21

T9. Fostering Cultures of Deliberate Inclusion in Geosciences (Posters) (GSA Geoscience Education Division; International Association for Geoscience Diversity)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

- | | Booth # | |
|------|---------|---|
| 21-1 | 33 | Carsrud, Corbin T.*; Urbanczyk, Kevin M.; Roberson, Jake: 3D MODELING OF OUTCROP SCALE FEATURES IN THE BIG BEND RANCH STATE PARK USING STRUCTURE FROM MOTION PHOTOGRAMMETRY TECHNIQUES |
| 21-2 | 34 | Wernette, Phillipe A.*; Houser, Chris; Nunez, Judy; Quick, Chris: PROMOTING DIVERSITY AND INCLUSION IN THE GEOSCIENCES IS VITAL TO STUDENT SUCCESS BY DEVELOPING A SAFE AND EFFECTIVE LEARNING COMMUNITY |
| 21-3 | 35 | Hooper, Donald*; Ximenes, Samuel; Webb, Jules: SPACE-STEM EDUCATION THROUGH THE LUNAR CAVES ANALOG TEST SITES (LCATS) PROGRAM |

SESSION NO. 22

T11. Petroleum and Water Interactions in Mexico's South- Central Region (Posters) (GSA International/International Interdisciplinary Interest Group)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

- | | Booth # | |
|------|---------|--|
| 22-1 | 36 | Huizar Alvarez, Rafael*: THE GROUNDWATER MANAGEMENT UNIT IN MEXICO |
| 22-2 | 37 | Ventura, René*: GROUNDWATER VULNERABILITY IN SHALE GAS EXTRACTION AREAS FROM A BASIN IN THE NORTHEAST OF MEXICO, BASED ON A GIS DRASTIC MODEL |
| 22-3 | 38 | Cauich-Kau, Dario del Angel*; Cardona, Antonio; Giacomani-Vallejos, German; Rocha-Escalante, Hermann; Ruede, Thomas: INTEGRATING GEOPHYSICAL AND GEOCHEMICAL MEASUREMENTS TO CHARACTERIZE FRESH/BRACKISH/ SALINE GROUNDWATER: A CASE STUDY IN A CARBONATE AQUIFER |

- 22-4 39 Rivera-Armendariz, Cristian Abraham*; Cardona, Antonio; Ocampo-Diaz, Yamzul Ernesto; Castro Larragoitia, Guillermo Javier; Padilla-Sanchez, Leticia; Flores-Mora, Edgar; Esparza-Hernandez, Laura Delia: **THE USE OF HYDROCHEMISTRY AND ENVIRONMENTAL ISOTOPES TO IDENTIFY GROUNDWATER FLOW SYSTEMS IN COAHUILA STATE, MEXICO**
- 22-5 40 Alonso Torres, Socrates*; Herrera, Graciela S.; Salazar-Cortes, Edgar Ulisses; Junez-Ferreira, Hugo Enrique; Cardona, Antonio; Rivera-Armendariz, Cristian Abraham: **OPTIMAL MONITORING NETWORK DESIGN FOR GROUNDWATER QUANTITY AND QUALITY: A CASE STUDY**

SESSION NO. 23

T12. Upper Crustal Deformation across Continental Interiors from the Mesozoic to the Present (Posters) (GSA Structural Geology and Tectonics Division)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

