

2022 PROGRAM

Vol. 54, No. 1



SOUTH-CENTRAL SECTION

14–15 March
McAllen, Texas, USA

<https://www.geosociety.org/sc-mtg>

A resistant layer of the Roma sandstone is exposed crossing the Rio Grande. Photo by Juan González.

SPONSORS

We are grateful to the following sponsors who made a substantial contribution to help underwrite the costs of the meeting. To help promote the health & safety of GSA attendees, Bruker has provided hand sanitizers for this meeting. Be sure to thank them during the meeting.

University of Texas Rio Grande Valley—College of Sciences

University of Texas Rio Grande Valley—School of Earth, Environmental, and Marine Sciences

South Texas College—Division of Science



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 inside back cover). If you have any concerns about behavior that may violate the Code, please contact:

GSA Director of Meetings & Events, Rebecca Fazzari, rfazzari@geosociety.org

GSA Ethics and Compliance Officer, Nan Stout, ethics@geosociety.org

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

Registration for the meeting requires full vaccination status, and booster shots are strongly advised. Additionally, masks are required for all indoor events associated with this meeting.

Program

56th SOUTH-CENTRAL SECTION

Annual meeting of the Geological Society of America
14–15 March 2022

Embassy Suites by Hilton McAllen Convention Center and Hotel
McAllen, Texas



Geology Has No Borders

Local Program Committee

General Chairs	Juan González, Chu-Lin Cheng
Technical Program Chairs	Juan González, Chu-Lin Cheng
Short Course Chair	Wendi J.W. Williams
Field Trip Chair	Sarah Hardage
Student Volunteer Coordinator	Engil Pereira
Exhibits/Sponsorship Coordinator	Saad Mohamed
Judging Coordinators	Engil Pereira, Ravi Nandigam

GSA Section Officers for 2021–2022 South-Central Section

Chairs	Juan González, Chu-Lin Cheng
Vice Chair	Todd Halihan
Past Chair	Mohamed Aly
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Management Board	Antonio Cardona, Mohamed Aly, Jonathan B. Sumrall, Juan González, Chu-Lin Cheng, Antony N. Giles, Todd Halihan, Wendi J.W. Williams, Stephen K. Boss

General Information



Location

The 2022 annual meeting of the South-Central GSA section is hosted by University of Texas Rio Grande Valley in McAllen, Texas. GSA's 2022 South-Central Section meeting local organizing committee is pleased to announce that the in-person meeting, 14–15 March in McAllen, Texas, USA will also include the option to attend online. McAllen, Texas is at the heart of the Rio Grande Valley, and considered the South Pole of Texas. It is served by a subtropical climate, with a rich, binational and cultural history and traditional authentic cuisines, and South Padre Island is just an hour's drive. McAllen has a vibrant downtown with museums, restaurants, art galleries, and live music venues. The conference location is the brand-new Embassy Suites Hotel by the McAllen Convention Center, conveniently located at less than a 10-minute drive from the McAllen International airport (MFE), and within walking distance of many restaurants, shopping centers, and other hotels. McAllen is easily accessible by plane from Houston (United) or from Dallas (American).

Venue

The meeting location is the Embassy Suites by Hilton McAllen Convention Center and Hotel at 800 Convention Center Blvd., McAllen, Texas.

Transportation

For those driving to the conference, McAllen is located 310 miles (approximately 4 hr. and 35 min) south of Austin along US 281. And 230 miles (approximately 3 hr. and 30 min) south of San Antonio, also along US 281.

Parking

Free parking is available in the parking lot adjacent to the Embassy Suites Hotel, or in any of the other nearby hotels.

Weather

March, is moderately hot month in McAllen, with average temperature fluctuating between 82°F (27°C) and 63°F (17°C). Temperatures in March rarely fall below 50°F (10°C) or exceed 92°F (33°C). Thus, participants are encouraged to check the forecast prior to their travel and potentially come prepared for a broad range of conditions.

Registration

Registration is required for anyone attending technical sessions, field trips, short courses, or exhibits. Check-in and on-site registration is located in the Embassy Suites by Hilton McAllen Convention Center and open the following times:

Sunday, 13 March 3–7 p.m.

Monday, 14 March 6:30 a.m.–4:30 p.m.

Tuesday, 15 March 6:30 a.m.–3 p.m.

Registration Fees

On-site registration fees are below and are shown in U.S. dollars. Owing to technology costs associated with hybrid meetings, registration rates are the same for both the in-person and online meeting. Professionals registering for the meeting are encouraged to add US\$15 to their registration fee to help a student attend the meeting.

On-site Rates	Full Mtg.	One Day
Professional Member	\$275	\$200
Professional Senior Member 70+	\$200	\$150
Professional Senior Member 65+	\$275	\$200
Professional Nonmember	\$325	\$225
Early Career Professional Member	\$200	\$150
Student Member	\$150	\$125
Student Nonmember	\$200	\$150
K–12 Professional	\$150	\$125
Guest or Spouse	\$75	n/a
Field Trip/Workshop Only	\$75	n/a
70 years of age or older, and a member for 30 or more years		
65 years of age or older, and a member for 25 or more years		

Meeting App and Abstracts

A web-based app is available for this meeting. This app allows you to view and search the meeting program and create your own schedule of events to attend. You can also view the full abstracts text from this app. Please download the app at <https://gsa.confex.com/gsa/2022SC/meetingapp.cgi>.

ACCOMMODATIONS

A block of rooms has been reserved at the Embassy Suites by Hilton McAllen Convention Center and Hotel at 800 Convention Center Blvd., McAllen, TX 78501, USA. Reservations should be made by calling the hotel at +1-956-688-8329.

SPECIAL EVENTS

Sunday, 13 March

Welcome Reception. 5–7 p.m., Washington/Jefferson Room. Enjoy snacks and a complimentary beverage while connecting with your colleagues. Each participant receives a coupon for one free beer, wine, or non-alcoholic beverage in their registration packet.

Monday, 14 March

Session Chair Orientation, 7–7:15 a.m., Adams Room. This meeting will include a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions.

GeoCareers Workshop Part 1: Career Planning and Informational Interviewing, 9–10 a.m., Madison Room. This workshop will help you begin the job hunting process and will

introduce you to informational interviewing.

GeoCareers Workshop Part 2: Geoscience Career Exploration, 10–11 a.m., Madison Room. 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 will address these issues.

Roy J. Shlemon Mentors Program in Applied Geoscience, noon–1:30 p.m., Madison Room. GSA student members will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors over a FREE lunch.

Plenary Talk, 12:30–1:30 p.m., Washington Room. Dr. Rafael Almeida. School of Earth, Environmental and Marine Science. The University of Texas Rio Grande Valley. *Energy in transition: Navigating carbon emissions, sediment trapping, and socioenvironmental tradeoffs from hydropower*.

Geology Club Meet-Up, 2–3 p.m., Madison Room. Chat with other representatives about their activities, goals, and accomplishments.

Posters/Exhibits Reception, 4–5:45 p.m., Washington/Jefferson Room. Enjoy light snacks and a complimentary beverage while visiting the poster / exhibit hall. Each participant receives a coupon for one free beer or wine in the registration packet.

Tuesday, 15 March

Session Chair Orientation, 7–7:15 a.m., Adams Room. This meeting will include a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions.

Thank-you Breakfast for GSA Campus Reps, 7–8 a.m. Chavez Room. This complimentary breakfast for Campus Reps is held to say Thank You. If you are a campus representative or are interested in becoming one please plan to attend this celebratory event.

GeoCareers Workshop Part 3: Cover Letters, Résumés and CV's, 9–10 a.m., Madison Room. Whether you are currently on the job market or not, learn how to prepare the best résumé possible. You will review numerous examples to help you learn important résumé do's and don'ts.

