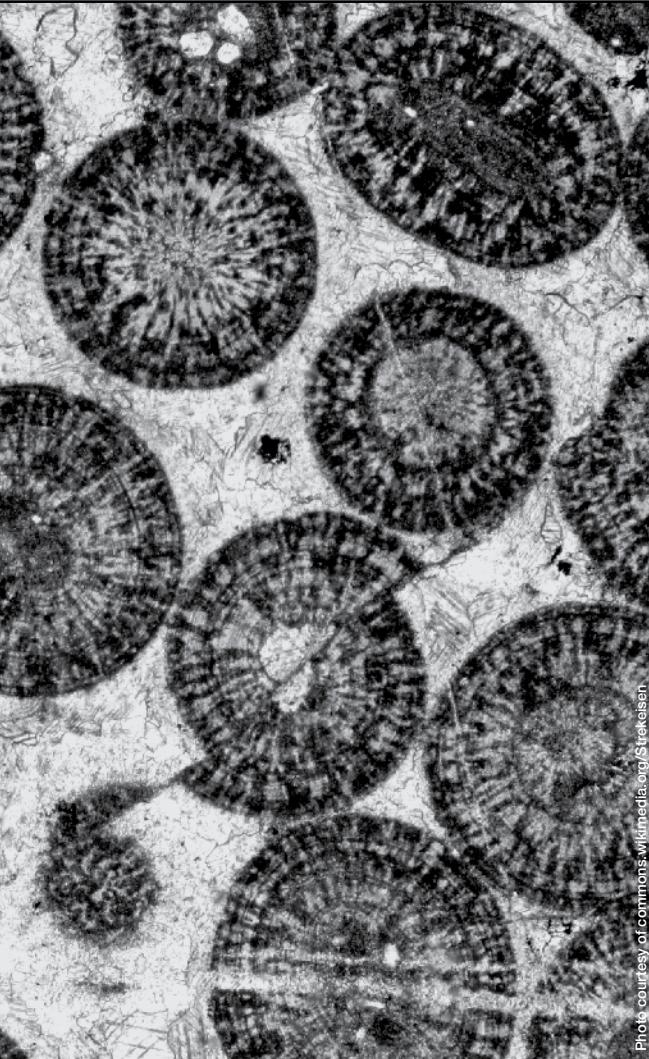


2019

Vol. 51,
No. 2

PROGRAM



South-Central/ North-Central/ Rocky Mountain Joint Section Meeting

25–27 March
Manhattan, Kansas, USA

www.geosociety.org/sc-mtg



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Museums at the Forefront of the History and Philosophy of Geology: History Made, History in the Making

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Natural history museums have evolved over the past 500 years to become vanguards of science literacy and thus institutions of democracy. Curiosity about nature and distant cultures has proven to be a powerful lure, and museums have progressively improved public engagement through increasingly immersive exhibits, participation in field expeditions, and research using museum holdings, all facilitated by new technology. Natural history museums have dispersed across the globe and demonstrated that public fascination with ancient life, vanished environments, exotic animals in remote habitats, cultural diversity, and our place in the cosmos is universal. This volume samples the story of museum development and illustrates that the historical successes of natural history museums have positioned them to be preeminent facilitators of science literacy well into the future.

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Program
Joint section meeting of the Geological Society of America

**53rd SOUTH-CENTRAL, 53rd NORTH-CENTRAL,
and 71st ROCKY MOUNTAIN**

25–27 March 2019

**Hilton Garden Inn Manhattan & Manhattan Conference Center
Manhattan, Kansas**

Source to Sink across the Midcontinent: Geosciences from the Rockies to the Gulf

Local Program Committee

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Field Trip Chairs	Susan Stover, Rex Buchanan
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Student Volunteer Coordinator	Aida Farough
Exhibits Coordinator.....	Matthew Brueske
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SPONSORS

We are grateful to the several entities and individuals who made substantial contributions to help underwrite the costs of the meeting. Their names will be prominently displayed at the meeting. Our sponsors as of press time are:

GSI Engineering

Kansas State University—Office of the Vice President
for Research

Kansas State University—College of Arts and Sciences

University of Texas at Arlington—Department of Earth and
Environmental Sciences

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

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

GSA Ethics and Compliance Officer, Nan Stout, gsaeventscode@gmail.com

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

General Information

LOCATION

The 2019 joint meeting of the South-Central, North-Central, and Rocky Mountain GSA sections is hosted by Kansas State University in Manhattan, Kansas. Thriving as a lively, college environment in the Flint Hills, Manhattan is home to delectable dining destinations, a vibrant nightlife, and exciting outdoor adventures. Take a short walk from the conference venue to explore downtown shops and restaurants or learn about the local history and ecology at the Flint Hills Discovery Center. Borrow a bike from the local bike share program and cruise along the Kansas River on the Linear Park Trail. Whether you want to go for a hike on the native tallgrass prairie, poke around in the Permian bedrock, or soar through the trees on zipline, Manhattan is a great starting point for a wide-range of adventures.

FLINT HILLS GEOLOGY

[Source: Goldberg and Miller, Geology of the Flint Hills, Kansas: Sea level and climate changes in the Permian. Field-trip Guidebook, 2019 Joint Regional GSA]

Manhattan is located near the northern edge of the Flint Hills; a strip of rolling hills that extends south into Oklahoma and contains some of the last remnants of native tallgrass prairie (see figure below). The Flint Hills were carved by erosion of Permian bedrock, which mostly consist of limestones and mudstones. The occurrence of those rock types repeats itself several times in the Permian succession of Kansas, recording past cycles of sea level and climate changes. The

limestones were deposited in marine environments and may contain abundant chert nodules. Flint is a common name for chert and thus, the nodules give the Flint Hills their name. Mudstones overlying the limestone layers are often gray and fossiliferous, consistent with shallow marine deposition. Above those marine facies, an interval of red and green mudstones with extensive paleosol (i.e., ancient soil) development is often present. Variation in sea level and climate occurred as southern hemisphere continents of Gondwana fluctuated between glacial and interglacial periods. Glacial advance and retreat would be associated with both global cyclical sea-level fluctuation and climate change. Arid to semi-arid conditions prevailed during sea-level rise and high-stand, resulting in deposition of carbonate sediment. Falling sea-level was associated with a transition to seasonally wet climates that initiated the influx of siliciclastic muds. As sea-level fell, these siliciclastic muds became subaerially exposed, allowing soils to develop. More details about the geology of the Flint Hills as well as its history and ecology are on display across the street from the Conference Center in the Flint Hills Discovery Center.

VENUE

The meeting location is the Manhattan Conference Center, which is connected to the Hilton Garden Inn, downtown Manhattan. Field trips are departing from the main entrance of the Conference Center and workshops are being held in rooms inside the Conference Center. See Field Trip and Workshop section for details.

TRANSPORTATION

For those driving to the conference, Manhattan is located along interstate 70 and is 110 miles west of Kansas City, Missouri, 130 miles north of Wichita, Kansas, 175 miles south of Omaha, Nebraska, and 495 miles east of Denver, Colorado. Air transportation options include the Manhattan Regional Airport (MHK), located 5 miles west of the conference center. MHK offers direct service to Dallas-Fort Worth (3 flights/day) and Chicago O'Hare (2 flights/day). Alternatively, attendees may also choose to fly to alternative airports nearby and drive to Manhattan. Options include Kansas City (MCI), Salina, Kansas (SLN), Wichita (ICT), and Omaha (OMA). Once in town, many of the hotels offer a shuttle to and from the airport. Ride-hailing services (e.g., Uber and Lyft) are also available.

PARKING

Free parking is available in the parking garage connected to the Manhattan Conference Center.



Location of the Flint Hills physiographic region. Prairie areas are shaded. Source: Kansas Geological Survey Open File Report 2016-1.

EATING AND DRINKING

The restaurant within the Hilton Garden Inn offers breakfast and dinner weekdays, 6 a.m.–8 p.m. Additional restaurants and bars are located adjacent to the conference center, in downtown Manhattan (within 0.5 mi), in the Aggieville shopping district near the Kansas State University campus (1.5 mi), and various other locations around town. A complete list is available here: <http://www.manhattancvb.org/19/Dining>.

WEATHER

In March, average daily high and low temperatures in Manhattan are 57°F (14°C) and 30°F (-1°C). Most precipitation falls between May and August. However, precipitation rates begin to gradually increase in March. 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 Hilton Garden Inn Manhattan, Ballroom Prefunction and open the following times:

Sunday, 24 March	3–6 p.m.
Monday, 25 March	6:30 a.m.–4:30 p.m.
Tuesday, 26 March	6:30 a.m.–4:30 p.m.
Wednesday, 27 March	6:30–11 a.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.

On-site fees

	Full Mtg	One day
Professional Member.....	\$270.....	\$190
Professional Member 70+	\$160.....	\$125
Professional Nonmember.....	\$320.....	\$220
Early Career Professional Member	\$200.....	\$150
Student Member	\$105.....	\$85
Student Nonmember	\$140.....	\$100
K–12 Professional	\$95.....	\$70
Guest or Spouse	\$55.....	n/a
Field Trip/Workshop Only.....	\$65.....	n/a

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/2019SC/meetingapp.cgi>.

ACCOMMODATIONS

A block of rooms had been reserved at the Hilton Garden Inn (+1-785-532-9116), and the Fairfield Inn (+1-785-539-2400).

SPECIAL EVENTS

Sunday, 24 March

Town Hall Session: GSA Strategic Planning Initiative. 4–5 p.m. Konza Prairie Room. Please join GSA Executive Director Vicki McConnell for an update on GSA's Strategic Planning. This is an opportunity to interact with leadership and ask questions about the future plans for GSA.

Welcome Reception. 5–7 p.m., Big Basin/Kaw Nation 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, 25 March

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

Posters/Exhibits Reception. 4–5:45 p.m. Big Basin/Kaw Nation Rooms. 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.

Keynote Presentation by Allyson K. Anderson Book. 6–7 p.m., Konza Prairie/Kings/Flint Hills Rooms. Please join us for this keynote presentation, to be given by Allyson K. Anderson Book, Executive Director of the American Geosciences Institute.

Tuesday, 26 March

Thank-you Breakfast for GSA Campus Reps. 7–8 a.m., Big Blue River Office. 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.

Posters/Exhibits Reception. 4–5:45 p.m. Big Basin/Kaw Nation Rooms. 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.

Keynote Presentation by Robbie R. Gries. 6–7 p.m. Konza Prairie/Kings/Flint Hills Rooms. Please join us for this keynote presentation, to be given by Robbie R. Gries, President of GSA.

Wednesday, 27 March

Posters/Exhibits Coffee. 10–11:45 a.m., Big Basin/Kaw Nation Rooms. Enjoy coffee and tea while connecting with your colleagues.

Outstanding Student Presentation Awards Ceremony. 11:45 a.m.–12:15 p.m., Big Basin/Kaw Nation Rooms. Come

find out which undergraduate and graduate students won awards for their oral or poster presentations!

BUSINESS MEETINGS

GSA North-Central Section Management Board

Meeting. Monday, 25 March, 6:30–8 a.m., Big Blue River Office.

GSA South-Central Section Management Board

Meeting. Monday, 25 March, 7–8 a.m., Little Apple Boardroom.

GSA Rocky Mountain Section Management Board

Meeting. Monday, 25 March, 7–8 a.m., Fort Riley Room.

GSA North-Central Section All-Member Business

Meeting. Monday, 25 March, 5:45–6 p.m., Konza Prairie/Kings/Flint Hills Rooms.

GSA South-Central, and Rocky Mountain Sections

Open Meeting. Tuesday, 26 March, 5:45–6 p.m. Konza Prairie/Kings/Flint Hills Rooms.

TECHNICAL PROGRAM

Speaker Ready Room

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

Sunday, 24 March	4:30–6:30 p.m.
Monday, 25 March	7:30 a.m.–5:30 p.m.
Tuesday, 26 March	7:30 a.m.–5:30 p.m.
Wednesday, 27 March	7:30 a.m.–11 a.m.

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 or at least 2 hours prior to the beginning of their session for afternoon sessions.