Booth #

- 23-1 41 Mathy, Hannah*; Surpless, Benjamin; Simoneau, Samuel O.: **USING 3D COMPUTER MODELS TO TEST EN ECHELON NORMAL FAULT EVOLUTION**
- 23-2 42 Biddle, Julian*; Ricketts, Jason W.: **CONSTRAINING TIMES OF EXTENSION IN THE SOUTHERN RIO GRANDE RIFT USING APATITE AND ZIRCON (U-TH)/HE THERMOCHRONOLOGY**
- 23-3 43 Simoneau, Samuel O.*; Surpless, Benjamin; Mathy, Hannah: **THE IMPACT OF NORMAL FAULT TRANSFER ZONES ON THE EVOLUTION OF SUBSIDIARY FRACTURE NETWORKS: A CASE STUDY FROM THE SEVIER FAULT ZONE, SOUTHERN UTAH**
- 23-4 44 Gray, K.*: **TEMPORALLY OVERLAPPING INTRACONTINENTAL CONTRACTION AND TERRANE ACCRETION IN THE CENTRAL NORTH AMERICAN CORDILLERA**
- 23-5 45 Sanchez, Veronica*: **RIFTING MECHANISMS AND GEOMETRIES FROM THE PERSPECTIVE OF SOUTH-CENTRAL TIBET AND WEST TEXAS**
- 23-6 46 Kolawole, Folarin*; Atekwana, Estella A.; Abdelsalam, Mohamed G.; Laó-Dávila, Daniel A.; Ivey, Toni A.; Chindandali, Patrick R.N.; Salima, Jalf: **THE 2009 KARONGA, MALAWI EARTHQUAKE ASSOCIATED WITH PARTIAL RUPTURE OF A BLIND CENOZOIC FAULT: EVIDENCE FROM AEROMAGNETIC AND ELECTRICAL RESISTIVITY DATA**

SESSION NO. 24

Research in Hydrogeology, Geochemistry, and Soils (Posters)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

Booth #

- 24-1 47 Peiris, Inoka*; Brikowski, Tom H.; Kaumal, M. N.: **INVESTIGATION OF TEMPORAL VARIATION OF NEPHROTOXINS IN GROUNDWATER, NORTH CENTRAL PROVINCE, SRI LANKA**
- 24-2 48 Anderson, Jacob S.*; Romanak, Katherine Duncker; Yang, Changbing; Lu, Jiemin; Hovorka, Susan D.; Young, Michael H.: **UNDERSTANDING THE SOURCE OF NEAR-SURFACE LIGHT HYDROCARBONS**
- 24-3 49 Horn, Jackie D.*; Brikowski, Tom: **NATURAL OR ANTHROPOGENIC ORIGIN FOR URBAN IRON-RICH SEEPAGE FROM THE AUSTIN CHALK? EVIDENCE FROM SEM/EDS**
- 24-4 50 Watkins, Joseph D.*; Shaw Faulkner, Melinda: **DELINEATING POTENTIAL WATERSHED CONTRIBUTION TO MERCURY CONCENTRATION IN CADDO LAKE, HARRISON AND MARION COUNTIES, TEXAS**
- 24-5 51 Phung, Linda*; Cheng, Chu-Lin; Hinthorne, James: **INVESTIGATION OF URANIUM OCCURRENCE IN SURFACE WATER AND GROUNDWATER IN SOUTH TEXAS**
- 24-6 52 Schott, Allison N.*: **WATER QUALITY ANALYSIS OF FINGER LAKES STATE PARK, MISSOURI: POTENTIAL IMPACTS OF A RECLAIMED COAL MINE**

- 24-7 53 Nichols, Naomi T.P.*; Peiris, Inoka; Brikowski, Tom H.: **EXPANDING THE HOUSEHOLD USE OF REVERSE OSMOSIS WATER IN DEVELOPING COUNTRIES IS PHYSIOLOGICALLY UNSUSTAINABLE**
- 24-8 54 Reger, Brandi*; Hinthorne, James; Gonzalez, Juan L.: **GEOCHEMICAL AND STATISTICAL ANALYSIS OF PROJECTILE POINTS IN THE RIO GRANDE VALLEY, SOUTH TEXAS**
- 24-9 55 Hinthorne, James*; Gonzalez, Juan L.; Skowronek, Russell; Bishop, Ronald: **CHARACTERIZATION OF MASSIVE GRAY CHERT OCCURRENCES ALONG STRIKE OF THE LATE OLIGOCENE CATAHOULA VOLCANIC ASH FROM STARR COUNTY TO DUVAL COUNTY, SOUTH TEXAS**
- 24-10 56 Bowers, Brent*; Stern, Robert J.; Leybourne, Matthew I.: **A LOOK INTO THE GEOLOGY OF THE SOUTHERNMOST MARIANA TRENCH THROUGH XRF ANALYSES OF OCEAN FLOOR ROCKS**
- 24-11 57 O'Shay, Lillian*; Morris, Jonah D.; Stafford, Kevin W.: **CHARACTERIZATION AND MOBILIZATION OF GYPSIC SOIL ASSOCIATED WITH SUFFOSION CAVE DEVELOPMENT, CULBERSON COUNTY, TEXAS**