John Mann Mentors Program in Applied Hydrogeology, noon–1:30 p.m., Madison Room. GSA student members interested in applied hydrogeology or hydrology as a career will have the opportunity to network with professionals in these fields over a FREE lunch.

Outstanding Student Presentation Awards Ceremony, 4 p.m., Washington/Jefferson Room. A video announcing which undergraduate and graduate students won awards for their oral or poster presentations will be sent to all of those attending.

Career Recognition Ceremony, 12:30–1:30 p.m., Washington Room. Honoring the careers of individuals who have made significant contributions to Geology, geoscience education and the South-Central Section.

Posters Reception, 4–5:45 p.m., Washington/Jefferson Room. Enjoy light snacks and a complimentary beverage while visiting the poster / exhibit hall. Each participant receives a coupon for one free beer or wine in the registration packet.

Business Meetings

GSA South-Central Section Management Board Meeting, Monday, 14 March, 3:20–4:20 p.m., Chavez Room.

TECHNICAL PROGRAM

Speaker Ready Room

The Speaker Ready Room is located in the Franklin Boardroom in the Conference Center, and is available at the following times:

Sunday, 13 March 4:30–6:30 p.m.

Monday, 14 March 7 a.m.–6 p.m.

Tuesday, 15 March 7 a.m.–noon

Computers and assistance is available to view presentations. All presentations are displayed as PowerPoint presentations in technical sessions, and presentations should be prepared using a 16:9 ratio. The Speaker Ready Room can also 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.

Session Chair Orientation, 7–7:15 a.m., Adams Room. This meeting will include a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions. Please plan to attend the morning of your session.

Posters

Each poster board is 4 feet × 8 feet (landscape), and posters can be hung with stickpins or Velcro. Pins and Velcro will be available in the exhibit hall. Posters are located in the Washington Room adjacent to the exhibitors. Presenters should take down their posters at the end of the session. Any posters not taken down will be discarded.

FIELD TRIPS

All trips depart from the Embassy Suites by Hilton McAllen Convention Center at 800 Convention Center Blvd., McAllen, TX 78501. For further information, contact Field Trip Chair, Sarah Hardage, sarah.fearnleyhardage@utrgv.edu.

FT1. Ancient Landscapes: Exploring South Texas through Time. Sun., 13 March, 8:30 a.m.–4 p.m., CDT. Cost: US\$106. Check in at 8 a.m. for an 8:30 a.m. departure. Leader: Sarah Hardage, the University of Texas Rio Grande Valley, sarah.fearnleyhardage@utrgv.edu.

Description: Explore 43 million years of geologic history in the Rio Grande Valley. See evidence of moving shorelines; a massive Oligocene volcanic eruption that produced rock products used by Native Americans and modern peoples; the changing course of the Rio Grande; and anthropogenic impacts on the flood plain. Sites of historic interest are included.

FT2. Rio Grande Delta. Wed., 16 March, 8 a.m.–6 p.m. CDT. Cost: US\$110. Check in at 7:30 a.m. for an 8 a.m. departure. Leaders: Thomas E. Ewing, Frontera Exploration Consultants, tewing@fronteraexploration.com; Juan L. González, The University of Texas Rio Grande Valley, juan.l.gonzalez@utrgv.edu.

Description: The Rio Grande delta is an unusual and distinctive delta with a complex history still being unraveled. The trip visits classic localities of clay dunes and esteros, the beach-front, modern and ancient river channels, and more. Sites of historic interest are included.

SHORT COURSES

SC1. Get Techy and Walk through Ancient Landscapes through STEAM. Sun., 13 Mar., 9 a.m.–noon, CDT. Cost: US\$20. Bowie Room. Instructor: Florestela Gomez, Donna ISD, fgomez@donnaisd.net.

Description: Have you ever wondered about the marvels that surround the landscapes of the Rio Grande Valley? This course takes you through STEAM-based lessons of how the Rio Grande Valley native flora and fauna has changed from the Eocene to the present using Google modern tools. Bring your own device and experience the adventure.

SC2 Applications of Active Learning Strategies in the Design and Teaching of Geoscience Courses. Sun., 13 Mar., 1–5 p.m., CDT. Cost: US\$20. Bowie Room. Instructors: Patrick Shabram, Front Range Community College, Patrick.Shabram@frontrange.edu; Chu-Lin Cheng, The University of Texas Rio Grande Valley, chulin.cheng@utrgv.edu; Leilani A. Arthurs, University of Colorado, leilani.arthurs@colorado.edu; Ming-Tsan Lu, The University of Texas Rio Grande Valley, mingtsan.lu@utrgv.edu; Eric Salahub, Front Range Community College; Kerri Mitchell, Front Range Community College.

Description: This short course provides an opportunity for faculty to develop a strong foundation in course design principles and research-based instructional strategies. These principles and strategies characterize high-impact active-learning classrooms. By the end of this short course, participants should be able to (1) apply course design principles to a course of their choosing, (2) discern in which contexts different instructional strategies are most impactful and why, and (3) call on members of this learning community for support in ongoing course development and teaching efforts. Participants who complete this short course receives a certificate of completion, which may be valuable for their annual merit reviews, promotion cases, and/or tenure cases.

SC3 Diversify Geoscience: Reveal Structural Racism and Make the Invisible Visible. Sun., 13 Mar., 9 a.m.–3 p.m., CDT. Cost: US\$20. Houston Room. Instructor: Kristie Bradford, Lone Star College–Tomball, christine.d.bradford@lonestar.edu.

Description: The movement to diversify geoscience has advanced haltingly over the past 50 years. This workshop highlights the roots of structural racism, making justice, equity, diversity, and inclusion efforts more fruitful. It's time to make meaningful, institutional changes to broaden participation of people from historically underrepresented groups across the geosciences.

EXHIBITS

Exhibits are located in the Jefferson Room. For additional information, please contact the Exhibits Coordinator, Saad Mohamed, saad.mohamed@utrgv.edu.

Set-up: Sunday, 13 March, 10 am–4 p.m.

Open: Sunday, 13 March, 5–7 p.m.

Open: Monday, 14 March, 10 a.m.–6 p.m.

Open: Tuesday, 15 March, 10 a.m.–4 p.m.

Tear down: Tuesday, 15 March, 4 pm–9 p.m.

Exhibitor (as of January)

2023 South-Central Section GSA Meeting
Geological Society of America Bookstore
Geological Society of America Foundation
University of Texas at Dallas

OPPORTUNITIES FOR STUDENTS

Outstanding Student Presentation Awards. *Cosponsored by GSA South-Central Section.* South-Central Section GSA will award cash prizes and plaques to the best graduate and undergraduate poster and oral presentations. Judging of student oral and poster presentations will take place throughout the meeting, and award winners will be announced at the awards reception on Tuesday, 4 p.m. in the Washington Room. To be eligible, students must be lead authors and presenters, and should be capable of answering detailed questions about their research.

Mentor Programs

For information about the Mentor Programs, please contact Jennifer Nocerino at jnocerino@geosociety.org.

Roy J. Shlemon Mentor Program in Applied Geoscience. Monday, 14 March, noon–1:30 p.m., Madison Room. GSA student members will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors over a FREE lunch. GSA student members will receive priority; any remaining space will be offered to student nonmembers on first come, first served basis.

John Mann Mentors in Applied Hydrogeology Program. Tuesday, 15 March, noon–1:30 p.m., Madison Room. GSA student members interested in applied hydrogeology or hydrology as a career will have the opportunity to network with professionals in these fields over a FREE lunch. GSA student members will receive priority; any remaining space will be offered to student nonmembers on first come, first served basis.