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 will be located in the Big Basin/Kaw Nation Rooms adjacent to the exhibitors. Presenters are expected to have their posters up by 8:30 am, and they are expected to be present at their posters from 4 to 5:45 p.m. for posters in sessions that take place on Monday and Tuesday and from 10 to 11:45 a.m. for posters in the session on Wednesday. Presenters should take down their posters at the end of the session. Any posters not taken down will be discarded.

Technical Sessions

Please direct questions related to the following sessions to the Technical Program Chairs, Joel Spencer, joelspen@ksu.edu, Alison Graettinger, graettingera@umkc.edu, and Shari Kelley, shari.kelley@nmt.edu.

Theme Sessions

T1. Conventional and Unconventional Reservoir Rocks: Advances in Experiments, Modeling, and Simulations.

T3. Injection-Induced Seismicity in the U.S. Midcontinent: Where Are We after a Decade?

T4. Crustal Structure of the Midcontinent using Geophysical and Geodynamic Data.

T5. Mantle Dynamics and Lithospheric Deformation.

T8. Cenozoic Magmatic and Tectonic Processes of Colorado–New Mexico: Understanding Voluminous Volcanism during the Transition from Laramide Contraction to Rio Grande Rift Extension.

T9. Mafic and Ultramafic Magmatism in the Mid-Continent and Beyond.

T10. Rhyolite/Granite Magmatism.

T11 Microanalyses, Macro Implications: Using Microscale Analyses to Decipher System-to-Regional Scale Processes.

T14. Geoscience Outreach and Engagement.

T18. Unconventional Aquifers and Aquifer Management.

T20. Advances in the Measurement and Modeling of Integrated Surface and Subsurface Hydrologic Systems.

T23 The Low Down on the High Plains: Geologic and Hydrogeologic Studies of the High Plains Aquifer.

T24. Karst Processes and Speleology.

T26. Midcontinent Paleoclimatology.

T28 Exciting New Interdisciplinary Themes in Quaternary Geochronology.

T29. Quaternary Landscape Evolution in the Midcontinent: Improved Insights from Geochronology.

T32. Geology of the Greater Kansas City Area (Posters).

T33. Undergraduate Student Research (Posters).

T34. Pleistocene Records of Climatic and Environmental Change in the Rocky Mountains, Great Plains, and Midwest.

Discipline Sessions

D1. Energy Geology

D2. Environmental Geology

D3. Quaternary Geology, Geomorphology, Paleoclimate, and Limnogeology

D4. Sedimentology and Stratigraphy

D5. Structural Geology

D6. Geochemistry (Posters)

D7. Hydrogeology (Posters)

D8. Paleontology (Posters)

D9. Planetary Geology (Posters)

D10. Science and Society (Posters)

D11. Volcanoes and Igneous Rocks (Posters)

FIELD TRIPS

All trips depart from the Hilton Garden Inn Manhattan & Manhattan Conference Center entrance. For additional information, please contact Field Trip Chairs, Susan Stover, susanstover@ku.edu, and Rex Buchanan, rex@kgs.ku.edu.

FT1. Looking Beneath the Plains: Geology of the Ogallala Formation and the Central High Plains of Kansas. Jon Smith, Kansas Geological Survey; Tony Layzell, Kansas Geological Survey. Sat.–Sun, 23–24 March, 7 a.m.–5 p.m. (overnight in Scott City, Kansas). Cost: US\$245.

This field trip will visit outcrops that are the focus of ongoing research efforts examining the stratigraphic architecture, chronostratigraphy, and ichnology of the Ogallala Formation in Kansas. Stops include an operating volcanic ash quarry and Ladder Creek Canyon in west-central Kansas containing paleosols, trace fossils, and historic ruins and battlefields. We will also discuss the hydrogeology of the Ogallala aquifer and some of the policy implications for management of this vital resource.

FT3. Late-Quaternary Landscape Evolution and Geoarchaeology in the Flint Hills of Northeastern Kansas: A Tale of Two Sites. Rolfe Mandel, Kansas Geological Survey. Sunday, 24 March, 8:30 a.m.–4 p.m. Cost: US\$57.

Visit two archaeological sites near Manhattan, Kansas: the Coffey site in the Big Blue River valley and the Claussen site on Mill Creek. Learn about Holocene and late Pleistocene alluvial and soil stratigraphy, landscape evolution in the stream valleys, and the context of deeply buried archaeological components dating back at least 12,000 years. Multi-proxy data provide a detailed history of environmental change at both sites. That history is crucial to understanding human adaptations in the Flint Hills during the Pleistocene-Holocene transition and the warm, dry Altithermal climatic episode.

FT5. The Science and the Industry of the Permian Hutchinson Salt. Marcia Schulmeister, Emporia State University; Kathleen Counter Bennison, West Virginia University; Anna Sofia Andeskie, West Virginia University. Sunday, 24 March, 6:30 a.m.–9 p.m. Cost: US\$87.

The 120-meter-thick Permian Hutchinson Salt Member of the Wellington Formation of central Kansas supports multiple industries. Composed of bedded halite, gypsum/anhydrite, and minor siliciclastic mudstone, it was deposited by shallow saline waters in a warm, dry climate. Underground salt mines access the purest horizon, producing salt that is distributed through the U.S. and Canada. The vast space left by mining supports a prosperous commercial storage enterprise and a popular underground tourist attraction. Additional vertical solution caverns host the nation's primary midcontinent liquid petroleum gas (LPG) storage industry. This field trip explores the origin and use of Hutchinson Salt in core samples and subsurface outcrops while meeting in an underground salt cavern, and topside, at a solution storage cavern.

FT6. Trails West, Kansas City Vicinity, Missouri and Kansas. James S. Aber, Emporia State University; Susan W. Aber, Emporia State University. Sunday, 24 March, 7 a.m.–6 p.m. Cost: US\$58.

This field trip includes several famous trails: Lewis and Clark, Santa Fe, Oregon, and California. The trip also features Civil War and Border War sites. Pennsylvanian cyclothsems make up the bedrock geology. The drainage system was determined by glaciation, specifically ice-marginal meltwater that carved the modern Missouri and Kansas river valleys as well as several other lesser valleys. These valleys served as primary transportation corridors that led to human settlement and development of the Kansas City metropolitan region.

FT7. Windows into the Cretaceous Mantle of the North American Mid-Continent—Kimberlites of Riley County. Pamela Kempton, Kansas State University; Matt Brueske, Kansas State University; Kayleigh Rogers, Kansas State University. Sunday, 24 March, 12:30–5 p.m. Cost: US\$40

Cretaceous-age kimberlites in Riley County, Kansas, are unusual in that they erupted through Proterozoic rather than Archean crust. Their occurrence, along with other localities in Wyoming and North Canada, has been linked to a lithosphere-scale structure called the “kimberlite corridor.” The Riley County kimberlites represent the southernmost kimberlite locality along the corridor. Participants on this field trip will have the opportunity to visit three different localities and will be provided with the latest information on their structure, composition, and petrogenesis.

FT9. Kansas River Alluvial Aquifer: Water Use and Real-Time Water-Level Monitoring. Don Whittemore, Kansas Geological Survey. Wednesday, 27 March, 1–5:30 p.m. Cost: US\$33

The alluvial aquifer in the Kansas River valley is an important aquifer for municipal, industrial, and agricultural uses. This field trip will provide participants with an overview of how the aquifer is being used and a new water-level monitoring program to enhance understanding of the impact of that use.

FT11. Geology of the Flint Hills, Kansas: Sea-Level and Climate Changes in the Permian. Karin Goldberg, Kansas State University; Keith Miller, Kansas State University (retired). Thursday, 28 March, 8 a.m.–5 p.m. Cost: US\$56.

This field trip focuses on the lower Permian (Wolfcampian) succession exposed in the Manhattan area, Riley County, Kansas. Nearly continuous exposures display numerous cycles of sea-level change (“cyclothsems”). Stacked paleosol horizons that are part of the Wolfcampian cyclothsems also record climate changes, from arid/semi-arid to sub-humid/seasonal climates.

SHORT COURSES

SC1. Making Geoscience Animations and Videos and Assessing them in the Classroom. Sunday, 24 March, 10 a.m.–4 p.m. Alcove Room. Robert J. Stern, University of Texas at Dallas; Ning Wang, University of Texas at Dallas; Jeffrey Ryan, University of South Florida; Lochlan Vaughn, University of Texas at Dallas; Siloa Willis, University of Texas at Dallas. Cost: US\$50.

Geoscientific information and processes are very amenable to treatment using videos and animations but not enough are being made or assessed in the classroom. This short course is designed to engage interested geoscientists to make and assess their own geoscience videos and animations. The short course will stress the importance of identifying target audiences, carrying out research, generating storyboards and narrations, making and editing videos and animations, the importance of sound, dissemination, and assessment.

SC2. GSA On To the Future Professional Skills Short Course for Students. Sunday, 24 March, 8 a.m.–5 p.m. Tuttle Room. Stephen K. Boss, University of Arkansas; Tahlia Bear,

Geological Society of America; Katherine Ellins, University of Texas at Austin.

This National Science Foundation–sponsored short course will focus on building the professional skills of undergraduate and graduate students with a focus on résumé and CV development, networking, and other written and oral communications. The course will be interactive and include individual and group exercises, discussion, and presentations. Limited to 20 students.

EXHIBITS

Exhibits are located in Big Basin/Kaw Nation Rooms. For additional information, please contact the Exhibits Coordinator, Matthew Brueske, brueske@ksu.edu.

Set-up: Sunday, 24 March, noon–5 p.m.

Open: Sunday, 24 March, 5–7 p.m.

Open: Monday, 25 March, 8 a.m.–6 p.m.

Open: Tuesday, 26 March, 8 a.m.–6 p.m.

Open: Wednesday, 27 March, 8 a.m.–noon

Tear down: Wednesday, 27 March, noon–9 p.m.

Exhibitor (as of early January)

2020 Rocky Mountain Section GSA Meeting

2020 South-Central Section GSA Meeting

2020 North-Central Section GSA Meeting

Geological Society of American Bookstore

Geological Society of America Foundation

Kansas Geological Survey

Kansas State University, Department of Geology

National Association of State Boards of Geology

(ASBOG)

Oklahoma State University/Boone Pickens School of Geology

OPPORTUNITIES FOR STUDENTS

Outstanding Student Presentation Awards. Cosponsored by GSA South-Central Section, North-Central Section, Rocky Mountain Section. These sections of GSA will award cash prizes and plaques to the best graduate and undergraduate posters 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 Wednesday, 11:45 a.m.–12:15 p.m. in Big Basin/Kaw Nation Rooms. 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, 25 March, noon–1:30 p.m., McDowell Room. Students and early career professionals will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors over a FREE lunch.

John Mann Mentors in Applied Hydrogeology Program.

Tuesday, 26 March, noon–1:30 p.m., McDowell Room. Students and early career professionals interested in applied hydrogeology or hydrology as a career will have the opportunity to network with professionals over a FREE lunch.

Geoscience Career Workshops

For more information about the Geoscience Career Workshops, please contact Jennifer Nocerino at jnocerino@geosociety.org.

Geoscience Career Workshop Part 1. Career Planning and Informational Interviewing. Monday, 25 March, 9–10 a.m., McDowell 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.

Geoscience Career Workshop Part 2. Geoscience Career Exploration. Monday, 25 March, 10–11 a.m., McDowell 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.