SESSION NO. 25

Research in Sedimentology and Stratigraphy (Posters)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 2:30 to 4:30 PM

Booth #

- 25-1 58 Li, Yuting*; Clift, Peter D.; Boning, Philipp; Blusztajn, Jerzy S.; Murray, Richard W.; Ireland, Thomas; Pahnke, Katharina; Giosan, Liviu: **CONTROLS ON SEDIMENT FLUX THROUGH THE INDUS SUBMARINE CANYON SINCE THE LAST DEGLACIAL**
- 25-2 59 Gulliver, Kirk D. H.*; Surpless, Kathleen D.: **DETRITAL ZIRCON PROVENANCE OF A QUARTZITE COBBLE FROM THE CRETACEOUS GOOSE ROCK CONGLOMERATE, CENTRAL OREGON**
- 25-3 60 Meyers, Creighton*; Haschenburger, J.K.: **BEDLOAD SHEETS IN A SAND-GRAVEL MIXTURE**
- 25-4 61 Magliolo, Christopher R.*; Bentley, Samuel J.: **SEDIMENT ACCUMULATION IN THE UNLEVEED MISSISSIPPI RIVER FLOODPLAIN**
- 25-5 62 Wolf, Emery Charles*: **WATER PLANNING AT A GLANCE: SYSTEMS AND TOPICAL ANALYSIS OF REGIONAL PATTERNS FOR THE STATE OF TEXAS**
- 25-6 63 Langford, Richard*; Collins, Joe D.; Gill, Thomas E.; Guijarro, Carolina: **TEST OF STATISTICAL UNMIXING OF SEDIMENT POPULATIONS**
- 25-7 64 Pope, Michael*; Ligon, Walker: **DETERMINING LITHOLOGIC VARIATIONS, PROVENANCE, AND DEPOSITIONAL ENVIRONMENTS OF THE DEL RIO FORMATION IN WEST TEXAS**
- 25-8 65 Flaming, Peter Lee*; Sumrall, Jonathan B.: **PETROGRAPHIC ANALYSIS OF HIGHLY CEMENTED PARTIALLY DOLOMITIZED CHALKS FROM BARBADOS, WEST INDIES**
- 25-9 66 Hendrickson, Cole E.*: **A SEQUENCE STRATIGRAPHIC ANALYSIS OF MIXED CARBONATE – EVAPORITIC DEPOSITION IN THE HARRISBURG MEMBER OF THE PERMIAN AGED KAIBAB FORMATION, NORTHERN ARIZONA AND SOUTHERN UTAH**
- 25-10 67 Rijfkoel, Luke*; Ali, Hendratta; Karim, Muhammad; Tedesco, Steven A.: **CYCLOTHERM CHARACTERIZATION FOR THE EASTERN EDGE OF THE CHEROKEE BASIN**
- 25-11 68 Olivas Tena, Jorge R.*; Ali, Hendratta; Tedesco, Steven A.: **CHARACTERIZING PALEO ENVIRONMENTS AND DIAGENETIC PROCESSES IN THE OSAGE RIVER BASIN, USING GEOCHEMICAL DATA AND WELL LOGS**
- 25-12 69 Thompson, Jacob T.*; Johnson, Harold; Hames, Willis; Miller, Brent V.: **DETRITAL ZIRCON AND MUSCOVITE AGE SPECTRA, ACROSS THE MISSISSIPPIAN-PENNSYLVANIAN BOUNDARY, OUACHITA BASIN, OKLAHOMA**

SESSION NO. 26

Research in Structural Geology, Geomorphology, and Igneous Processes (Posters)