Geology Club Meet-Up. Monday, 14 March, 2–3 p.m. Madison Room. Chat with other representatives about their activities, goals and accomplishments.

Geo Careers Workshops

For more information about these Geo Careers Workshops, please contact Jennifer Nocerino at jnocerino@geosociety.org.

Geo Careers Workshop Part 1. Career Planning and Informational Interviewing. Monday, 14 March, 9–10 a.m., Madison Room. Your job-hunting process should begin with career planning, not when you apply for jobs. This workshop will help you begin this process and will introduce you to informational interviewing. This section is highly recommended for freshman, sophomores and juniors. The earlier you start your career planning the better.

Geo Careers Workshop Part 2. Geoscience Career Exploration. Monday, 14 March, 10–11 a.m., Madison Room. What do geologists in various sectors earn? What do they do? What are the pros and cons to working in academia,

government, and industry? Professionals in the field, will address these issues.

Geo Careers Workshop Part 3. Cover Letters, Résumés, and CVs. Tuesday, 15 March, 9–10 a.m., Madison Room. How do you prepare a cover letter? Does your résumé need a good edit? Whether you are currently in the job market or not, learn how to prepare the best résumé possible. You will review numerous examples to help you learn important résumé dos and don'ts.

STUDENT VOLUNTEERS

The South-Central Section offer free meeting registration to student volunteers in return for ~7 hours of work during the meeting. For further information, please contact the Student Volunteer Coordinator, Engil Pereira at engil.pereira@utrgv.edu.

Students will meet with the Student Volunteer Coordinator before the meeting begins at the Student Volunteer Table (located near Registration) for their assignments.

Schedule of Events

EVENT	TIME	LOCATION
SUNDAY, 13 MARCH		
FT1. Ancient Landscapes: Exploring South Texas through Time Check In (Field Trip)	8–8:30 am	Embassy Suites by Hilton McAllen Conv. Ctr. Lobby
SC1. Get Techy and Walk through Ancient Landscapes through STEAM (Short Course)	9 a.m.–noon	Bowie Room
SC3 Diversify Geoscience: Reveal Structural Racism and Make the Invisible Visible (Short Course)	9 a.m.–3 p.m.	Houston Room
Exhibitor Set Up	10 a.m.–4 p.m.	Jefferson Room
SC2 Applications of Active Learning Strategies in the Design and Teaching of Geoscience Courses (Short Course)	1–5 p.m.	Bowie Room
Registration Open	3–7 p.m.	Pre-Function Area
Speaker Ready Room Open	4:30–6:30 p.m.	Franklin Boardroom
Exhibits Open	5–7 p.m.	Jefferson Room
Welcome Reception	5–7 p.m.	Washington/Jefferson Room
MONDAY, 14 MARCH		
Registration Open	6:30 a.m.–4:30 p.m.	Pre-Function Area
Session Chair Orientation	7–7:15 a.m.	Adams Room
Speaker Ready Room Open	7 a.m.–6 p.m.	Franklin Boardroom
GeoCareers Workshop Part 1: Career Planning and Informational Interviewing (Workshop)	9–10 a.m.	Madison Room
GeoCareers Workshop Part 2: Geoscience Career Exploration (Workshop)	10–11 a.m.	Madison Room
Exhibits Open	10 a.m.–6 p.m.	Jefferson Room
Morning Oral Technical Sessions		
T2. Petroleum-Produced Water	8:30–9:55 a.m.	Hamilton Room
T8. Exploring Opportunities for Carbon Management through CO ₂ Capture, Utilization, and Storage (CCUS)	8:30–10:40 a.m.	Adams Room
T6. Environmental Significance and Preservation Mechanisms of Cretaceous Marginal-Marine and Terrestrial Ecosystems	10:10 a.m.–12:30 p.m.	Hamilton Room
T11. Tectonics and Sedimentation, Rio Grande Embayment/Burgos Basin	10:55 a.m.–12:30 p.m.	Adams Room
Poster Sessions: (authors present 2 to 4 PM)		
D1. Mineralogy, Geochemistry, Petrology, and Volcanology (Posters)	8:30 a.m.–5:30 pm	Washington Room
T4. Hydrogeology and Water Resources II: Extreme Events and Coastal Hazards: Flooding, Contamination, and Land Subsidence (Posters)	8:30 a.m.–5:30 p.m.	Washington Room

EVENT	TIME	LOCATION
T5. From Grenvillian Basement to Neotectonics in Northeast Mexico: A 1.3-Billion-Year Journey of Geological Development (Posters)	8:30 a.m.–5:30 p.m.	Washington Room
Roy J. Shlemon Mentors Program in Applied Geoscience	noon–1:30 p.m.	Madison Room
Plenary Talk: Energy in Transition: Navigating Carbon Emissions, Sediment Trapping, and Socioenvironmental Tradeoffs from Hydropower	12:30–1:30 p.m.	Washington Room

Afternoon Oral Technical Sessions

T4. Hydrogeology and Water Resources II: Extreme Events and Coastal Hazards: Flooding, Contamination, and Land Subsidence	1:30–5:30 p.m.	Hamilton Room
T5. From Grenvillian Basement to Neotectonics in Northeast Mexico: A 1.3-Billion-Year Journey of Geological Development	1:30–5:30 p.m.	Adams Room
Geology Club Meet-Up	2–3 p.m.	Madison Room
GSA South-Central Section Management Board Meeting	3:20–4:20 p.m.	Chavez Room
Posters/Exhibits Reception	4–5:45 p.m.	Washington/Jefferson Room

TUESDAY, 15 MARCH

Registration Open	6:30 a.m.–3 p.m.	Pre-Function Area
Session Chair Orientation	7–7:15 a.m.	Adams Room
Thank-you Breakfast for GSA Campus Reps	7–8 a.m.	Chavez Room
Speaker Ready Room Open	7 a.m.–noon	Franklin Boardroom
GeoCareers Workshop Part 3: Cover Letters, Résumés and CV's (Workshop)	9–10 a.m.	Madison Room
Exhibits Open	10 a.m.–4 p.m.	Jefferson Room

Morning Oral Technical Sessions

T7. Geoscience Education I: Geosciences Education Advancing Concepts and Inclusion	8:30 a.m.–12:30 p.m.	Adams Room
T12. General Geomorphology	8:30 a.m.–12:30 p.m.	Hamilton Room

Poster Sessions: (authors present 2 to 4 PM)

T7. Geoscience Education I: Geosciences Education Advancing Concepts and Inclusion (Posters)	8:30 a.m.–5:30 p.m.	Washington Room
T12. General Geomorphology (Posters)	8:30 a.m.–5:30 p.m.	Washington Room
T13. Sustainable Management in Fluvial Aquifers and Transboundary Issues (Posters)	8:30 a.m.–5:30 p.m.	Washington Room
John Mann Mentors Program in Applied Hydrogeology	noon–1:30 p.m.	Madison Room
Career Recognition Ceremony	12:30–1:30 p.m.	Washington Room

Afternoon Oral Technical Sessions

T10. Tracer Tests in the Hydrological Cycle	1:30–5:30 p.m.	Hamilton Room
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EVENT	TIME	LOCATION
T13. Sustainable Management in Fluvial Aquifers and Transboundary Issues	1:30-5:30 p.m.	Adams Room
Outstanding Student Presentation Awards Ceremony	4-5:45 p.m.	Washington/Jefferson Room
Posters Reception	4-5:45 p.m.	Washington/Jefferson Room
Exhibitor Tear Down	4-9 p.m.	Jefferson Room
WEDNESDAY, 16 MARCH		
FT2. Rio Grande Delta Check In (Field Trip)	7:30-8 a.m.	Embassy Suites by Hilton McAllen Conv. Ctr. Lobby

The Edwards Aquifer: The Past, Present, and Future of a Vital Water Resource

*Edited by John M. Sharp Jr.,
Ronald T. Green, and Geary M. Schindel*

The Edwards aquifer system is one of the great karstic aquifer systems of the world. It supplies water for more than 2 million people and for agricultural, municipal, industrial, and recreational uses. The Edwards (Balcones Fault Zone) Aquifer in the San Antonio, Texas, area was the first to be designated a sole source aquifer by the Environmental Protection Agency in 1975.