Geoscience Career Workshop Part 3. Cover Letters, Résumés, and CVs. Tuesday, 26 March, 9–10 a.m., McDowell 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, North-Central, and Rocky Mountain Sections offer free meeting registration to student volunteers in return for ~7 hours of work during the meeting. If you are a student interested in volunteering, please contact the Student Volunteer Coordinator, Aida Farough at afarough@ksu.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
SATURDAY, 23 MARCH		
FT1. Looking Beneath the Plains: Geology of the Ogallala Formation and the Central High Plains of Kansas (Field Trip)	7 a.m.–Sunday, 5 p.m.	Hilton Garden Inn Manhattan
SUNDAY, 24 MARCH		
FT5. The Science and the Industry of the Permian Hutchinson Salt (Field Trip)	6:30 a.m.–9 p.m.	Hilton Garden Inn Manhattan
FT6. Trails West, Kansas City Vicinity, Missouri and Kansas (Field Trip)	7 a.m.–6 p.m.	Hilton Garden Inn Manhattan
SC2. GSA On To the Future Professional Skills Short Course for Students (Short Course)	8 a.m.–5 p.m.	Tuttle Room
FT3. Late-Quaternary Landscape Evolution and Geoarchaeology in the Flint Hills of Northeastern Kansas: A Tale of Two Sites (Field Trip)	8:30 a.m.–4 p.m.	Hilton Garden Inn Manhattan
SC1. Making Geoscience Animations and Videos and Assessing them in the Classroom (Short Course)	10 a.m.–4 p.m.	Alcove Room
FT7. Windows into the Cretaceous Mantle of the North American Mid-Continent—Kimberlites of Riley County (Field Trip)	12:30–5 p.m.	Hilton Garden Inn Manhattan
Exhibits Set-up	noon–5 p.m.	Big Basin/Kaw Nation Rooms
Registration	3–6 p.m.	Ballroom Prefunction
Town Hall Session: GSA Strategic Planning Initiative	4–5 p.m.	Konza Prairie Room
Speaker Ready Room	4:30–6:30 p.m.	Cottonwood Room
Exhibits Open	5–7 p.m.	Big Basin/Kaw Nation Rooms
Welcome Reception	5–7 p.m.	Big Basin/Kaw Nation Rooms
MONDAY, 25 MARCH		
Registration	6:30 a.m.–4:30 p.m.	Ballroom Prefunction
GSA North-Central Section Management Board Meeting	6:30–8 a.m.	Big Blue River Office
GSA South-Central Section Management Board Meeting	7–8 a.m.	Little Apple Boardroom
GSA Rocky Mountain Section Management Board Meeting	7–8 a.m.	Fort Riley Room
Speaker Ready Room	7:30 a.m.–5:30 p.m.	Cottonwood Room
Exhibits Open	8 a.m.–6 p.m.	Big Basin/Kaw Nation Rooms
Morning Oral Technical Sessions		
T1. Conventional and Unconventional Reservoir Rocks: Advances in Experiments, Modeling, and Simulations	8 a.m.–noon	Konza Prairie Room
T8. Cenozoic Magmatic and Tectonic Processes of Colorado–New Mexico: Understanding Voluminous Volcanism during the Transition from Laramide Contraction to Rio Grande Rift Extension	8 a.m.–noon	Tuttle Room
T11. Microanalyses, Macro Implications: Using Microscale Analyses to Decipher System-to-Regional Scale Processes	8 a.m.–noon	Kings Room

EVENT	TIME	LOCATION
T18. Unconventional Aquifers and Aquifer Management	8 a.m.–noon	Flint Hills Room
T28. Exciting New Interdisciplinary Themes in Quaternary Geochronology	8 a.m.–noon	Alcove Room

Poster Sessions: *Authors will be present from 4 to 5:45 PM*

T33. Undergraduate Student Research (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
Geoscience Career Workshop Part 1. Career Planning and Informational Interviewing	9–10 a.m.	McDowell Room
Geoscience Career Workshop Part 2. Geoscience Career Exploration	10–11 a.m.	McDowell Room
Roy J. Shlemon Mentor Program in Applied Geoscience	noon–1:30 p.m.	McDowell Room

Afternoon Oral Technical Sessions

T3. Injection-Induced Seismicity in the U.S. Midcontinent: Where Are We after a Decade?	1:30–5:45 p.m.	Konza Prairie Room
T9. Mafic and Ultramafic Magmatism in the Mid-Continent and Beyond	1:30–5:45 p.m.	Kings Room
T14. Geoscience Outreach and Engagement I	1:30–5:45 p.m.	Tuttle Room
T20. Advances in the Measurement and Modeling of Integrated Surface and Subsurface Hydrologic Systems	1:30–5:45 p.m.	Flint Hills Room
T29. Quaternary Landscape Evolution in the Midcontinent: Improved Insights from Geochronology	1:30–5:45 p.m.	Alcove Room

Geology Club Meet-Up	2–3 p.m.	McDowell Room
Posters/Exhibits Reception	4–5:45 p.m.	Big Basin/Kaw Nation Rooms
GSA North-Central Section All-Member Business Meeting	5:45–6 p.m.	Konza Prairie/Kings/Flint Hills Rooms
Keynote Presentation by Allyson K. Anderson Book	6–7 p.m.	Konza Prairie/Kings/Flint Hills Rooms

TUESDAY, 26 MARCH

Registration	6:30 a.m.–4:30 p.m.	Ballroom Prefunction
Thank-you Breakfast for GSA Campus Reps	7–8 a.m.	Big Blue River Office
Speaker Ready Room	7:30 a.m.–5:30 p.m.	Cottonwood Room
Exhibits Open	8 a.m.–6 p.m.	Big Basin/Kaw Nation Rooms

Morning Oral Technical Sessions

D4. Sedimentology and Stratigraphy	8 a.m.–noon	Kings Room
T10. Rhyolite/Granite Magmatism I	8 a.m.–noon	Konza Prairie Room
T14. Geoscience Outreach and Engagement II	8 a.m.–noon	Tuttle Room
T23. The Low Down on the High Plains: Geologic and Hydrogeologic Studies of the High Plains Aquifer	8 a.m.–noon	Flint Hills Room
T34. Pleistocene Records of Climatic and Environmental Change in the Rocky Mountains, Great Plains, and Midwest	8 a.m.–noon	Alcove Room

EVENT	TIME	LOCATION
Poster Sessions: Authors will be present from 4 to 5:45 PM		
D6. Geochemistry (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
D7. Hydrogeology (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
D8. Paleontology (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
T1. Conventional and Unconventional Reservoir Rocks: Advances in Experiments, Modeling, and Simulations (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
T3. Injection-Induced Seismicity in the U.S. Midcontinent: Where Are We after a Decade? (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
T8. Cenozoic Magmatic and Tectonic Processes of Colorado–New Mexico: Understanding Voluminous Volcanism during the Transition from Laramide Contraction to Rio Grande Rift Extension (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
T24. Karst Processes and Speleology (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
T32. Geology of the Greater Kansas City Area (Posters)	8:30 a.m.–5:45 p.m.	Big Basin/Kaw Nation Rooms
Geoscience Career Workshop Part 3. Cover Letters, Résumés, and CVs	9–10 a.m.	McDowell Room
John Mann Mentors in Applied Hydrogeology Program	noon–1:30 p.m.	McDowell Room
Afternoon Oral Technical Sessions		
D2. Environmental Geology	1:30–5:45 p.m.	Flint Hills Room
T4. Crustal Structure of the Midcontinent using Geophysical and Geodynamic Data	1:30–5:45 p.m.	Tuttle Room
T10. Rhyolite/Granite Magmatism II	1:30–5:45 p.m.	Konza Prairie Room
T24. Karst Processes and Speleology	1:30–5:45 p.m.	Alcove Room
T26. Midcontinent Paleoclimatology	1:30–5:45 p.m.	Kings Room
Posters/Exhibits Reception	4–5:45 p.m.	Big Basin/Kaw Nation Rooms
GSA South-Central, and Rocky Mountain Sections Open Meeting	5:45–6 p.m.	Konza Prairie/Kings/Flint Hills Rooms
Keynote Presentation by Robbie R. Gries	6–7 p.m.	Konza Prairie/Kings/Flint Hills Rooms
WEDNESDAY, 27 MARCH		
Registration	6:30–11 a.m.	Ballroom Prefunction
Speaker Ready Room	7:30–11 a.m.	Cottonwood Room
Exhibits Open	8 a.m.–noon	Big Basin/Kaw Nation Rooms
Morning Oral Technical Sessions		
D1. Energy Geology	8 a.m.–noon	Konza Prairie Room
D3. Quaternary Geology, Geomorphology, Paleoclimate, and Limnogeology	8 a.m.–noon	Alcove Room
D5. Structural Geology	8 a.m.–noon	Kings Room
T5. Mantle Dynamics and Lithospheric Deformation	8 a.m.–noon	Flint Hills Room

EVENT	TIME	LOCATION
Poster Sessions: Authors will be present from 10 to 11:45 AM		
D1. Energy Geology (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D2. Environmental Geology (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D3. Quaternary Geology, Geomorphology, Paleoclimate, and Limnogeology (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D4. Sedimentology and Stratigraphy (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D5. Structural Geology (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D9. Planetary Geology (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D10. Science and Society (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
D11. Volcanoes and Igneous Rocks (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
T4. Crustal Structure of the Midcontinent using Geophysical and Geodynamic Data (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
T9. Mafic and Ultramafic Magmatism in the Mid-Continent and Beyond (Posters)	8:30–11:45 a.m.	Big Basin/Kaw Nation Rooms
Posters/Exhibits Coffee	10–11:45 a.m.	Big Basin/Kaw Nation Rooms
Outstanding Student Presentation Awards Ceremony	11:45 a.m.–12:15 p.m.	Konza Prairie/Kings/Flint Hills Rooms
Exhibits Tear Down	noon–9 p.m.	Big Basin/Kaw Nation Rooms
FT9. Kansas River Alluvial Aquifer: Water Use and Real-Time Water-Level Monitoring (Field Trip)	1–5:30 p.m.	Hilton Garden Inn Manhattan
THURSDAY, 28 MARCH		
FT11. Geology of the Flint Hills, Kansas: Sea-Level and Climate Changes in the Permian (Field Trip)	8 a.m.–5 p.m.	Hilton Garden Inn Manhattan

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, 25 MARCH 2019

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 1

T1. Conventional and Unconventional Reservoir Rocks: Advances in Experiments, Modeling, and Simulations (GSA Continental Scientific Drilling Division; GSA Energy Geology Division)

8:00 AM, Hilton Garden Inn Manhattan, Konza Prairie Room

Behzad Ghanbarian, Chi Zhang, Reza Barati and Manika Prasad, Presiding

1-1	8:00 AM	Hasiuk, Franciszek*; Harding, Chris: 3D PRINTING MUDROCKS: EXPERIMENTS IN VALIDATING THE 3D-PRINTING PROCESS WHEN USING KAOLINITE CLAY AS A BUILD MATERIAL
1-2	8:20 AM	Agbogun, Henry M.D.*: A LABORATORY EXPERIMENT TO CHARACTERIZE CHANGES IN POROSITY, PERMEABILITY, AND WORMHOLE FORMATION IN A CARBONATE ROCK
1-3	8:40 AM	Ghanbarian, Behzad*; Ioannidis, Marios; Hunt, Allen G.: ESTIMATING WATER RELATIVE PERMEABILITY FROM CAPILLARY PRESSURE CURVE AND ELECTRICAL RESISTIVITY
1-4	9:00 AM	Achang, Mercy*; Pashin, Jack C.; Atekwana, Eliot; Xiaojun, Cui: HOW PARTICLE SIZE, MICROFRACTURES, AND MOISTURE CONTENT INFLUENCE THE PERMEABILITY OF CRUSHED SHALE SAMPLES
1-5	9:20 AM	Vera, Alexandre*; Nakata, Nori: ACOUSTIC ANISOTROPY CHARACTERIZATION OF WOODFORD SHALE AND ITS IMPACT ON HYDRAULIC FRACTURING: NUMERICAL SIMULATION OF FRACTURES
1-6	9:40 AM	Yang, Zhi*: RESOURCE POTENTIAL OF THE CONTINENTAL SHALE OIL IN CHINA
1-7	10:00 AM	Mews, Kim S.*; Alhubail, Mustafa M.; Barati, Reza Gh.: A REVIEW OF BRITTLENESS INDEX CORRELATIONS FOR UNCONVENTIONAL TIGHT AND ULTRA-TIGHT RESERVOIRS