9:00 AM, Omni Colonnade San Antonio Grand Ballroom CDE

Authors will be present from 9:30 to 11:30 AM

Booth #

- 26-1 70 Silberstorf, Ryan R.*; Barker, Chris A.: **STRIKE-SLIP FAULT INDICATORS IN EASTERN ERNST TINAJA CANYON, BIG BEND NATIONAL PARK, TEXAS**
- 26-2 71 Ramirez, Samantha*: **COMPLEX FOLD-THRUST SYSTEM IN THE INDIO MOUNTAINS: ONGOING MAPPING OF THE INVERTED RIFT BASIN**
- 26-3 72 Zuniga, Myra*: **HIGH-RESOLUTION 3D SURFACE MODELING OF FOLD-THRUST SYSTEMS: INDIO MOUNTAINS, WEST TEXAS**
- 26-4 73 Schoen, Robert*; Barker, Chris A.: **GEOLOGY OF THE ALTO RELEX AREA, SIERRA DEL CARMEN, BIG BEND NATIONAL PARK, BREWSTER COUNTY, TEXAS**
- 26-5 74 Askelson, Kaitlin L.*; Barker, Chris A.; Allen, Joseph L.: **BASEMENT AND COVER STRUCTURAL ANALYSIS ALONG THE EAGLE RIVER GORGE, SAWATCH RANGE, COLORADO**
- 26-6 75 Powers, Brendan Edward*: **LATE PLEISTOCENE GLACIAL HISTORY AND EVALUATION OF THE SAN JUAN FAULT, SOUTHWESTERN VANCOUVER ISLAND, BRITISH COLUMBIA**
- 26-7 76 Jeon, Kyungho*; Giardino, John R.: **THE GEOMORPHIC ORIGIN OF THE GRAND VALLEY, COLORADO: A NEW APPROACH**
- 26-8 77 Newman, Jordan*: **PETROLOGICAL AND GEOCHEMICAL ANALYSIS OF XENOLITHS FROM THE HUALALAI VOLCANO CRATER**
- 26-9 78 Andrews, Virginia P.*; Hanson, Richard E.; Lehman, Katelyn Marie; Baylor, David J.; Williams, John W.: **VOLCANIC AND HYPABYSSAL LITHOFACIES IN A MESOPROTEROZOIC VOLCANIC ARC SEQUENCE, BARBY FORMATION, SOUTHWEST NAMIBIA**

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 27

T4. The Impact of Oceanographic Conditions, Oaes, and Volcanism on an Unconventional Reservoir System: The Late Cretaceous Eagle Ford and Austin Chalk Groups of the Gulf Coast (GSA Sedimentary Geology Division)

1:30 PM, Omni Colonnade San Antonio Grand Ballroom A

Alexis Godet, Michael Pope, Robert J. Stern, Jonathan E. Snow and Steve Bergman, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 27-1 1:35 PM Eldrett, James*; Bergman, Steve; Minisini, Daniel: **GLOBAL, REGIONAL AND LOCAL CONTROLS ON ORGANIC MATTER PRODUCTION AND PRESERVATION: EVIDENCE FROM THE EAGLE FORD, MAVERICK BASIN, TX, USA**
- 27-2 1:55 PM Pope, Michael C.*; Donovan, Arthur D.; Miller, Brent V.; Tice, Michael M.; Conte, Roy; Peavey, Eric James; Wehner, Matthew: **EAGLE FORD GROUP DEPOSITION AND CORRELATION IN SOUTH AND WEST TEXAS, INSIGHTS FROM OUTCROPS AND CORES**
- 27-3 2:15 PM Sun, Lei*; Khan, Shuhab: **GROUND-BASED HYPERSPECTRAL IMAGING OF THE EAGLE FORD FORMATION**
- 27-4 2:35 PM Peavey, Eric J.*; Borremans, Sean C.; Bonnette, Grant J.; Pachuca, Fernando; Merrill, Clayton W.; Purwamaska, Ivanakbar; Deluca, Michael J.; Moore, Bronwyn: **CHEMOSTRATIGRAPHIC ANALYSIS AND CORRELATION OF EAGLE FORD GROUP-EQUIVALENT STRATIGRAPHY ACROSS WEST TEXAS**