The Edwards Aquifer also hosts unique groundwater, cave, and spring ecosystems. This 27-chapter memoir reviews the current state of knowledge, current and emerging challenges to wise use of the aquifer system, and some of the technologies that must be adopted to address these challenges.

MWR215, 312 p., ISBN 9780813712154
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The Edwards Aquifer: The Past, Present, and Future of a Vital Water Resource

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and Geary M. Schindel*

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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, 14 MARCH 2022

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 1

T2. Petroleum-Produced Water

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Hamilton Room

Javier Vilcaez and Todd Halihan, Presiding

- 8:30 AM **Introductory Remarks**
- 1-1 8:35 AM Omar, Khalid*; Vilcaez, Javier: **REMOVAL OF A MIXTURE OF TOXIC METALS FROM PETROLEUM PRODUCED WATER BY DOLOMITE**
- 1-2 8:55 AM Sharp, John*; Goswami, Rohit; Bedekar, Vivek; Acevedo, Juan: **POTENTIAL TO USE CLASS II WELLS TO DISPOSE OF DESALINATION RESIDUAL FLUIDS IN TEXAS**
- 1-3 9:15 AM Ezennubia, Valentine*; Vilcaez, Javier: **METHANOGENIC DEGRADATION OF DISSOLVED OIL HYDROCARBONS IN PETROLEUM PRODUCED WATER**
- 9:35 AM **Concluding Remarks**

SESSION NO. 2

T6. Environmental Significance and Preservation Mechanisms of Cretaceous Marginal-Marine and Terrestrial Ecosystems

10:10 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Hamilton Room

Alexis Godet, Thomas Adams, Marina Suarez and Daniel Lehrmann, Presiding

- 10:10 AM **Introductory Remarks**
- 2-1 10:15 AM Godet, Alexis*; Price, Dianna; Sharpe, Justin; Davis, Charles; Sheppard, Charles; Tesauero, Josephine; Adams, Thomas; Lehrmann, Daniel; Suarez, Marina B.: **DINOSAUR TRACK**

AND SUBAERIAL EXPOSURE SURFACES IN THE ALBIAN GLEN ROSE FORMATION OF CENTRAL TEXAS

- 2-2 10:35 AM Tesauero, Josephine*; Sheppard, Charles; Davis, Charles; Adams, Thomas; Price, Dianna; Sharpe, Justin; Godet, Alexis; Suarez, Marina B.; Altiner, Demir; Lehrmann, Daniel: **SEDIMENTOLOGIC AND GEOCHEMICAL ANALYSIS OF A DINOSAUR TRACK SITE, THE DAVENPORT RANCH, BANDERA COUNTY AND COMPARISON WITH OTHER TRACK SITES IN THE LOWER CRETACEOUS GLEN ROSE FORMATION OF CENTRAL TEXAS**
- 2-3 10:55 AM Gibson, Michael*; Byl, Thomas D.; Cunningham, Champagne: **PRELIMINARY RESULTS OF MICROCYSTIN (MT) AND SAXITOXIN (SXT) PRESERVATION IN FOSSIL MOLLUSKS OF THE LATE CRETACEOUS COON CREEK FORMATION LAGERSTÄTTE: IMPLICATIONS FOR A KILL MECHANISM PRODUCING POSSIBLE MARINE REPTILE DEADFALLS**
- 11:15 AM **Break**
- 11:30 AM **Discussion**

SESSION NO. 3

T8. Exploring Opportunities for Carbon Management through CO₂ Capture, Utilization, and Storage (CCUS)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Adam Room

Miles A. Henderson and Eric Brain, Presiding

- 8:30 AM **Introductory Remarks**
- 3-1 8:40 AM Trentham, Robert C.; Henderson, Miles*: **THE CARBON UTILIZATION AND STORAGE PROJECT OF THE WESTERN USA: A VIEW FROM THE OIL PATCH**
- 3-2 9:00 AM Trevino, Ramon*; Hovorka, Susan D.; Hentz, Tucker F.; Dunlap, Dallas B.; Bhattacharya, Shuvajit; DeAngelo,

		Michael V.; Rogers, Harold; Prentice, Sarah M.; Merida, Amanda L.: A WORKFLOW FOR DOWN-SELECTING A CCS SITE
3-3	9:20 AM	Brain, Eric*; Trentham, Robert C.; Henderson, Miles A.: RESERVOIR CHARACTERIZATION OF THE LOWER SAN ANDRES RESIDUAL OIL ZONE FOR UTILIZATION AND STORAGE OF CARBON DIOXIDE IN COCHRAN AND YOAKUM COUNTIES, TEXAS
3-4	9:40 AM	Balumi, Wakil*; Puckette, Jim: CHARACTERIZATION OF PORE TYPES AND MORPHOLOGY IN A POTENTIAL CO₂ SEQUESTRATION RESERVOIR: A CASE STUDY OF THE SMOKY HILL MEMBER OF THE NIOBRARA FORMATION, DENVER-JULESBURG BASIN
3-5	10:00 AM	Kalina, Megan*; Trentham, Robert C.; Henderson, Miles A.: EVALUATION OF CEMENTING PHASES IN THE CHERRY CANYON FORMATION OF THE DELAWARE MOUNTAIN GROUP, FORD GERALDINE FIELD, TEXAS
3-6	10:20 AM	Fuller, Matthew*; Henderson, Miles A.; Trentham, Robert C.: PETROGRAPHIC AND GEOCHEMICAL EVALUATION OF THE LIMESTONE-DOLOSTONE TRANSITION BEANTH THE RESIDUAL OIL ZONE OF THE LOWER PERMIAN SAN ANDRES FORMATION, ECTOR COUNTY, TEXAS

SESSION NO. 4

T11. Tectonics and Sedimentation, Rio Grande Embayment/Burgos Basin

10:55 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Adams Room

Thomas Ewing, Presiding

	10:55 AM	Introductory Remarks
4-1	11:00 AM	Ewing, Thomas*: TECTONIC SETTING OF THE SENO MEXICANO (SOUTH TEXAS AND BURGOS BASIN): EXTENSION, FOLDING, TILTING, GROWTH FAULTING AND SOME SALT
4-2	11:20 AM	Ewing, Thomas*: HYDROCARBON SYSTEMS IN THE SENO MEXICANO (SOUTH TEXAS AND BURGOS BASIN): AN INITIAL EXAMINATION
4-3	11:40 AM	Eguiluz, Samuel*; Juárez-Arriaga, Edgar; Aranda-Gómez, Jorge: GEODYNAMIC EVOLUTION LATE EOCENE-OLIGOCENE IN THE BURGOS BASIN, MEXICO
4-4	12:00 PM	Stockli, Daniel*; Lawton, Timothy; Kortyna, Cullen D.; Clark, Julian; Amato, Jeffrey: THE PALEOGENE BURGOS BASIN – INSIGHTS INTO PROVENANCE HISTORY, BASIN EVOLUTION, AND IMPLICATIONS FOR GULF OF MEXICO SEDIMENTATION
	12:20 PM	Discussion

POSTER TECHNICAL SESSIONS

SESSION NO. 5

D1. Mineralogy, Geochemistry, Petrology, and Volcanology (Posters)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Washington Room