1-8	10:20 AM	Djezzar, Sofiane*; Rasouli, Varmegh; Boualam, Aldjia; Rabiei, Minou: INTEGRATION OF SEISMIC CURVATURE AND ILLUMINATION ATTRIBUTES IN FRACTURE DETECTION ON A DIGITAL ELEVATION MODEL: METHODOLOGY AND INTERPRETATIONAL IMPLICATIONS
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1-9	10:40 AM	Hoffmann, Anna A.*; Thompson, Audrey; Borrok, David: THE ORIGIN AND EVOLUTION OF PRODUCED WATERS FROM THE TUSCALOOSA MARINE SHALE IN MISSISSIPPI AND LOUISIANA
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1-10	11:00 AM	Borrok, David M.*; Hoffmann, Anna A.; Wei, Mingzhen; Yang, Wan: HETEROGENEITY OF THE MINERALOGY AND ORGANIC CONTENT IN THE TUSCALOOSA MARINE SHALE
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1-11	11:20 AM	Zhao, Wenyu*: NUMERICAL SIMULATION OF OVERPRESSURE DURING SEDIMENTATION
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1-12	11:40 AM	Zheng, Han*; Sun, Xiaomeng; Wang, Pujun; Chen, Wei: CHARACTERISTICS AND FACTORS CONTROLLING RESERVOIR SPACE IN FELSIC LAVAS
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SESSION NO. 2

T8. Cenozoic Magmatic and Tectonic Processes of Colorado-New Mexico: Understanding Voluminous Volcanism during the Transition from Laramide Contraction to Rio Grande Rift Extension

8:00 AM, Hilton Garden Inn Manhattan, Tuttle Room

Gary S. Michelfelder, Jacob O. Thacker, Conor O'Dowd, Brooke E. Benz, Shari Kelley, Jason W. Ricketts and Jesse Kelsch, Presiding

2-1	8:00 AM	Puckette, James O.*; Wallace, Chester: EVIDENCE OF LATE PALEOZOIC LATERAL-SLIP FAULTING, FRONT RANGE, COLORADO
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2-2	8:20 AM	Thacker, Jacob O.*; Kelley, Shari; Karlstrom, Karl E.; Kendall, Jerry; Crow, Ryan S.: REGIONAL LARAMIDE DEFORMATION TIMING AND ITS IMPLICATIONS FOR CRETACEOUS-PALEOGENE TECTONIC PROCESSES
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2-3	8:40 AM	Nelson, W. John*; Elrick, Scott D.; Lucas, Spencer G.: LARAMIDE DEFORMATION IN THE FRA CRISTOBAL RANGE, SOUTHERN NEW MEXICO
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2-4	9:00 AM	Kelley, Shari*: THERMAL STRUCTURE AND EXHUMATION HISTORY OF THE SAN JUAN BASIN, NEW MEXICO	OF MESOPROTEROZOIC HALOGEN-RICH GRANITIC MAGMAS
2-5	9:20 AM	Sanabria, Mateo*; Gonzales, David A.: CONSTRAINT ON TIMING AND HISTORY OF LATE MESOZOIC TO CENOZOIC PLUTONS IN THE SAN MIGUEL MOUNTAINS, SOUTHWESTERN COLORADO	3-9 10:55 AM Piccione, Gavin G.; Rasbury, Troy; Elliott, Brent A.*; Kyle, J. Richard; Jaret, Steven J.; Acerbo, Alvin; Lanzirotti, Antonio; Northrup, Paul; Wooten, Kathleen; Parrish, Randall R.: GEOCHEMISTRY AND U-PB DATING OF FLUORITE AND NACRITE FROM THE ROUND TOP RHYOLITE: CONSTRAINTS ON MAGMATISM AND TECTONISM IN TRANS-PECOS TEXAS
	9:40 AM	BREAK	
2-6	9:55 AM	Rader, Mikaela A.*; Kempton, Pamela D.; Möller, Andreas: ZIRCON GEOCHRONOLOGY OF GRANULITE XENOLITHS FROM THE GERONIMO VOLCANIC FIELD AND IMPLICATIONS FOR TECTONIC EVOLUTION OF THE LOWER CRUST OF THE SW UNITED STATES	3-10 11:15 AM Mahaffey, Nova*; Finkelman, Robert B.: MICRO-MINERALOGY OF A SINGLE KEOKUK GEODE; HOW COMPLEX CAN IT GET?
2-7	10:15 AM	O'Dowd, Conor L.*; Michelfelder, Gary S.: PETROGENETIC EVOLUTION OF INTERMEDIATE MAGMAS FROM THE MOGOLLON-DATIL VOLCANIC FIELD DURING ARC-RIFT TRANSITION: INSIGHTS FROM WHOLE-ROCK GEOCHEMISTRY OF THE BEARWALLOW MOUNTAIN ANDESITE	3-11 11:35 AM Stearn, Madelaine M.*; Michelfelder, Gary S.: PUMICE COMPOSITIONS AND MINERAL CHEMISTRY OF BIMODAL PUMICE ERUPTED FROM LASCAR VOLCANO, CENTRAL VOLCANIC ZONE, CHILE
2-8	10:35 AM	Carsrud, Corbin T.*: PATTERNS OF CONGLOMERATE DEPOSITION ASSOCIATED WITH THE UNROOFING OF THE SOLITARIO DOME, PRESIDIO AND BREWSTER COUNTY, TEXAS	
2-9	10:55 AM	Rodriguez-Gonzalez, Georgina*; Ricketts, Jason W.: FAULT KINEMATICS AND PALEOSTRAIN ANALYSIS OF THE SOUTHERN RIO GRANDE RIFT: A COMPARATIVE STUDY TO THE CENTRAL RIFT	
SESSION NO. 3			
T11. Microanalyses, Macro Implications: Using Microscale Analyses to Decipher System-to-Regional Scale Processes			
8:00 AM, Hilton Garden Inn Manhattan , Kings Room			
Tenley J. Banik and Benjamin W. Hallett, Presiding			
3-1	8:00 AM	Bassoo, Roy*; Befus, Kenneth: MANTLE SUCCESSES AND RHYOLITE FAILURES OF PETROLOGY'S NEXT BIG THING: MINERAL-INCLUSION RAMAN THERMOBAROMETRY	4-1 8:05 AM Croskrey, Andrea*; Meyer, John; Suydam, Alysa: UTILIZING RESISTIVITY LOGS AND THE RWA METHOD TO MAP SALINITY ZONES IN THE EOCENE QUEEN CITY AQUIFER, CENTRAL TEXAS
3-2	8:20 AM	Castro, Adrian E.*; Wolfe, Oliver M.; Spear, Frank S.: CHALLENGING THE EQUILIBRIUM PARADIGM: QUARTZ-IN-GARNET RAMAN INCLUSION BAROMETRY AND TRACE ELEMENT THERMOMETRY REVEAL OVERSTEPPED GARNET NUCLEATION ACROSS TECTONIC REGIMES	4-2 8:25 AM Spencer, Kevin J*; Leal, Jesus: DEVELOPMENT OF BRACKISH GROUNDWATER RESOURCES IN THE LOWER RIO GRANDE VALLEY, TEXAS
3-3	8:40 AM	Hallett, Benjamin*: MULTIPLE GENERATIONS OF RUTILE INCLUSIONS IN METAMORPHIC GARNET FROM THE TAOS RANGE, NM: EVIDENCE FOR HIGH TEMPERATURE GRANULITE FACIES REGIONAL METAMORPHISM	4-3 8:45 AM Finch, Steve*: EXPLOITATION POTENTIAL FOR THE CAPITAN REEF COMPLEX AQUIFER, DELAWARE BASIN, SOUTHEASTERN NEW MEXICO AND FAR WEST TEXAS
3-4	9:00 AM	Day, Michael M.*; Duke, Edward F.: NEAR INFRARED SPECTROSCOPY OF WHITE MICA AND IMPLICATIONS FOR METAMORPHISM IN THE BLACK HILLS, SOUTH DAKOTA	4-4 9:05 AM Cameron, Katie A.*; Olafsen Lackey, Susan: HYDROGEOLOGIC FRAMEWORK OF EASTERN NEBRASKA – RECENT DEEPER (EARLY CRETACEOUS TO CENOMANIAN) EXPLORATION
3-5	9:20 AM	Wierman, Christopher*; Brueseke, Matthew E.: COPPER PARTITIONING IN MID-MIOCENE STEENS BASALT LAVAS FROM SOUTHEASTERN OREGON (USA): IMPLICATIONS FOR CU BEHAVIOR IN MAFIC MAGMAS	4-5 9:25 AM BREAK
3-6	9:40 AM	Velazquez-Santana, Liannie Coral*; McLeod, Claire: MAFIC ENCLAVES FROM THE CENTRAL ANDES: INVESTIGATING THE MAGMATIC PLUMBING SYSTEMS OF CONTINENTAL ARCS	4-6 9:40 AM Klager, Brian*: MODELING THE EFFECTS OF AN ARTIFICIAL RECHARGE PROJECT ON STORAGE VOLUME IN THE EQUUS BEDS AQUIFER IN SOUTH-CENTRAL KANSAS
	10:00 AM	BREAK	4-7 10:00 AM Stone, Mandy L.*; Klager, Brian; Ziegler, Andrew C.: WATER QUALITY IN THE LITTLE ARKANSAS RIVER AND EQUUS BEDS AQUIFER, SOUTH-CENTRAL KANSAS, 2001-16
3-7	10:15 AM	Benz, Brooke E.*; Michelfelder, Gary S.: MINERAL CHEMISTRY AND GEOTHERMOBAROMETRY OF ANDESITES FROM THE LAZUFRE COMPLEX, CENTRAL ANDES, CHILE: INSIGHTS INTO THE PRE-ERUPTIVE MAGMA PLUMBING SYSTEM	4-8 10:20 AM Juracek, Kyle E.*: STREAMFLOW ALTERATION IN KANSAS: ASSESSMENT, CAUSES AND HABITAT IMPLICATIONS
3-8	10:35 AM	Cayes, Hannah Beauchesne*; Palin, Richard M.; Holm-Denoma, Christopher S.: FORMATION OF TOPAZ-ENRICHED GNEISS IN THE EAST-CENTRAL COLORADO FRONT RANGE VIA CRYSTALLIZATION	10:40 AM CONCLUDING REMARKS
SESSION NO. 5			
T28. Exciting New Interdisciplinary Themes in Quaternary Geochronology (GSA Geochronology Division; GSA Geoarchaeology Division; GSA Quaternary Geology and Geomorphology Division)			
8:00 AM, Hilton Garden Inn Manhattan , Alcove Room			
Shannon A. Mahan, Sebastien Huot, Tammy M. Rittenour and Joel Q.G. Spencer, Presiding			
8:00 AM INTRODUCTORY REMARKS			
5-1	8:05 AM	Ruleman, Cal*; Mitchell, Mark D.; Turner, Kenzie J.; Gray, Harrison; Mahan, Shannon A.: GEOMORPHIC EVOLUTION OF THE LA BOTICA ARCHAEOLOGICAL SITE AND LA JARA CANYON: RELATIONSHIPS TO MIDDLE PLEISTOCENE LAKE ALAMOSA AND THE RIO GRANDE GORGE, SAN LUIS VALLEY, SOUTH-CENTRAL COLORADO, USA	