2:55 PM **BREAK**

- 27-5 3:10 PM Basu, Asish R.*; Chakrabarty, Puloma: **U-PB AGES AND HF-ISOTOPES OF ZIRCONS IN ASH BEDS AND RE-OS ISOTOPES OF THE EAGLE FORD FORMATION OF SOUTH TEXAS**
- 27-6 3:30 PM Chakrabarty, Puloma*; Basu, Asish R.; Freymuth, Bryan: **CONTINUOUS VOLCANISM THROUGHOUT THE DEPOSITION OF THE SOUTH TEXAN EAGLE FORD FORMATION AT THE CENOMANIAN-TURONIAN (93-93.5 MA) BOUNDARY: EVIDENCE FROM LA-ICPMS ZIRCON AGE AND XRD ANALYSIS OF EXPANDABLE CLAYS**
- 27-7 3:50 PM Gottardi, Raphaël*; Mason, Shanna: **CHARACTERIZING THE NATURAL FRACTURE SYSTEM OF THE EAGLE FORD FORMATION**
- 27-8 4:10 PM Finger, Luke Joseph*; Godet, Alexis; Billingsley, Lee T.: **POROSITY EVALUATION IN THE LOWER EAGLE FORD FORMATION, ATASCOSA COUNTY, SOUTH TEXAS**
- 27-9 4:30 PM Cooper, John R.*; Godet, Alexis; Kelley, Jeremy A.; Hardwick, Jeffrey W.; Spangenberg, Jorge: **THE IMPACT OF TECTONIC AND ENVIRONMENTAL CHANGES ON DEPOSITIONAL GEOMETRIES OF THE AUSTIN CHALK GROUP IN BEXAR COUNTY, TEXAS**

SESSION NO. 28

T9. Fostering Cultures of Deliberate Inclusion in Geosciences (GSA Geoscience Education Division; International Association for Geoscience Diversity)

1:30 PM, Omni Colonnade San Antonio Grand Ballroom F

Stephen K. Boss, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 28-1 1:35 PM Boss, Stephen K.*: **FOSTERING COMMUNITIES OF DELIBERATE INCLUSION IN GEOSCIENCES**
- 28-2 1:55 PM Wheatcraft, Jeff*; Turner, David R.; McCue, Marshall: **DEVELOPING A GEOSCIENCE-FOCUSED PROJECT BASED LEARNING ASSESSMENT FOR EIGHTH GRADE STEM EDUCATION**
- 28-3 2:15 PM Busbey, Arthur B.*: **IPAD MAPPING APPLICATIONS: EVALUATION AND WORKFLOW**
- 28-4 2:35 PM Wang, Ning*; Stern, Robert: **USING VIDEOGRAPHY, 3D PHOTOREALISTIC MODELS AND AN INEXPENSIVE DRONE TO HELP IMPROVE GEOSCIENCE RESEARCH AND EDUCATION AT THE UNIVERSITY OF TEXAS AT DALLAS**
- 28-5 2:55 PM Williams, Wendi J.W.*: **INCLUSIVE EDUCATIONAL METHODS FOR 2YC AND 4YC ENVIRONMENTS**
- 28-6 3:15 PM Mathewson, Christopher*: **SO HOW DOES PROFESSIONAL LICENSURE IN GEOSCIENCE IMPACT ME?**
- 3:35 PM **BREAK**
- 28-7 3:50 PM Yin, Zoe*; Tandon, Saloni; Aguilera, Kimberly N.; Etzel, Thomas M.; Catlos, Elizabeth J.; Elliott, Brent; Kyle, J. Richard: **LESSONS LEARNED FROM AN INTERNATIONAL RESEARCH EXPERIENCE FROM THE UNDERREPRESENTED STUDENT PERSPECTIVE**
- 28-8 4:10 PM Turner, David R.*; Oxley, Susan; Sperling, Rick; Faris, Nicole: **A COLLABORATIVE MULTIDISCIPLINARY PROGRAM USING LOCATION BASED URBAN FIELD WORK TO ENHANCE STEM EDUCATION OUTCOMES**
- 28-9 4:30 PM Moore, Samuel*; Hofer, Matthew; Hash, John: **GEOFORCE TEXAS: A COLLECTIVE IMPACT FOR INCLUSION IN THE GEOSCIENCES**
- 28-10 4:50 PM Boss, Stephen K.*: **MICROAGGRESSIONS AS BARRIERS TO INCLUSION IN GEOSCIENCES**