Authors will be present from 2 to 4 PM

	Booth #	
5-1	1	Price, Van*; Bish, David L.: USE OF 1970S NURE DATA TO GAIN INSIGHTS INTO CRITICAL MINERAL RESOURCES
5-2	2	Price, Jonathan D.*: HIGH RESOLUTION DIGITAL MAPPING OF THE EASTERN WICHITA MOUNTAINS, SOUTHERN OKLAHOMA
5-3	3	Parker, Evan S.; Price, Jonathan D.*: GEOSPATIAL ANALYSIS OF FEATURES ON THE DALQUEST DESERT RESEARCH STATION, BIG BEND, TEXAS

5-4	4	Biebesheimer, Ellie*; Suarez, Marina B.: BULK ORGANIC CARBON ISOTOPE CHEMOSTRATIGRAPHY OF THE YUCCA FORMATION, WEST TEXAS
5-5	5	Hamilton, Chad*; Price, Jonathan: SERIAL SECTION OF A K-FELDSPAR MEGACRYSTS FROM THE ENCHANTED ROCK PLUTON, TOWN MOUNTAIN INTRUSIVE COMPLEX, CENTRAL TEXAS
5-6	6	Keesling, Raelene*; Price, Jonathan D.: MOUNT SCOTT GRANITE ENCLAVES, WICHITA GRANITE GROUP, OKLAHOMA: CHARACTERIZATION, COMPARISON, CLASSIFICATION
5-7	7	Hillard, Aaron*; Stevenson, Alexandria M.; Price, Jonathan: MAPPING AND ANALYSIS OF THE CRATERVILLE FACIES OF THE QUANAH GRANITE, WICHITA MOUNTAINS, SOUTHERN OKLAHOMA
5-8	8	Campos, Mary*; Stevens, Liane: PETROLOGIC AND GEOCHEMICAL ANALYSIS OF DIKES INTRUDING VOLCANIC DEPOSITS AT KNIGHT PEAK AND WALKING X PEAK, GRANT COUNTY, NEW MEXICO
5-9	9	Newman, Jordan*; Leybourne, Matthew; Stern, Robert: AN OVERVIEW OF THE COLD SPRINGS BRECCIA AND THE COMMINGLING ORIGIN OF INTERMEDIATE GRANOPHYRES WICHITA MTNS., SW OKLAHOMA
5-10	10	Vike, Haylee*; Stevens, Liane: COMPARISON OF ANALYTICAL METHODS FOR HXRF GEOCHEMISTRY OF THE PACKSADDLE SCHIST AND TOWN MOUNTAIN GRANITE, LLANO UPLIFT, TEXAS
5-11	11	Aminu, Abdulmutallib*; Zobaa, Mohamed; Trentham, Robert C.: ORGANIC GEOCHEMISTRY OF THE WOODFORD FORMATION IN THE RICHBURG-1 WELL, DELAWARE BASIN

SESSION NO. 6

T4. Hydrogeology and Water Resources II: Extreme Events and Coastal Hazards: Flooding, Contamination, and Land Subsidence (Posters)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Washington Room

Authors will be present from 2 to 4 PM

	Booth #	
6-1	12	Mihindukulasooriya, Lorita*: ASSESSMENT OF WATER QUALITY OF THE BIG BONE LICK SALT SPRINGS, KENTUCKY, USA
6-2	13	Vickers, Christopher*; Murgulet, Dorina; Jafarzadeh, Arash; Vedadi Moghadam, Sina; Kapoor, Vikram: GROUNDWATER QUALITY RESPONSE TO FLOODING FOLLOWING HURRICANE HANNA CONSTRAINED BY GEOCHEMICAL AND BIOLOGICAL INDICATORS
6-3	14	Andrews, William*; O'Reilly, Catherine; Peterson, Eric; Perry, William L.: IDENTIFYING UNKNOWN SOURCES OF NITRATE IN TWO CENTRAL ILLINOIS WATERSHEDS
6-4	15	Garcia, Alvaro*: A GIS DATABASE THAT INCLUDES RELEVANT OSSF INFORMATION, SUCH AS LOCATION, SYSTEM AGE, LOT SIZE, AND OTHER IMPORTANT PARAMETERS WAS CREATED
6-5	16	Alo, Olawale*; Gonez-Rodriguez, Leroy; Mayes, Melanie; Johs, Alexander: EVALUATING THE EXTENT AND RATE OF HG SORPTION BY ENGINEERED SORBENTS DEPLOYED IN BANK SOILS AND SEDIMENTS OF A HG-CONTAMINATED CREEK
6-6	17	Brown, Chelsea A.*; Mclachlan, Robin: SHORELINE EROSION RELATED TO SEA-LEVEL RISE AND CHANNEL MIGRATION ON LITTLE CUMBERLAND ISLAND, GEORGIA
6-7	18	Simbo, Christophe Wakamya*: GEOLOGICAL FACTORS INFLUENCING THE VIABILITY OF AQUIFER STORAGE AND RECOVERY
6-8	19	Martinez-Sacristan, Hernando*: NEOTECTONICS AFFECTING UNDERGROUND WATERS CASE OF NW CARIBE COLOMBIA: FAR FROM RHETORIC CLOSER TO REALITY

SESSION NO. 7

T5. From Grenvillian Basement to Neotectonics in Northeast Mexico: A 1.3-Billion-Year Journey of Geological Development (Posters)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Washington Room

Authors will be present from 2 to 4 PM

Booth #

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|-----|----|---|
| 7-1 | 20 | Apolinar Morales, Blanca Sughey*; Ramirez Fernandez, Juan; Jenchen, Uwe; Pichardo-Barrón, Yolanda: PERMIAN BASIC VOLCANISM ON THE NW MARGIN OF GONDWANA IN THE GUACAMAYA FORMATION, CIUDAD VICTORIA BLOCK, TAMAULIPAS, MEXICO |
| 7-2 | 21 | Gauna Saucedo, Iris Lucia*; Montalvo Arrieta, Juan Carlos; Ramirez Fernandez, Juan; Salinas Jasso, Jorge Alán: ASSESSMENT OF ACTIVE TECTONICS IN THE WESTERN MARGIN OF THE SIERRA MADRE ORIENTAL. IMPLICATIONS FOR NEOTECTONIC STRESS REGIME AND SEISMIC HAZARD IN THE CURVATURE OF MONTERREY IN NORTHEASTERN MEXICO |
| 7-3 | 22 | De anda, Javier*: MECHANISMS OF ASCENT AND EMPLACEMENT OF THE INTRUSIVE SAN FELICIANO, MAZAPIL, ZACATECAS |

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 8

T4. Hydrogeology and Water Resources II: Extreme Events and Coastal Hazards: Flooding, Contamination, and Land Subsidence

1:30 PM, Embassy Suites by Hilton McAllen Conv. Ctr., Hamilton Room

Dorina Murgulet and Mohamed Ahmed, Presiding

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| | 1:30 PM | Introductory Remarks |
| 8-1 | 1:35 PM | Matarrita Rodriguez, Jessie; Vickers, Christopher; Murgulet, Dorina; Abdulla, Hussain*: DISTRIBUTION OF PESTICIDES IN GROUNDWATER FLOOD-IMPACTED UNCONNECTED COMMUNITIES IN SOUTH TEXAS FOLLOWING HURRICANE HANNA |
| 8-2 | 1:55 PM | Jafarzadeh, Arash*; Vickers, Christopher; Vedadi Moghadam, Sina; Lopez, Cody; Murgulet, Dorina; Kapoor, Vikram: USING MOLECULAR TOOLS AND MICROBIOLOGY TESTING TO STUDY THE IMPACT OF HURRICANE HANNA ON MICROBIAL CONTAMINATION IN SOUTH TEXAS WATER RESOURCES |
| 8-3 | 2:15 PM | Gutierrez, Melida*; Alarcon-Herrera, Maria Teresa; Espino-Valdes, Maria Socorro; Nkongolo, Keran: GEOGENIC OCCURRENCE OF AS AND F IN GROUNDWATER OF NORTHERN MEXICO |
| 8-4 | 2:35 PM | Ahmed, Mohamed*; Beattie, Amanda; Haley, Michael: QUANTIFYING LAND SUBSIDENCE IN COASTAL TEXAS USING GEOPHYSICAL AND REMOTE SENSING OBSERVATIONS |
| | 2:55 PM | Concluding Remarks |