5-2	8:25 AM	Mahan, Shannon A.*; Meachen, Julie; Wood, John R.; Lovelace, David M.; Minckley, Thomas: OPTICALLY STIMULATED LUMINESCENCE DATING OF SEDIMENT IN NATURAL TRAP CAVE, WYOMING	TO COLLECT, ANALYZE AND INTERPRET DETRITAL ZIRCONS FROM THE LOWER RIO GRANDE RIVER FLOODPLAIN
5-3	8:45 AM	Shore, Dominique*; Rittenour, Tammy; Yanites, Brian J.: UNDERSTANDING DYNAMICS AND PATTERNS OF RIVER INCISION IN SOUTHERN TAIWAN	6-9 9 Smith, Lindsey Michelle*; Houston, W.S.: GROUND PENETRATING RADAR OF BAY MILLS POINT: STRATIGRAPHIC ARCHITECTURE AND BASE STRUCTURE
5-4	9:05 AM	Ataee, Nina*; Spencer, Joel Q.G.; Lacroix, Brice J.; Owen, Lewis A.: FANGLOMERATE DATING IN THE COACHELLA VALLEY, SOUTHERN CALIFORNIA: MULTI GRAIN AND SINGLE GRAIN OSL RESULTS	6-10 10 Sealander, Alessandra*; Pujana, Ignacio: CALCISPHERES FROM THE LOWER CRETACEOUS, NORTH TEXAS DUCK CREEK FORMATION
	9:25 AM	BREAK	6-11 11 Cook, Alex D.*; Stafford, Kevin W.: GIS-BASED CHARACTERIZATION AND SPELEOGENESIS OF GYPSUM KARST, ALABASTER CAVERNS STATE PARK, WOODWARD COUNTY, OKLAHOMA
5-5	9:40 AM	Cornachione, Harriet S.*; Rittenour, Tammy; Nelson, Michelle S.: HOLOCENE DUNE ACTIVITY IN SOUTHERN UTAH	6-12 12 Francis, David*; Kambesis, Patricia N.; Sumrall, Jeanne Lambert: MORPHOLOGICAL COMPARISON OF CAVES ON SAN SALVADOR ISLAND, THE BAHAMAS
5-6	10:00 AM	Huot, Sebastien*; Fleming, Ciara; Turner, Jonathan; Bourke, Mary: OPTICALLY STIMULATED LUMINESCENCE DATING OF POSTGLACIAL FLOODPLAIN SEDIMENTS IN IRELAND: IT IS LIKE ASSEMBLING A JIGSAW PUZZLE!	6-13 13 Atchison, Erin*: MODELING POTENTIAL BIOTIC PROCESSES IN THE GALE CRATER ON MARS USING LAKE SULFUR AND CARBON CYCLES
5-7	10:20 AM	Spencer, Trevor*; Spencer, Joel Q.G.: NEW CHRONOLOGICAL DATA ON THE FURTHEST EXTENT OF THE SOUTHEASTERN FLATHEAD LOBE OF THE CORDILLERAN ICE SHEET FROM LUMINESCENCE STUDIES OF GLACIO-DELTAIC AND MORaine DEPOSITS, FLATHEAD VALLEY, MONTANA	6-14 14 Murbarger, Brodey I.*; Gorman, Seth L.; Doss, Paul K.; Weinzapfel, Adam M.; Young, Ryan K.: QUANTIFYING VARIABLE EVAPOTRANSPIRATION ACROSS A RIPARIAN ZONE, MANISTEE NATIONAL FOREST, MICHIGAN
5-8	10:40 AM	Rittenour, Tammy*; Shulmeister, James; Thackray, Glenn D.: ILLUMINATING THE PAST IN MIDDLE EARTH: APPLICATION OF LUMINESCENCE DATING TO GLACIAL SEQUENCES IN THE SOUTHERN ALPS OF NEW ZEALAND	6-15 15 Thoresen, Haley*; Currie, Brian; Stubbins, Blake; Adedugbe, Emmanuel; Ries, Rosamie; Palko, Emma; Swearingen, Seth; Knutson, Ellie; Blake, Daniel; Nash, T. Andrew: BEDROCK TOPOGRAPHY OF THE FOUR-MILE CREEK BURIED VALLEY NEAR OXFORD, OHIO: IMPLICATIONS FOR GROUNDWATER RESOURCES AND LATE WISCONSIN LANDSCAPE EVOLUTION

POSTER TECHNICAL SESSIONS

SESSION NO. 6

T33. Undergraduate Student Research (Posters) (Council on Undergraduate Research Geosciences Division; GSA Energy Geology Division; GSA Geoarchaeology Division; GSA Geology and Health Division; GSA Soils and Soil Processes Division)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

6-1	1	Helm, Tyler R.*; Pope, John Paul: PRESERVATION OF MIDDLE PENNSYLVANIAN RADIOLARIANS IN EARLY DIAGENETIC CARBONATE CONCRETIONS	6-16 16 Broaddus, Carson L.*; Hannula, Kimberly A.; Krantz, Robert W.: THE EFFECT OF FAULT GOUGE ON FLUID FLOW, LISBON VALLEY, UT
6-2	2	Harrington, Matthew*; Widga, Chris; Wanamaker, Alan D.; Walker, Douglas: IDENTIFYING DIETARY AND MIGRATORY PATTERNS OF ILLINOIS <i>MAMMUTHUS PRIMIGENIUS</i> POPULATIONS USING ISOTOPE ANALYSIS OF CARBON, OXYGEN, AND STRONTIUM	6-17 17 Morgan, Tanner F.*; Hannula, Kimberly A.; Krantz, Robert W.: MAPPING SURFACE GEOCHEMICAL DATA WITH GIS IN LOWER LISBON VALLEY, UTAH
6-3	3	Perkins, Andrew J.*; Rittenour, Tammy: AGE CONTROL FOR THE BIG WATER MAMMOTH SITE, BIG WATER, UTAH	6-18 18 Broaddus, Connor M.*; Hannula, Kimberly A.; Gianniny, Gary L.; Krantz, Robert W.: THE IMPACT OF FACIES HETEROGENEITY ON FLUID STORAGE AND TRANSPORT IN THE LOWER BURRO CANYON FORMATION, LISBON VALLEY, UTAH
6-4	4	Manker, Jaclyn*; Teed, Rebecca: MOLLUSKS AS LAKE-LEVEL INDICATORS IN CRYSTAL LAKE, OHIO	6-19 19 Adams, Colleen A.*: ENHANCED BIOMETHANATION FROM MUNICIPAL SOLID WASTE (MSW): CONCENTRATION AND MESH SIZE EFFECTS OF ZERO VALENT IRON (ZVI)-MEDIATED HYDROGEN PRODUCTION
6-5	5	Judge, Lauren E.*; Arkle, Kelsey M.; Murphy, Kimberly A.; Stessman, Holly A.F.: GENETIC SEQUENCING FOR MEASURING BIODIVERSITY IN RECENT AND ANCIENT MARINE SEDIMENTS	6-20 20 Lashley, Victoria*; Straley, Charlotte; Sumrall, Jeanne Lambert; Kambesis, Patricia N.: ENVIRONMENTAL AND HUMAN EFFECTS OF PRODUCING AND USING COOKING OIL BIODIESEL
6-6	6	Kindley, Sierra N.*: IDENTIFYING SPATIAL VARIANCE IN THE GEOCHEMISTRY OF SHALLOW MARINE SEDIMENTS: A STUDY OF GRAND CAYMAN	6-21 21 Bell, Matt Ede*; Duthler, Brandon; Rocheford, M.Kathryn: REMOTE SENSING EVALUATION OF HUMAN IMPACTS ON THE LOWER MUSKEGON RIVER, MI
6-7	7	Saavedra, Marcelo A.*; Gonzalez, Juan Luis: MINERALOGICAL AND TEXTURAL CHARACTERIZATION OF MIXED-SOURCE EOLIAN SANDS ON THE SOUTH TEXAS SAND SHEET	6-22 22 Carlson, Claire*: Milbrandt, Eric; Cramer, Bradley D.: MACROALGAE AQUACULTURE IN SOUTHWESTERN FLORIDA AS A POTENTIAL TOOL FOR NUTRIENT SEQUESTRATION
6-8	8	Reger, Brandi; Hinckley, James; Flores, Adam; Perez, Julian; Flores, Madelyn; Trevino, Mia*; Garza, Rocky: THE ZIRCON PICKERS: AN UNDERGRADUATE GEOLOGY CLUB PROJECT	6-23 23 Perera, Sonasha G.*; Price, Jonathan D.: NEAR-SURFACE ALTERATION OF THE MOUNT SCOTT GRANITE, WICHITA MOUNTAINS, OKLAHOMA
			6-24 24 Jonas, Trey S.*; Stolzman, Kacie C.; Kairies-Beatty, Candace L.; Elswick, Erika R.: PRELIMINARY ASSESSMENT OF METALS PARTITIONING IN SOIL AND VEGETATION IN A SUBALPINE WETLAND (BISMARCK MINE, SOUTHWEST MONTANA)
			6-25 25 Klein, Dillon J.*; Dere, Ashlee L.: INVESTIGATING NUTRIENT SOLUBILITY AND RETENTION IN NO TILL AND TILLED AGRICULTURAL SOILS
			6-26 26 Grund, Denay M.*; Osborn, Alan; Dere, Ashlee L.: ARCHAEOLOGY AT GLACIER CREEK PRESERVE AND THE MOVEMENTS OF PEOPLE TRACKED THROUGH THE GEOLOGIC RECORD
			6-27 27 Borgetti, Adam J.*; Malone, David H.: DETRITAL ZIRCON GEOCHRONOLOGY OF LATE WISCONSIN GLACIAL ERRATICS