SESSION NO. 29***T11. Petroleum and Water Interactions in Mexico's South- Central Region (GSA International/International Interdisciplinary Interest Group)***

1:30 PM, Omni Colonnade San Antonio Grand Ballroom B

Antonio Cardona, Todd Halihan and Martin Carlos Vidal García, Presiding

1:30 PM INTRODUCTORY REMARKS

- 29-1** 1:35 PM Vidal García, Martin Carlos*: **HYDROGEOLOGY A CHALLENGE IN THE GENERATION OF ENERGY RESOURCES IN MEXICO**
- 29-2** 1:55 PM Brena-Naranjo, Jose Agustin*; Hernandez-Espriú, Antonio: **A FRAMEWORK TO QUANTIFY WATER AVAILABILITY IN SHALE GAS REGIONS OF MEXICO: BASELINE AND DEVELOPMENT SCENARIOS**
- 29-3** 2:15 PM Carrillo-Rivera, José Joel*; Cardona, Antonio: **VERTICAL FLOW AND EARLY ALERT IN LOW HYDRAULIC CONDUCTIVITY MEDIA**
- 29-4** 2:35 PM Garfias Quezada, Alberto*; Pita de la Paz, Carlos; Sánchez Galindo, Luis Alfredo; García Perez, Sergio Jose; García García, Emilio: **INTEGRATED GEOPHYSICAL SURVEY IN SABINAS BASIN FOR THE EVALUATION OF DEEP AQUIFERS AND NON-CONVENTIONAL RESOURCES (SHALE GAS)**
- 29-5** 2:55 PM Cardona, Antonio*; Alonso Torres, Socrates; Castro Larragoitia, Guillermo Javier; Aceves de Alba, Jorge; Carrillo-Rivera, José Joel: **HYDROCHEMICAL CHARACTERIZATION OF**

BRACKISH GROUNDWATER IN LOWER RIO BRAVO AQUIFER, TAMAULIPAS, MEXICO**3:15 PM BREAK**

- 29-6** 3:30 PM Rocha-Escalante, Hermann*; Ruede, Thomas R.; Cardona, Antonio; Giacomani-Vallejos, German; Cauich-Kau, Dario del Angel: **GROUNDWATER USE AND ITS IMPLICATIONS IN COASTAL ECOSYSTEMS REQUIREMENTS: A CASE STUDY IN A COASTAL KARSTIC AQUIFER BY GROUNDWATER MODELING**
- 29-7** 3:50 PM Plenge, Megan F.*; Muñoz, Yvette; Shiels, R. David; Webber, Miguel; Martinez-Abrego, Andrea; Zhong, Rui; Liaw, Ellen: **CHANGES TO SUBSURFACE MICROBIAL DIVERSITY FOLLOWING HYDROCARBON CONTAMINATION AND REMEDIATION**
- 29-8** 4:10 PM Davila Porcel, René Alberto*; de León-Gómez, Héctor; Rodríguez-Martínez, Juan Manuel; Castro Larragoitia, Guillermo Javier; Cardona, Antonio; Villalba, María de Lourdes; Pinales, Adan; de La Garza, Rodrigo; Silva Hidalgo, Humberto; Cruz López, Arquimedes: **DIAGNOSIS OF EMERGING CONTAMINANTS AND HEAVY METALS IN THE WATER AND SEDIMENTS OF THE RIVER SANTA CATARINA IN THE METROPOLITAN AREA OF MONTERREY TO DETERMINE THE IMPACT ON ITS QUALITY AND ITS SUSTAINABLE USE**
- 4:30 PM **DISCUSSION**

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The first number (preceding the dash) represents the session number in which the paper will be presented.