SESSION NO. 9

T5. From Grenvillian Basement to Neotectonics in Northeast Mexico: A 1.3-Billion-Year Journey of Geological Development

1:30 PM, Embassy Suites by Hilton McAllen Conv. Ctr., Adams Room

Juan Ramirez Fernandez and Uwe Jenchen, Presiding

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| 9-1 | 1:30 PM | Ramirez Fernandez, Juan*; Alemán Gallardo, Eduardo Alejandro; Casas Peña, Juan Moisés; Weber, Bodo; Jenchen, Uwe; Velasco Tapia, Fernando: CIUDAD VICTORIA BLOCK: PRACAMBRIAN AND PALEOZOIC PERI-GONDWANAN CRUSTAL ASSEMBLAGE FROM NE MEXICO |
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|-----|---------|---|
| 9-2 | 1:50 PM | Jenchen, Uwe*; Rodríguez Saavedra, Pedro; Casas Peña, Juan Moisés; Ramírez Fernández, Juan Alonso: GEOCHEMISTRY OF THE CONTINENTAL TRIASSIC IN ARGENTINA USED AS AN ANALOG FOR THE TRIASSIC-JURASSIC SILICICLASTIC DEPOSITS ON THE WESTERN EDGE OF THE GULF OF MEXICO |
| 9-3 | 2:10 PM | Parker, Donnie*: A COMPREHENSIVE TECTONIC/MAGMATIC MODEL FOR CENOZOIC TRANS-PECOS TEXAS AND ADJACENT MEXICO |
| 9-4 | 2:30 PM | Leal-Cuellar, Victor Alejandro*; Ramírez Fernández, Juan Alonso; Velasco Tapia, Fernando; González-Guzmán, René; Montalvo Arrieta, Juan Carlos; Solari, Luigi: AGE AND PETROGENESIS OF THE RINCÓN MURILLO GABBRO OF THE SIERRA DE SAN CARLOS ALKALINE COMPLEX, NE MEXICO |
| | 2:50 PM | Concluding Remarks |

TUESDAY, 15 MARCH 2022

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 10

T7. Geoscience Education I: Geosciences Education Advancing Concepts and Inclusion (National Association of Geoscience Teachers (NAGT); International Association for Geoscience Diversity; Teacher Education Division of National Association of Geoscience Teachers)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Adams Room

Wendi J.W. Williams and Engil Pereira, Presiding

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| | 8:30 AM | Introductory Remarks |
| 10-1 | 8:35 AM | Hauptvogel, Daniel*; Sisson, Virginia: PROMOTING DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY IN INTRODUCTORY GEOLOGY COURSES THROUGH OPEN-ACCESS MATERIALS AND VIRTUAL FIELD TRIPS |
| 10-2 | 8:55 AM | Stern, Robert*; Pujana, Ignacio: GEOGRAPHY, RESOURCES AND ENVIRONMENT OF LATIN AMERICA: A LOWER DIVISION COURSE DESIGNED FOR NON-MAJORS TO INTEREST STUDENTS TO WANT TO LEARN MORE ABOUT OUR SOUTHERN NEIGHBORS AND HISPANIC STUDENTS TO BE MORE INTERESTED IN OUR SCIENCE |
| 10-3 | 9:15 AM | Ayers, Jennifer*: ADDRESSING THE DEVELOPMENT AND USE OF INNOVATIVE AND INCLUSIVE PEDAGOGICAL FRAMEWORKS IN THE EARTH, ENVIRONMENTAL, AND SPACE SCIENCES |
| 10-4 | 9:35 AM | Wang, Ning*; Seals, Katherine; Nnachetta, Somtochukwu; Stern, Robert: GOOGLE EARTH GEOED VIDEO LIBRARY (GEGVL): AN ORGANIZED AND IMMERSIVE WAY OF USING VIDEOS FOR GEOSCIENCE EDUCATION AND STUDENT ENGAGEMENT |
| 10-5 | 9:55 AM | Anderson, Brendan*; Petsios, Elizabeth; Nesmith, Suzanne; Friend, Dana: A PILOT STUDY OF HOW EVOLUTION UNDERSTANDING, EVOLUTION ACCEPTANCE, AND PERCEPTIONS OF CONFLICT BETWEEN RELIGION AND EVOLUTION ARE AFFECTED BY SCIENCE CLASSES AT A RELIGIOUSLY AFFILIATED INSTITUTION |
| | 10:15 AM | First Half Wrap-Up and T7 Poster Session Encouragement |
| | 10:30 AM | Break |
| 10-6 | 10:45 AM | Maceda, Amanda*; Stern, Robert: NATURAL MATERIALS SCIENCE: EXPLORING THE CHEMISTRY BEHIND THE MOHS HARDNESS SCALE |

10-7	11:05 AM	Yelderman, Joe; Atchley, Stacy C.; Browning, Sharon; Hamilton, Wayne*: TEACHING GEOSCIENCE IN A CHANGING CLIMATE: IT'S HARD TO TEACH STUDENTS WHO AREN'T IN YOUR CLASS
10-8	11:25 AM	Griffin, Randy*; Stern, Robert; Shapiro, Jon; Garnand, Nathalie; Mohanlal, Sarina: THE UNIVERSITY OF TEXAS AT DALLAS METEORITE RESEARCH AND EDUCATION LAB
10-9	11:45 AM	Stevens, Liane*: WALK-THROUGH VIDEOS: USING FLIPGRID FOR FORMATIVE ASSESSMENT WITH GEOLOGY MAJORS
10-10	12:05 PM	Campos, Daniel*; Clarke, Julia A.; Ellins, Katherine K.; Papendieck, Adam S.: NAVIGATING THROUGH TURBULENCE IN STEM HIGHER EDUCATION: GEOSCIENCE AMBASSADORS PERSONAL PATHWAY STORYTELLING
	12:25 PM	Concluding Remarks

SESSION NO. 11

T12. General Geomorphology

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Hamilton Room

Juan González, Presiding

	8:30 AM	Introductory Remarks
11-1	8:40 AM	De Hon, Rene*: VARIATIONS IN LUNAR COMPLEX CRATER MORPHOLOGY
11-2	9:00 AM	Washington, Paul A.*: USING ARCHAEOLOGICAL DATA TO CONSTRAIN THE NEOTECTONIC AND FLUVIAL HISTORY OF NORTHEASTERN LOUISIANA
11-3	9:20 AM	Washington, Paul A.*: A PROPOSED MECHANISTIC MODEL FOR CLIMATE EFFECTS OF LOBE SHIFTS IN THE MISSISSIPPI RIVER DELTA
11-4	9:40 AM	Granados, Paola*; Luna, August; Gonzalez, Juan; Choudhury, Robin; Harrison, Cheryl: ANALYZING HISTORICAL TEMPERATURE AND PRECIPITATION TRENDS FOR THE LOWER RIO GRANDE VALLEY, TX
11-5	10:00 AM	Massey, Jordon*; Halihan, Todd: PSEUDOKARST CONDUIT CHARACTERIZATION IN A SANDSTONE SILTSTONE AQUIFER, IN STILLWATER, OKLAHOMA
	10:20 AM	Break
11-6	10:35 AM	Gonzalez, Juan*; Reger, Brandi; Hinthorne, James; Skowronek, Russell: EL SAUZ CHERT, A LIMITED-SOURCE, CHEMICALLY UNIQUE LITHIC ARCHAEOLOGICAL RESOURCE MATERIAL FROM THE LOWER RIO GRANDE VALLEY OF TEXAS
11-7	10:55 AM	Skowronek, Russell; Miller, Christopher; Bacha-Garza, Roseann*; Gonzalez, Juan: THE ANCIENT LANDSCAPES OF SOUTH TEXAS, A GEOHERITAGE PROTOTYPE FOR THE LOWER RIO GRANDE VALLEY
	11:15 AM	Concluding Remarks