	FROM WESTERN INDIANA: IMPLICATIONS FOR PROVENANCE AND LOBE ADVANCE	6-45	45 Pate, Olivia L.*; DeAngelis, Michael T.: REFINING THE SOL-GEL SYNTHESIS METHOD OF INTERMEDIATE, NANO-SCALE OLIVINE
6-28	28 Ahumada, David*; Hartwig, Emily; Mugavero, Dominic; Page, Nicolina; Beierle Pavek, Karissa; Perna, Chris; Leonard, Karl W.: SEDIMENTOLOGICAL INTERPRETATIONS OF LANDSCAPE DEVELOPMENT IN THE BUFFALO RIVER VALLEY: MSUM REGIONAL SCIENCE CENTER IN WEST-CENTRAL MINNESOTA	6-46	46 Vick, Travis J.*; Kolawole, Folarin; Atekwana, Estella A.; Lao-Davila, Daniel; Costa, Aristides G.; Carpenter, Brett M.: FEEDBACK BETWEEN STRUCTURAL INHERITANCE, MAGMA-PLUMBING AND FAULTING IN A MULTIPHASE RIFT: THE SHIRE GRABEN, EAST AFRICAN RIFT
6-29	29 Tomlinson, Zachary Dean; Pfeifer, Lily S.*; Soreghan, Gerilyn: ROLE OF GLACIAL POLISH IN THE FORMATION OF LOESS DEPOSITS	6-47	47 Bryson, Alexis N.*; Kenderes, Stuart M.; Whittington, Alan: THROUGH A GLASS DARKLY; AN INVESTIGATION INTO THE VC-1 RHYOLITE, SW VALLES CALDERA, NM
6-30	30 Christner, Claire M.*; Dillon, Jeremy S.: THE CONTACT BETWEEN PEORIA LOESS AND THE GILMAN CANYON FORMATION IN THE KEARNEY AREA, SOUTH-CENTRAL NEBRASKA	6-48	48 Ludwig, Katherine G.*: GEOCHRONOLOGY OF THE CHINCHÍN FORMATION IN SOUTHERN ECUADOR
6-31	31 Pletnikoff, Paula M.*; Harvey, Jonathan E.: WHEN A RIVER DISAPPEARS: ANALYZING THE EFFECTS OF STREAM CAPTURE IN THE YUKON TERRITORY, CANADA	6-49	49 Parcher, Sara*; Maher, Harmon; Redfield, Tim F.: GEOLOGIC HISTORY OF A METAMORPHIC CORE COMPLEX IN NW SPITSBERGEN
6-32	32 Hartke, Emma R.*; Cramer, Bradley D.; Oborny, Stephan C.; Bancroft, Alyssa M.: EXAMINING THE COINCIDENCE OF ORGANIC AND CARBONATE CARBON ISOTOPE PERTURBATIONS DURING THE IREVIKEN EXTINCTION EVENT (WENLOCK, SILURIAN)	6-50	50 Bruce, Hallie R.*; Lacroix, Brice J.: STUDY OF FLUID INCLUSIONS THROUGH MICRO-THERMOMETRIC ANALYSIS OF QUARTZ-TOURMALINE MINERALIZED VEINS FROM AN OROGENIC AU-EPOSIT
6-33	33 Biebesheimer, Ellie J.*; Cramer, Bradley D.; Oborny, Stephan C.; Bancroft, Alyssa M.: PAIRED ORGANIC AND CARBONATE CARBON ISOTOPE CHEMOSTRATIGRAPHY OF THE MULDE EXCURSION FROM THE ALTAJME CORE, GOTLAND, SWEDEN	6-51	51 Bonin, Pieter G.*; Rougvie, James R.: LITHOLOGICAL CONTROLS OF FLUID FLOW DURING METAMORPHISM OF THE MAROON FORMATION IN THE WHITEROCK PLUTON CONTACT AUREOLE, COLORADO
6-34	34 Pearson, Joshua*: HOLOCENE PALEOCLIMATE RECORD OF NORTHERN IOWA RECORDED IN FLOWSTONE	6-52	52 Sailor, Matthew*; Faulkner, Melinda: REMOTE SENSING AND FIELD INVESTIGATIONS OF GEOLOGIC STRUCTURES IN THE OWL MOUNTAIN PROVINCE, FORT HOOD MILITARY INSTALLATION, TEXAS
6-35	35 Waltz, Robin*; Goswami, Arghya: PALEOCENE-EOCENE THERMAL MAXIMUM (PETM, 56 MA) RECONSTRUCTED PALEOBATHYMETRY WITH UPDATED OESBATHY 1.022	6-53	53 Pope, Jeffrey J.*; Maher, Harmon; Knapp, Kasie: MAPPING SLIM BUTTES STRATIGRAPHIC AND STRUCTURAL FEATURES BY UAV PHOTOGRAPHMETRY
6-36	36 Chapman, Jenna*; Kulhanek, Denise K.; Aiello, Ivano; Rosenthal, Yair; Holbourn, Ann: ELUCIDATING CHANGES IN CARBONATE PRODUCTION AND BURIAL DURING THE PLIO-PLEISTOCENE IN THE WESTERN EQUATORIAL PACIFIC (IODP SITE U1490) USING GEOCHEMISTRY AND SEDIMENTOLOGY	6-54	54 Clay, Hayden D*; Hannula, Kimberly A.; Krantz, Robert W.: ANALYZING AVERAGE FRACTURE SPACING (AFS) WITHIN THE BURRO CANYON FORMATION, LISBON VALLEY, UT
6-37	37 McLaughlin, Jack R.*; Kulhanek, Denise K.; Patterson, Molly O.; McKay, Robert M.; De Santis, Laura; Scientists, IODP Expedition 374: A SEDIMENTOLOGICAL AND GEOCHEMICAL APPROACH TO ELUCIDATING ANTARCTIC ICE SHEET EXTENT IN THE LATE MIocene TO PLIOCENE: INITIAL RESULTS FROM IODP SITE U1522 ON THE ROSS SEA CONTINENTAL SHELF	6-55	55 Wilkerson, Paul*; Mickus, Kevin L.; Pavlowsky, Robert T.: SEISMIC MONITORING FOR BLAST DISTURBANCES TO THREATENED AND ENDANGERED SPECIES IN MISSOURI
6-38	38 Martinez, Dominique*: Kulhanek, Denise K.; Ravelo, Ana Christina; Aiello, Ivano; Gibson, Kelly; Rosenthal, Yair; Holbourn, Ann: VARIATIONS IN CARBONATE PRODUCTION, DISSOLUTION, AND BURIAL IN THE MIocene OF THE WESTERN EQUATORIAL PACIFIC (IODP SITE U1489): AN INTEGRATED GEOCHEMICAL AND SEDIMENTOLOGICAL APPROACH	6-56	56 Molina, Zalma P.*; Nolte, Keith A.; Tsosfias, George: ANALYSIS OF EARTHQUAKE LOCATION ACCURACY IN THE WELLINGTON SEISMIC NETWORK
6-39	39 Hobart, Bethany Michelle*; Wolf, Michael B.: SCANNING ELECTRON MICROSCOPY OF LITHOPHYSAE AND 3-D VISUALIZATION OF THE INTERNAL STRUCTURE OF BANDED AGATE NODULES		
6-40	40 Gerhart, Paige K*: SPECTROSCOPIC FINGERPRINTING OF FLUORESCENT GEMS		
6-41	41 Reale, Jill R.*; Wolf, Michael B.: EFFECTS OF HEAT TREATMENT ON SPINELS AS DETERMINED BY VIS/NIR AND RAMAN SPECTROSCOPY AND XRD		
6-42	42 Bruck, Victoria J.*; Vinke, Ali Jo; Pope, John Paul: A COMPARISON OF A HOT SPOT BASALT FROM KILAUEA, HAWAII AND A CONTINENTAL BASALT FROM GRANTS, NEW MEXICO		
6-43	43 Strachan, Sean*: Pope, John Paul: PRELIMINARY INVESTIGATION OF HYDROTHERMALLY DEPOSITED CARBONATE VEINS WITHIN A GABBROIC ANORTHOSITE OF THE DULUTH COMPLEX, NORTHEASTERN MINNESOTA		
6-44	44 LeBlanc, Catherine G.*; Tarantolo, Mitchell S.; Vetter, Scott; Shervais, John: ORIGIN AND EVOLUTION OF QUATERNARY BASALTS: CAMAS PRAIRIE RIFT BASIN, CENTRAL SNAKE RIVER PLAIN, IDAHO		

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 7

T3. Injection-Induced Seismicity in the U.S. Midcontinent: Where Are We after a Decade? (GSA Continental Scientific Drilling Division; GSA Energy Geology Division; GSA Hydrogeology Division; GSA Geology and Society Division)

1:30 PM, Hilton Garden Inn Manhattan, Konza Prairie Room

Tandis Bidgoli and Jake Walter, Presiding

1:30 PM **INTRODUCTORY REMARKS**

7-1 1:35 PM Ausbrooks, Scott M.*; Kopper, Martha; Horton, Stephen P.: **HISTORY AND RESPONSE TO INDUCED SEISMICITY IN ARKANSAS WITH EXAMPLES OF PREVIOUS CASE STUDIES... WHAT WE HAVE LEARNED?**

7-2 1:55 PM Walter, Jake*; Rosson, Zachary D.: **ESTIMATING THE DECADAL-LEVEL SEISMIC HAZARD IN OKLAHOMA**

7-3 2:15 PM Rosson, Zachary D.*; Walter, Jake; Goebel, Thomas; Chen, Xiaowei: **AFTERSHOCK DENSITY DECAY IN SPACE AND TIME: OBSERVATIONS FOR OKLAHOMA AND IMPLICATIONS**

MONDAY, 25 MARCH

7-4	2:35 PM	Qin, Yan*; Pennington, Colin; Chen, Xiaowei: DIVERSE FOCAL MECHANISM FROM INDUCED EARTHQUAKE SEQUENCES IN OKLAHOMA	PEBBLE PUPS/EARTH SCIENCE SCHOLARS: INNOVATIVE OUTREACH METHODS THAT ENGAGE STUDENTS
	2:55 PM	BREAK	
7-5	3:10 PM	Carpenter, Brett M.*; Kolawole, Folarin; Kibikas, William; Reches, Ze'ev: SEISMIC REACTIVATION OF BASEMENT STRUCTURES IN OKLAHOMA	9-2 1:50 PM Lamm, Sarah N.*; Bosch, Jeanette S.; Bosch, Lynette D.: ONLINE OUTREACH PRESENTING GEOLOGY CAREERS TO UNDERREPRESENTED OR RURAL COMMUNITIES
7-6	3:30 PM	Ries, Rosamiel; Currie, Brian*; Skoumal, Robert; Brudzinski, Michael; Cunningham, J. Connor: INVESTIGATING OPERATIONAL PARAMETERS ASSOCIATED WITH EARTHQUAKES INDUCED BY HYDRAULIC FRACTURING IN OKLAHOMA	9-3 2:10 PM Diffendal, Jr., R.F.*: WITH A SPOONFUL OF SUGAR THE MEDICINE GOES DOWN: USING AN EXISTING INTEREST TO INITIATE GEOSCIENCE ENGAGEMENT
7-7	3:50 PM	Nolte, Keith A.*; Tsoflias, George: TIME-LAPSE OBSERVATIONS OF INJECTION-INDUCED EARTHQUAKE SHEAR-WAVE SPLITTING	9-4 2:30 PM Maxson, Julie*: A COMMUNITY-UNIVERSITY COLLABORATION FOR SOIL HEALTH IN URBAN AGRICULTURAL SETTINGS IN ST. PAUL, MN
7-8	4:10 PM	Barnes, Caitlin*; Halihan, Todd; Weingarten, Matthew: PRESSURE MIGRATION ASSESSMENT IN USGS AREAS OF POTENTIALLY INDUCED SEISMICITY	2:50 PM BREAK
SESSION NO. 8			
79. Mafic and Ultramafic Magmatism in the Mid-Continent and Beyond			
1:30 PM, Hilton Garden Inn Manhattan , Kings Room			
Matthew E. Brueseke and Pamela D. Kempton, Presiding			
8-1	1:30 PM	Hanger, Brendan Joseph*; Jollands, Michael C.; Yaxley, Greg M.; Hermann, Jörg: SHORT TIMESCALES BETWEEN MANTLE METASOMATISM AND KIMBERLITE ASCENT AS INDICATED BY DIFFUSION PROFILES IN GARNET CRYSTALS FROM SOUTH AFRICAN PERIDOTITE XENOLITHS	9-5 3:05 PM Westgaard, John*; Hanks, H. Douglas; Willging, Steve; Korf, Jason J.: HILL ANNEX PALEONTOLOGY PROJECT: ADAPTING TO A NEW HOME
8-2	1:50 PM	Dunn, Dennis*: A POSSIBLE ARCHEAN SOURCE FOR ARKANSAS DIAMONDS?	9-6 3:25 PM Caruthers, Andrew H.; Gillespie, Robb; Voice, Peter J.*: DINOSAUR PARK: THE MULTI-PURPOSE GEOLOGICAL PLATFORM AT WESTERN MICHIGAN UNIVERSITY
8-3	2:10 PM	Andrews, Graham D.M.*; Russell, J. Kelly; Cole, Brenna G.; Brown, Sarah R.: THE KIMBERLITE FACTORY: THE VOLCANIC NATURE OF KIMBERLITES	9-7 3:45 PM Honey, Jeannine*; Ivis, Dawn: USGS CORE RESEARCH CENTER: A GATEWAY TO SUBTERRANEAN DISCOVERY FOR GEOSCIENCE RESEARCH
8-4	2:30 PM	Kempton, Pamela D.*; Brueseke, Matthew E.; Rogers, KayLeigh: WHY DOES KANSAS HAVE KIMBERLITES – A REVIEW	9-8 4:05 PM Voice, Peter J.*; Grammer, Susan; Grammer, G. Michael; Harrison, William B.; Petcovic, Heather; Yellich, John A.: WESTERN MICHIGAN UNIVERSITY'S COREKIDS PROGRAM: K-12 OUTREACH USING STUDENT EDUCATORS
	2:50 PM	BREAK	
8-5	3:05 PM	Clark, Ryan J.*; Anderson, Raymond R.; Peate, David W.: THE NORTHEAST IOWA INTRUSIVE COMPLEX: A MAGMATIC CONUNDRUM RELATED TO THE MIDCONTINENT RIFT SYSTEM	
8-6	3:25 PM	Graettinger, Alison*; Bennis, Kadie; Reynolds, Emma: MAGMA SEDIMENT MINGLING AND POSSIBLE SEDIMENT MELTING IN A BASALTIC PHREATOMAGMATIC FISSURE ERUPTION	
8-7	3:45 PM	Peate, David W.*; Siebach, Jacob A.; Maruszczak, Alex D.; Burney, David: AN OVERVIEW OF THE ALKALINE OFF-AXIS MAGMATISM OF THE SNAEFELLSNES PENINSULA, ICELAND	
8-8	4:05 PM	Lee, Yung Ping*; Snow, Jonathan E.; Gao, Yongjun: PETROGENESIS OF GABBRO FROM ARCTIC GAKKEL MID-OCEAN RIDGE	
SESSION NO. 9			
T14. Geoscience Outreach and Engagement I (GSA Energy Geology Division; GSA Geology and Health Division; GSA Geology and Society Division)			
1:30 PM, Hilton Garden Inn Manhattan , Tuttle Room			
Lisa Anderson, Peter J. Voice, Beth A. Johnson, Susan Stover, Liane M. Stevens and Michael T. DeAngelis, Presiding			
9-1	1:30 PM	Veatch, Steven Wade; Hair, Jonathan David*; Salvat, Jenna M.; Elick, Benjamin Hayden; Cruickshanks, Alister; Bogart, Destin; Reeves, Theodore S.; Reher, Blake: THE PIKES PEAK	10-1 1:35 PM Tian, Lijun*; Rodriguez, Alexander; Weissling, Blake; Ackley, Stephen; Gao, Yongli: CONTROLS ON STABLE ISOTOPE VARIABILITY IN PRECIPITATION DURING 2015-2018 IN SAN ANTONIO, CENTRAL TEXAS
			10-2 1:55 PM Whittemore, Donald O.*; Butler, James J.; Wilson, B. Brownie: SPATIAL VARIATION IN INFLOW TO THE HIGH PLAINS AQUIFER IN KANSAS DERIVED FROM A NEW WATER-BALANCE APPROACH
			10-3 2:15 PM Hallum, Douglas R.*: OBSERVATIONS OF STREAM-GROUNDWATER INTERACTION AT PARCEL, RANCH, AND REACH SCALE, WEST-CENTRAL NEBRASKA
			10-4 2:35 PM Hager, John P.*; Halihan, Todd; Guertault, Lucie; Fox, Garey: LABORATORY ELECTRICAL RESISTIVITY IMAGING OF MACROPORE FLOW
			2:55 PM BREAK
			10-5 3:10 PM Kramer, Ariele*: 20 YEARS OF CONTINUOUS WATER-QUALITY MONITORING IN THE CHENEY RESERVOIR WATERSHED, SOUTH-CENTRAL KANSAS
			10-6 3:30 PM Kelly, Brian*: CONTINUOUS WATER-QUALITY SURROGATE MODELS
			10-7 3:50 PM Williams, Thomas J.*: USE OF SURROGATE MODELS AS AN EARLY WARNING SYSTEM FOR CHANGING WATER-QUALITY CONDITIONS IN THE KANSAS RIVER, KS
			10-8 4:10 PM Loiacomo, Dalila*; Schwartz, Benjamin F.; Nowlin, Weston: STATISTICAL ANALYSIS OF FACTORS CONTROLLING NONPOINT SOURCE POLLUTANT LOADS IN A SMALL URBAN WATERSHED, SAN MARCOS, TX, USA
			4:30 PM CONCLUDING REMARKS