The second number (following the dash) indicates the presentation order of the paper within its session.

Example: Meinerts, Jacob A. 7-4*

Find Session #7 in the Technical Session portion of the Program, and look at the fourth paper in the session.

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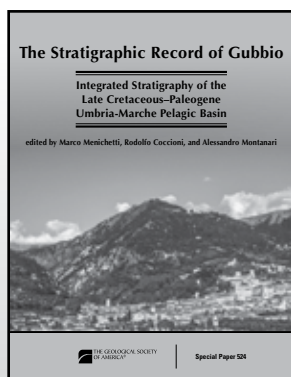
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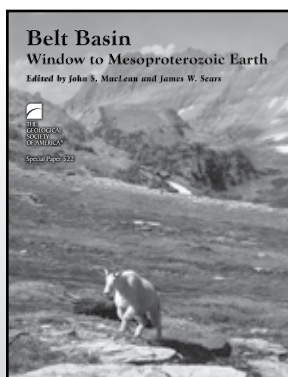
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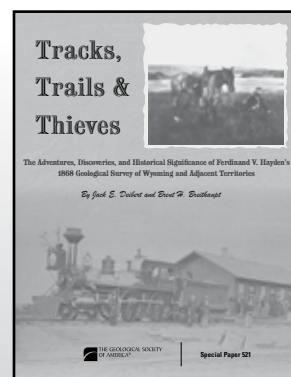
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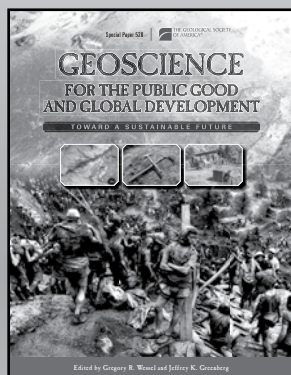
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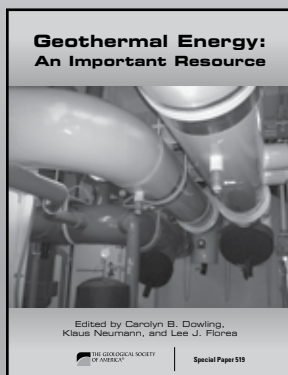
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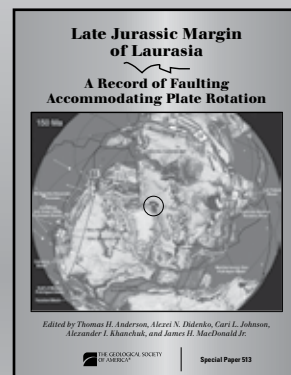
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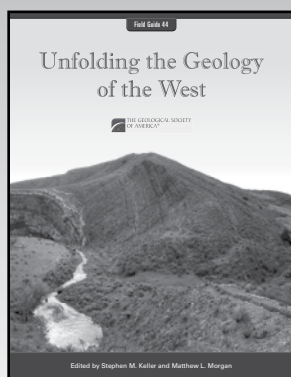
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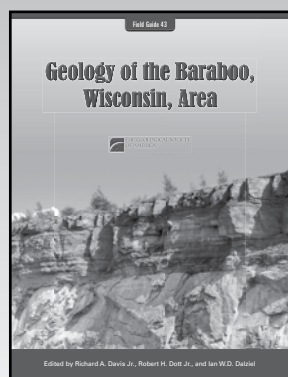
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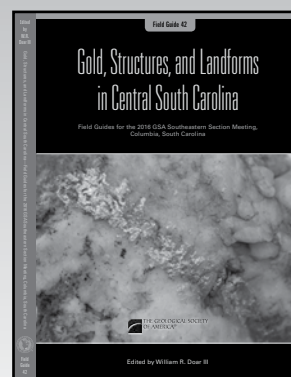
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