POSTER TECHNICAL SESSIONS

SESSION NO. 12

T7. Geoscience Education I: Geosciences Education Advancing Concepts and Inclusion (Posters) (National Association of Geoscience Teachers (NAGT); International Association for Geoscience Diversity; Teacher Education Division of National Association of Geoscience Teachers)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Washington Room

Authors will be present from 2 to 4 PM

Booth #		
12-1	1	Gonzalez, Juan*; Bacha-Garza, Roseann; Miller, Christopher; Skowronek, Russell: LOWER RIO GRANDE VALLEY PROJECTILE POINT TYPES, AN IMMERSIVE EXPERIENCE
12-2	2	McLachlan, Robin*: PEER REVIEW IN UPPER-LEVEL GEOLOGY COURSES INCREASES STUDENT SUCCESS WHILE DECREASING INSTRUCTOR WORKLOAD
12-3	3	Williams, Wendi J.W.*: COMMUNITIES WORK TO REMOVE BARRIERS TO INCLUSION OF PERSONS WITH DISABILITIES TO BETTER ACHIEVE "GEOLOGY HAS NO BORDERS" UNIVERSALLY

SESSION NO. 13

T12. General Geomorphology (Posters)

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Washington Room

Authors will be present from 2 to 4 PM

Booth #		
13-1	4	Thompson, MARK*: DETERMINATION OF EXACT ANCIENT GULF OF MEXICO SHORELINE LOCATION IN SOUTH CENTRAL TEXAS DURING MAXIMUM UPPER CRETACEOUS (MID MAESTRICTIAN) REGRESSION USING WELL LOGS TO DEFINE THE BIGFOOT EROSIONAL UNCONFORMITY
13-2	5	Ortiz Enriquez, Octavio*; Gonzalez Sanchez, Heriberto; Alonso Torres, Socrates; Alfaro de la Torre, Maria Catalina; Cardona, Antonio: THE KARSTIC AQUIFER OF THE HUASTECA REGION, SAN LUIS POTOSI, MEXICO
13-3	6	Luna, August*; Granados, Paola; Gonzalez, Juan; Choudhury, Robin; Harrison, Cheryl: COMPARING HISTORICAL TEMPERATURE AND PRECIPITATION TRENDS FOR THE LOWER RIO GRANDE VALLEY, TX TO CMIP6 PREDICTED MODEL OUTPUT
13-4	7	Herebia, Edoardo Jair*; Gonzalez, Juan; Cheng, Chu-Lin; Hardage, Sarah; Soti, Pushpa: ANTHROPOGENICALLY INDUCED SINUOSITY CHANGES ON THE CHANNEL OF THE LOWER RIO GRANDE
13-5	8	Lewis, Skye A.*; Brown, Chelsea A.; McLachlan, Robin: MEASURING EROSION RATES ALONG LITTLE CUMBERLAND ISLAND GEORGIA TO ANALYZE LONGEVITY OF DEVELOPED STRUCTURES

- 13-6 9 Rivera, Armida*; Fera, Teresa Patricia; Choudhury, Robin; Pereira, Engil: **REVEALING THE EFFECTS OF CLIMATE CHANGE AND FUNGICIDES ON SOIL MICROBIAL COMMUNITIES IN THE LOWER RIO GRANDE VALLEY, TEXAS**
- 13-7 10 Elliott, Lilly*; Martinez, Isabel; Pereira, Engil; Choudhury, Robin; Penn, Hannah: **HOUSE HUNTING: HARVESTER ANT (POGONOMYRMEX BARBATUS) COLONIES IN AN URBAN GRADIENT**

SESSION NO. 14**T13. Sustainable Management in Fluvial Aquifers and Transboundary Issues (Posters)**

8:30 AM, Embassy Suites by Hilton McAllen Conv. Ctr., Washington Room

Authors will be present from 2 to 4 PM

Booth #

- 14-1 11 Brewer, Will*; Dawson, Claudia; Yelderman, Joe: **TRACING ORGANIC POLLUTANTS IN GRAVEL-PIT LAKES: A CASE STUDY IN THE BRAZOS RIVER ALLUVIUM AQUIFER**
- 14-2 12 Capus, Dwight Zedric*; Cheng, Chu-Lin: **AQUIFER STORAGE AND RECOVERY POTENTIALS AT LOWER RIO GRANDE VALLEY: SUBSURFACE 3D VISUALIZATION AND DATA ANALYSIS OF SOUTHERN GULF COAST AQUIFER**
- 14-3 13 Gonzalez Sanchez, Heriberto*; Ortiz Enriquez, Octavio; Alonso Torres, Socrates; Cardona, Antonio: **IDENTIFICATION AND EVALUATION OF DIRECT NATURAL RECHARGE IN THE RIO VERDE FLUVIAL AQUIFER**

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 15**T10. Tracer Tests in the Hydrological Cycle**

1:30 PM, Embassy Suites by Hilton McAllen Conv. Ctr., Hamilton Room

Yongli Gao, Presiding

1:30 PM **Introductory Remarks**

- 15-1 1:35 PM Das, Kousik*; Murgulet, Dorina; Lopez, Cody: **TRACING NUTRIENT FLUXES ASSOCIATED WITH SALINE SUBMARINE GROUNDWATER DISCHARGE IN A SEMI-ARID ESTUARY USING STABLE AND RADIOACTIVE ISOTOPES**
- 15-2 1:55 PM Matthews, Kathleen*; Murgulet, Dorina; Lopez, Cody: **TRACING GROUNDWATER INPUTS AND COMPOSITION NEAR CORAL REEFS ALONG A STRETCH OF THE CARIBBEAN COAST**
- 15-3 2:15 PM Nordstrand, Thomas*; Gao, Yongli; Ackley, Stephen F.; Weissling, Blake: **CHARACTERIZATION OF LARGE HAILSTONE GROWTH USING STABLE ISOTOPES**
- 15-4 2:35 PM Dale, Isaac*; Halihan, T.; Sayyad, M.A. Al; Massey, Jordon: **USING TERI TO MONITOR A HORIZONTAL SEGMENTED WELL**
- 2:55 PM **Break**
- 15-5 3:10 PM Culver, Madison*; Andrews, William; Sewell, Guy W.; Halihan, Todd: **PRODUCTION OF GROUNDWATER TRACING PARTICLES FOR EVALUATING KARST GROUNDWATER CONNECTIONS**