SESSION NO. 11

T29. Quaternary Landscape Evolution in the Midcontinent: Improved Insights from Geochronology (GSA Geochronology Division; GSA Geoarchaeology Division; GSA Quaternary Geology and Geomorphology Division)

1:30 PM, Hilton Garden Inn Manhattan , Alcove Room

Paul Hanson, Joel Q.G. Spencer, Elizabeth G. Ceperley, Lucas K. Zoet and J.E. Rawling III, Presiding

11-1	1:30 PM	Layzell, Anthony L.*; Mandel, Rolfe D.: HOLOCENE LANDSCAPE EVOLUTION IN THE REPUBLICAN RIVER VALLEY, SOUTH-CENTRAL NEBRASKA
11-2	1:50 PM	Muttel, Sage*; McKay, Matthew P.: SEDIMENTARY PETROCHRONOLOGY FOR DETRITAL PROVENANCE ANALYSIS: U-PB AND RARE-EARTH ELEMENT COMPOSITIONS IN ZIRCON FROM THE MODERN MISSISSIPPI RIVER DRAINAGE BASIN
11-3	2:10 PM	Joeckel, R.M.*: FIRST REPORT OF WIDESPREAD POLYGONAL GROUND IN NEBRASKA AND ITS ASSOCIATION WITH EOLIAN LANDFORMS
11-4	2:30 PM	Ceperley, Elizabeth G.*; Marcott, Shaun A.; Rawling, J. Elmo; Zoet, Lucas K.; Zimmerman, Susan H.: THE ROLE OF PERMAFROST ON THE MORPHOLOGY OF AN MIS 3 MORaine FROM THE SOUTHERN LAURENTIDE ICE SHEET
	2:50 PM	BREAK
11-5	3:05 PM	Kerr, Phillip J.*; Tassier-Surine, Stephanie A.; Kohrt, Casey: TRENDS IN EOLIAN FEATURES ON THE IOWAN EROSION SURFACE
11-6	3:25 PM	Cyr, Andrew J.*; Nicovich, Sylvia Rose; Johnstone, Samuel; Hudson, Adam M.; Welch, Jessica Lynn; Ruleman, Cal: TEMPORAL AND SPATIAL PATTERNS OF DEGLACIATION AND ALLUVIAL FAN DEPOSITION IN THE SOUTHERN ROCKY MOUNTAINS, COLORADO, USA
11-7	3:45 PM	Headley, Rachel*; Hrpcek, Mark: GRAIN-SIZE VARIATION AMONG MORAINES OF A RETREATING LAURENTIDE ICE SHEET LOBE
11-8	4:05 PM	Nicovich, Sylvia Rose*; Schmitt, James G.; Klinger, Ralph E.; Mahan, Shannon A.: LATE PLEISTOCENE RECORD OF SURFACE-MODIFYING PROCESSES ON INACTIVE LOBES OF THE PIONEER DEBRIS-FLOW ALLUVIAL FAN, SAN LUIS VALLEY, COLORADO

TUESDAY, 26 MARCH 2019

MORNING
ORAL TECHNICAL SESSIONS

SESSION NO. 12

D4. Sedimentology and Stratigraphy

8:00 AM, Hilton Garden Inn Manhattan , Kings Room

Alison Graettinger, Presiding

12-1	8:00 AM	Anglim, Trey*; Obrist-Farner, Jonathan: EVOLUTION OF A SHELF LOCK-IN BASIN MARGIN: PRELIMINARY RESULTS FROM FLUME TANK EXPERIMENTS
12-2	8:20 AM	Evanoff, Emmett*: THE WHITE RIVER SEQUENCE, THE FIRST WIDESPREAD POST-LARAMIDE DEPOSITS OF THE NORTHERN HIGH PLAINS
12-3	8:40 AM	Foreman, Brady Z.*; Rasmussen, Dirk: PROVENANCE OF THE WASATCH FORMATION AND OHIO CREEK CONGLOMERATE IN THE PICEANCE CREEK BASIN (NORTHWEST COLORADO, U.S.A.)

12-4	9:00 AM	Vahling, Jessica*; Clark, C. Kit; Longman, Mark; Shanley, Keith: ASSESSING HYPOTHESES FOR THE ORIGIN OF THE GIANT LOWER NIOBRARA "CHANNEL" IN THE SOUTHERN POWDER RIVER BASIN, CAMPBELL AND CONVERSE COUNTIES, WYOMING
12-6	9:40 AM	Zheng, Dongyu*; Yang, Wan: PETROFACIES AND PROVENANCE OF UPPER PERMIAN-LOWERMOST TRIASSIC SANDSTONES, WUTONGGOU LOW-ORDER CYCLE, BOGDA MOUNTAINS, GREATER TURPAN-JUNGGAR RIFT BASIN, NW CHINA: IMPLICATIONS ON UNROOFING HISTORY OF NORTH TIANSHAN
	10:00 AM	BREAK
12-7	10:15 AM	Grosskopf, Jacob*; Vickers, Hunter; Lawhon, Hunter: UNLOCKING THE UPPER ATOKA SEDIMENTATION HISTORY USING THE ROCK PROPERTY OF MAGNETIC SUSCEPTIBILITY
12-8	10:35 AM	Mayo, Dave P.*; Testa, Maurice P.; Knubley, Christopher; Gutierrez, Pedro E.: MINERALOGY OF SIDERITE NODULES IN THE PENNSYLVANIAN COAL MEASURES OF WESTERN ARKANSAS
12-9	10:55 AM	Westjohn, David B.*; Harrison, William B.; Shaw, Nicholas D.: CARBONIFEROUS STRATIGRAPHY OF MICHIGAN REVISITED: IMPLICATIONS OF REVISED BEDROCK GEOLOGY MAPS OF CENTRAL JACKSON COUNTY, MICHIGAN, USA
12-10	11:15 AM	Zhao, Chen*; Hogan, John P.; Chapman, Alan D.; Obrist-Farner, Jonathan: U-PB DETRITAL ZIRCON GEOCHRONOLOGY OF PALEOZOIC CLASTICS OF THE OZARK PLATEAU: IMPLICATION FOR SEA-LEVEL FLUCTUATIONS AND FAR-FIELD TECTONICS
12-11	11:35 AM	Zambito, James J.*; Haas, Lisa D.: ORIGIN OF IRON OXIDE CEMENTS IN THE CAMBRIAN WONEWOC FORMATION SANDSTONE OF WISCONSIN

SESSION NO. 13

T10. Rhyolite/Granite Magmatism I

8:00 AM, Hilton Garden Inn Manhattan , Konza Prairie Room

Don F. Parker, Matthew E. Brueseke and Richard Hanson, Presiding

13-1	8:05 AM	Barnes, Melanie A.*; Sweet, Dustin E.; Ewing, Thomas E.: THE GRANITE RHYOLITE PROVINCE OF NORTH AMERICA
13-2	8:35 AM	Day, Warren*; du Bray, E.A.; McCafferty, Anne E.; Ayuso, R.; Lori, Lisa M.; Seeger, Cheryl: ORIGIN OF THE MESOPROTEROZOIC IGNEOUS ROCKS IN THE ST. FRANCOIS MOUNTAINS, MISSOURI, USA
13-3	9:05 AM	Chavez, Eduardo A.*: PETROLOGY AND GEOCHEMISTRY OF THE PRECAMBRIAN ILLINOIS BASEMENT AND RELATED ROCKS FROM ST. FRANCOIS MOUNTAINS, MISSOURI
13-4	9:25 AM	Hooker, Jacob C.*; Baird, Graham B.; Chumley, Adam S.; Muller, Simone R.: PALEOPROTEROZOIC IGNEOUS ROCKS OF THE COLORADO FRONT RANGE AS INDICATORS OF SUBDUCTION ZONE PROCESSES DURING BASIN CLOSURE AND ACCRETION
	9:45 AM	BREAK
13-5	10:00 AM	Newman, Jordan*: BASEMENT PENETRATING WELL CONTROLS TO ESTABLISH THE LLANO FRONT IN THE SOUTHERN GRANITE-RHYOLITE PROVINCE
13-6	10:20 AM	Wall, Corey J.*; Hanson, Richard E.; Schmitz, Mark D.; Price, Jonathan D.; Donovan, R. Nowell: AGE OF THE WICHITA IGNEOUS PROVINCE: INTEGRATING ZIRCON GEOCHRONOLOGICAL AND GEOCHEMICAL CONSTRAINTS ON VOLUMINOUS CAMBRIAN AULACOGEN

TUESDAY, 26 MARCH

13-7	10:40 AM	Hanson, Richard E.*; Wall, Corey J.; Schmitz, Mark D.; Price, Jonathan D.; Puckett, Robert E.; Donovan, R. Nowell: PRECISE U-PB ZIRCON GEOCHRONOLOGY FOR THE WICHITA IGNEOUS PROVINCE IN SOUTHERN OKLAHOMA: GEOLOGICAL CONTEXT AND TECTONIC IMPLICATIONS
13-8	11:00 AM	Price, Jonathan D.*: THERMODYNAMIC MODELING AND POTENTIAL CONSTRAINTS ON THE THERMAL HISTORY OF THE WICHITA GRANITE GROUP, OKLAHOMA
13-9	11:20 AM	Puckett, Robert E.*; Hanson, Richard; Price, Jonathan D.: SUBSURFACE CAMBRIAN FELSIC IGNEOUS ROCKS OF THE SOUTHERN OKLAHOMA AULACOGEN

SESSION NO. 14

T14. Geoscience Outreach and Engagement II (GSA Energy Geology Division; GSA Geology and Health Division; GSA Geology and Society Division)

8:00 AM, Hilton Garden Inn Manhattan , Tuttle Room

Lisa Anderson, Peter J. Voice, Beth A. Johnson, Susan Stover, Liane M. Stevens and Michael T. DeAngelis, Presiding