- 15-6 3:30 PM Ong, Claire*; Gao, Yongli; Goddard, Faith; Fu, Qi: **ANALYSIS OF PFAS IN THE EDWARDS-TRINITY AQUIFER SYSTEM**
- 15-7 3:50 PM Gao, Yongli*; Sullivan, Timothy; Li, Xianglei; Ma, Lin: **TRACING SOURCES AND FATE OF NITRATE USING ENVIRONMENTAL TRACERS AND NUMERICAL MODELS IN KARST WATERSHEDS AND SPRINGS, CENTRAL TEXAS**
- 15-8 4:10 PM Bertetti, Franklin*; Quintanilla, Jessica: **USING TRACER TESTS TO DEVELOP AN IMPROVED CONCEPTUAL MODEL FOR A LARGE KARST AQUIFER**
- 4:30 PM **Discussion**
- 4:45 PM **Concluding Remarks**

SESSION NO. 16**T13. Sustainable Management in Fluvial Aquifers and Transboundary Issues**

1:30 PM, Embassy Suites by Hilton McAllen Conv. Ctr., Adams Room

Antonio Cardona, Marusia Renteria-Villalobos, Todd Halihan, Rosario Sanchez, Raul Morales-Escalante, Martin Argueta-Hernandez and Raul Mejía-Vázquez, Presiding

- 1:30 PM **Introductory Remarks**
- 16-1 1:40 PM Renteria-Villalobos, Marusia*; Hanson, Randall; Mendieta-Mendoza, Aurora: **WATER SUSTAINABILITY FRAMEWORK AND STRATEGIES FOR NORTHERN MEXICO**
- 16-2 2:00 PM Aceves De Alba, Jorge*; Cardona, Antonio; Júnez Ferreira, Hugo Enrique: **DESIGN OF GROUNDWATER MONITORING NETWORKS FOR THE SUSTAINABLE MANAGEMENT OF FLUVIAL AQUIFERS**
- 16-3 2:20 PM Dawson, Claudia*; Brewer, Will; Yelderman, Joe: **GRAVEL PIT LAKES IN THE BRAZOS RIVER ALLUVIUM AQUIFER**
- 16-4 2:40 PM Halihan, Todd*; Rahi, Khayyun: **SURFACE WATER SALINITY OF THE EUPHRATES, TIGRIS, AND SHATT AL-ARAB RIVERS**
- 16-5 3:00 PM Cardona, Antonio*; Martinez Partida, Maribel Emilia; Giacomani Vallejos, German; Lorenzo, Alfonso: **EVALUATION OF PESTICIDES OCCURRENCE IN GROUNDWATER OF RIO VERDE FLUVIAL AQUIFER, SAN LUIS POTOSI, MEXICO**
- 3:20 PM **Break**
- 16-6 3:35 PM Cauich-Kau, Dario*; Rude, Thomas; Cardona, Antonio; Castro-Larragoitia, Guillermo Javier: **ARSENIC ENRICHMENT IN SHALLOW FLUVIAL AQUIFERS IN CERRITOS BASIN, MEXICO**
- 16-7 3:55 PM Alonso Torres, Socrates*; Lazaro, Isabel; Cardona, Antonio: **UNDERSTANDING GROUNDWATER RECHARGE IN PERCHED FLUVIAL AQUIFERS IN MOUNTAINOUS REGIONS OF SAN LUIS POTOSI, MEXICO**
- 16-8 4:15 PM Yelderman, Joe*: **USING A SIMPLE FINITE ELEMENT MODEL TO EXPLORE GROUNDWATER FLOW DYNAMICS IN A FLUVIAL AQUIFER**
- 16-9 4:35 PM Rocha-Escalante, Hermann*; Mansilla-Díaz, Andrea; Solis-Orozco, J. Alfredo: **GROUNDWATER USE AND ITS IMPLICATIONS IN AN AGRICULTURAL AREA: A CASE STUDY IN A FLUVIAL AQUIFER BY GROUNDWATER NUMERICAL MODELING**
- 4:55 PM **Concluding Remarks**

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How to use the indexing system:

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.

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Find Session #8 in the Technical Session portion of the Program, and look at the fourth paper in the session.

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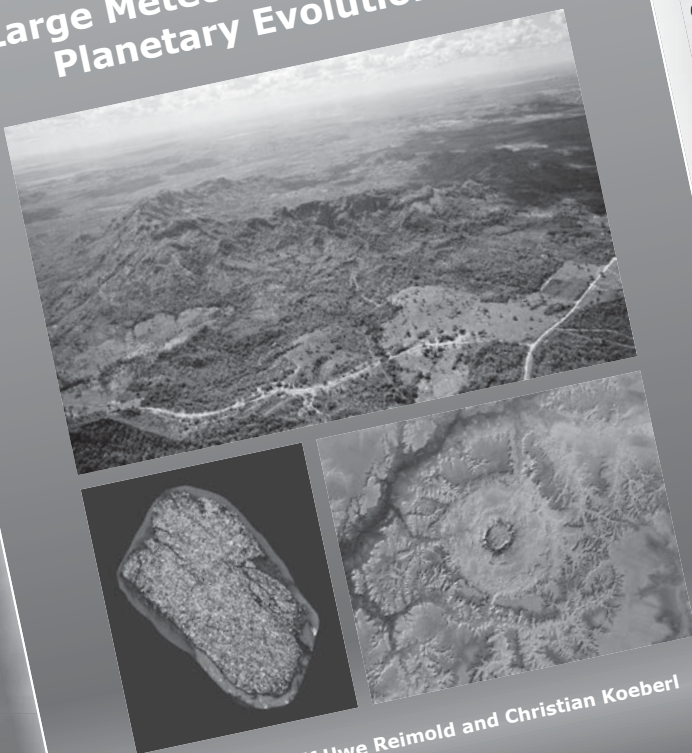
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CODE OF CONDUCT AT GSA EVENTS



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.

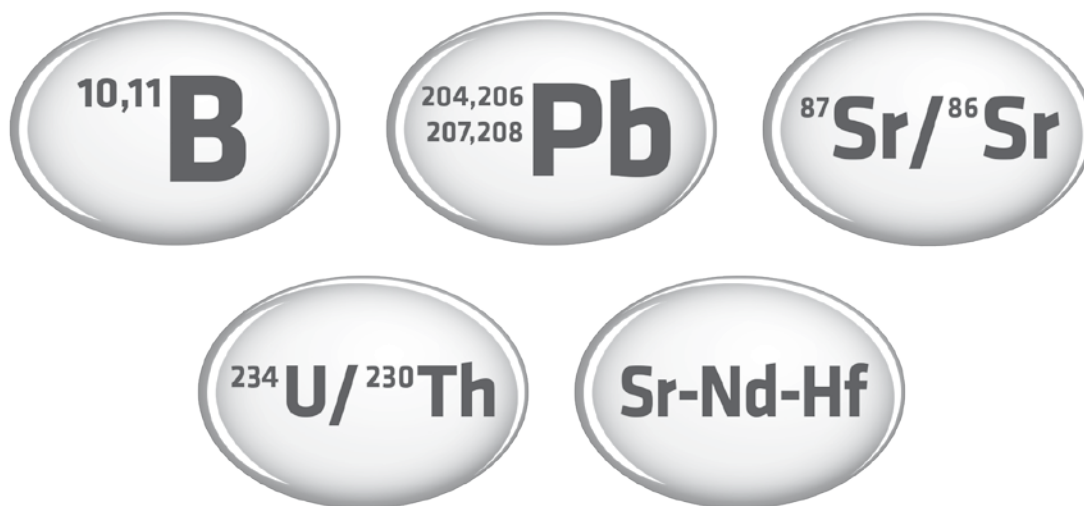
Reporting Unacceptable Behavior

If you are being harassed, notice that someone else is being harassed, or have any other concerns, please locate a GSA Staff Member or GSA Leader (see page 2) with a GSA RISE button.

Always remember that if it is a life-threatening emergency, dial 9-1-1. If you are within the meeting venue or hotel, it is helpful to have someone notify a staff member or building employee if possible to avoid delays with emergency responders.

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