14-1	8:00 AM	Ali, Hendratta*; Prasad, Manika: GENDER TRENDS AMONG GEOSCIENCE FACULTY AND STAFF IN HIGHER EDUCATION: A REVIEW FROM TOP GEOSCIENCE INSTITUTIONS
14-2	8:20 AM	Schneider, Blair B.*; Holmes, Mary Anne: THE CRITICAL ROLE THAT WHITE MEN AND WOMEN PLAY IN CREATING AN EQUITABLE STEM WORKFORCE
14-3	8:40 AM	Holmes, Mary Anne*; Schneider, Blair Benson: BEGINNING BYSTANDER INTERVENTION STRATEGIES
14-4	9:20 AM	Stover, Susan G.*; Lanier, Hayley C.: WOMEN GEOSCIENTISTS AT STATE GEOLOGICAL SURVEYS
14-5	9:40 AM	Johnson, Beth A.*: THE INVISIBILITY OF WOMEN GEOSCIENTISTS IN CHILDREN'S NONFICTION BOOKS
	10:00 AM	BREAK
14-6	10:15 AM	Spinler, Kalyca N.*; Shroat-Lewis, René A.; DeAngelis, Michael T.: EARTH SCIENCE IN ACTION! ACTIVE LEARNING STRATEGIES IN PHYSICAL GEOLOGY LABS
14-7	10:35 AM	Cockrell, Jay Alan*; Petcovic, Heather L.: ASSESSING THE IMPACT OF 3D PRINTED TERRAIN ON TEACHING TOPOGRAPHY IN INTRODUCTORY EARTH SCIENCE LABS
14-8	10:55 AM	Stevens, Liane M.*; Faulkner, Melinda: INCREASING STUDENT ENGAGEMENT AND RECRUITMENT THROUGH MODIFICATION AND ADAPTATION OF TRADITIONAL SERVICE FIELD TRIPS
14-9	11:15 AM	McMillan, Margaret E.*; DeAngelis, Michael T.; Connely, Jeffrey B.: ALTERNATE FIELD CAMP ACTIVITIES AT THE UNIVERSITY OF ARKANSAS AT LITTLE ROCK THAT INCORPORATE DIGITAL TECHNIQUES AND LOCALITIES NEAR AND FAR

SESSION NO. 15

T23. The Low Down on the High Plains: Geologic and Hydrogeologic Studies of the High Plains Aquifer (GSA Hydrogeology Division; GSA Geology and Health Division)

8:00 AM, Hilton Garden Inn Manhattan , Flint Hills Room

Jon J. Smith and Randy L. Stotler, Presiding

15-1	8:00 AM	Korus, Jesse T.*; Joeckel, R.M.; Tucker, S.T.: GIANT, BOULDERY FLUVIAL BARS IN AN EXHUMED MIocene PALEOVALLEY, NEBRASKA PANHANDLE
15-2	8:20 AM	Divine, D.P.*; Cherry, Mikaela; Gilmore, Troy; Orvis, Kevin; Little, Nolan; Thorburn, John; Onnen, Mike: CHARACTERIZING AQUIFER PROPERTIES IN THE VICINITY OF A GROUNDWATER MOUND IN THE HIGH PLAINS AQUIFER, SOUTH-CENTRAL NEBRASKA

15-3	8:40 AM	Stotler, Randy L.*; Salley, Kaitlin A.; Johnson, William C.; Ryuh, Yon-Gyung: EVALUATING PLAYAS AS SOURCES OF RECHARGE TO THE HIGH PLAINS AQUIFER IN WESTERN KANSAS
15-4	9:00 AM	Brookfield, Andrea E.*; Hill, Mary C.; Rodell, Matthew; Loomis, Bryant; Stotler, Randy L.; Porter, Misty E.; Bohling, Geoffrey C.; Shankar, Siddharth; Stearns, Leigh A.; Smith, Jon J.: USING IN-SITU AND SATELLITE-BASED OBSERVATIONS TO STUDY THE HIGH PLAINS AQUIFER IN KANSAS
	9:20 AM	BREAK
15-5	9:35 AM	Smith, Jon J.*; Field, Holly L.; Joeckel, R.M.; Ludvigson, Greg A.; Möller, Andreas; Tucker, Shane T.; Layzell, Anthony L.: NEW APPROACH TO U-PB ZIRCON DATING AND CARBON ISOTOPE GEOCHEMISTRY OF PALEOSOLS IN THE MIocene OGALLALA GROUP, NORTH-CENTRAL NEBRASKA, USA
15-6	9:55 AM	Ludvigson, Greg A.*; Layzell, Anthony L.; Smith, Jon J.; Fox, David L.; Stotler, Randy L.: PALEOHYDROLOGIC EVALUATIONS OF CENOZOIC CALCRETES FROM THE HIGH PLAINS OF WESTERN KANSAS
15-7	10:15 AM	Möller, Andreas*; Smith, Jon J.; Ludvigson, Greg A.; McLean, Noah M.; Joeckel, R.M.; Hallman, Jason A.; Graham, Maggie; Sitek, Brian C.; Turner, Elijah: IMPROVING CHRONOSTRATIGRAPHY OF CONTINENTAL DEPOSITS WITH INTEGRATED GEOCHRONOLOGY AND GEOCHEMISTRY: CASE STUDIES ON THE MID-CONTINENT US HIGH PLAINS

SESSION NO. 16

T34. Pleistocene Records of Climatic and Environmental Change in the Rocky Mountains, Great Plains, and Midwest

8:00 AM, Hilton Garden Inn Manhattan , Alcove Room

Benjamin J. Laabs, B. Brandon Curry and Sébastien Huot, Presiding

16-1	8:00 AM	Slade, Noah*; Myrbo, Amy; MacGregor, Kelly: THE PLEISTOCENE-HOLOCENE TRANSITION IN EASTERN GLACIER NATIONAL PARK AS EVIDENCED BY LAKE SEDIMENT LITHOSTRATIGRAPHY
16-2	8:20 AM	Sortor, Rachel N.*; Ruleman, Cal; Goehring, Brent M.; Caffee, Marc W.; Hudson, Adam M.: THE CENTRAL CITY GRAVEL: COSMOGENIC NUCLIDE DATING OF A MID-PLEISTOCENE GLACIAL TILL IN THE FRONT RANGE, COLORADO
16-3	8:40 AM	Ruleman, Cal*; Hudson, Adam M.; Caffee, Marc W.; Goehring, Brent M.; Sortor, Rachel N.; Brugger, Keith A.; Frothingham, Michael G.; Nicovich, Sylvia Rose: MIS 12-11 (478-374 KA) ~ MIDDLE PLEISTOCENE GLACIATION OF THE SOUTHERN ROCKY MOUNTAIN-GREAT PLAIN REGION: LINKS TO LANDSCAPE EVOLUTION OF MAJOR CENTRAL NORTH AMERICAN RIVERS
16-4	9:00 AM	Brugger, Keith A.*; Laabs, Benjamin J.: LATE PLEISTOCENE GLACIATION IN THE MOSQUITO RANGE, COLORADO: CHRONOLOGY AND CLIMATE
	9:20 AM	BREAK
16-5	9:35 AM	Kohl, Barry*; Curry, B. Brandon; Miller, Merrell A.: FROM SOURCE TO SINK, LATE DEVONIAN ALGAL CYSTS (TASMANITES) DELIVERED TO THE GULF OF MEXICO DURING THE LAST GLACIATION: PART I, THE SINK
16-6	9:55 AM	Curry, B. Brandon*; Kohl, Barry; Miller, Merrell A.: FROM SOURCE TO SINK, LATE DEVONIAN ALGAL CYSTS (TASMANITES) DELIVERED TO THE GULF OF MEXICO DURING THE LAST GLACIATION: PART II, THE SOURCE
16-7	10:15 AM	Rovey, Charles W.*; Balco, Greg: STRATIGRAPHIC COMPLEXITY WITHIN THE EARLY AND MIDDLE PLEISTOCENE TILL SEQUENCE IN NEBRASKA AND WESTERN IOWA
16-8	10:35 AM	Dorale, Jeffrey A.*: A CHRONOLOGY OF BIG PLEISTOCENE EVENTS FROM CREVICE CAVE, MISSOURI

POSTER TECHNICAL SESSIONS

SESSION NO. 17

D6. Geochemistry (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

17-1 1 Tamborello, Brittney Lynn*; Philp, R. Paul: **GEOCHEMICAL COMPARISON OF OILS FROM UPPER PENNSYLVANIAN KANSAS RESERVOIRS, NW KANSAS TO WOODFORD SHALE SOURCE ROCKS: A CASE FOR LONG DISTANCE MIGRATION**

17-2 2 Balumi, Wakil Bunu*; Puckette, James: **INVESTIGATION OF CHANGES IN CRETACEOUS PALEOREDOX CONDITIONS DURING OCEAN ANOXIC EVENTS WITHIN THE COLORADO SECTION OF THE WESTERN INTERIOR SEAWAY**

17-3 3 Thompson, Leah N.*; Finkelman, Robert B.; Arbuzov, Sergey I.: **POSSIBLE GENESIS OF AN UNUSUAL MINERAL IN A SIBERIAN COAL**

17-4 4 Andrews, William*; Atekwana, Eliot; Morton, Dylan; Wu, Tao: **TEMPORAL VARIATION OF STABLE HYDROGEN AND OXYGEN ISOTOPES FOR PRECIPITATION IN STILLWATER, OKLAHOMA**

17-5 5 Chisholm, James*; Shonnard, Christine; Fryxell, J.E.; Currano, Ellen D.; Dunn, Regan E.; Foreman, Brady Z.; Dechesne, Marieke: **EVALUATION OF BULK ORGANIC CARBON ISOTOPE RECORDS FROM EARLY PALEOGENE STRATA IN THE HANNA BASIN (WYOMING U.S.A.) SPANNING THE PALEOCENE-EOCENE THERMAL MAXIMUM**

17-6 6 Key, Amanda*; Mayo, Dave P.; Testa, Maurice P.; Knubley, Christopher: **EXAMINATION OF AN ALTERNATIVE METHOD OF OPAL SYNTHESIS**

SESSION NO. 18

D7. Hydrogeology (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

18-1 7 Vega, Jordan*; Gouzie, Douglas: **GEOCHEMICAL ANALYSIS OF THE MAJOR SPRINGS OF THE OZARK AQUIFER WITHIN THE BIG FOUR REGION OF SOUTH-CENTRAL, MISSOURI**

18-2 8 Davis, Chantelle*: **EFFECTS OF Ephemeral FLOW ON BANK STORAGE, AQUIFER RECHARGE, AND WATER CHEMISTRY IN WESTERN KANSAS STREAMS**

18-3 9 Conrad, Lily*; Iqbal, Mohammad: **A SPATIAL AND TEMPORAL COMPARISON OF ION CHEMISTRY WITHIN THE CEDAR RIVER AND WEST OKOBOJI LAKE**

18-4 10 Stafford, Kevin W.*; Faulkner, Melinda: **GEOCHEMICAL CHARACTERIZATION OF SEDIMENT AND WATER CONTRIBUTIONS TO LAKE BELTON, CENTRAL TEXAS**

18-5 11 Zdanowski, Sarah E.*; Costigan, Katie H.: **GEOMORPHIC CLASSIFICATION OF INTERMITTENT RIVERS AND EPHEMERAL STREAMS IN DIFFERENT ECOREGIONS OF THE CONTINENTAL UNITED STATES**

18-6 12 Peterman, Cara*; Fryar, Alan; Edwards, Dwayne; Gorman-Sanisaca, Lillian; Gellis, Allen C.: **SENSITIVITY OF FLUVIAL SOURCE CONTRIBUTIONS IN A MIXED LAND-USE ENVIRONMENT: OTTER CREEK, FORT KNOX, KENTUCKY**

18-7 13 Engelbart, Tyler W.*; Gouzie, Douglas: **INVESTIGATION OF TUFA ON THE SPRING RIVER IN NORTHERN ARKANSAS**

18-8 14 Toth, Kevin J.*; Halihan, Todd: **GEOLOGIC CONTROLS ON EROSION AT COW CREEK ENGINEERED STREAM IN STILLWATER, OKLAHOMA**

18-9 15 Abesh, Bidisha Faruque*; Liu, Gamming; Vázquez-Ortega, Angélica; Gomezdelpcampo, Enrique: **MODELING AND UNDERSTANDING GROUNDWATER CONTAMINATION CAUSED BY CYANOTOXINS FROM HARMFUL ALGAL BLOOMS IN LAKE ERIE**

18-10 16 Tandy, Tyler A.*; Brown, Wesley: **2D ELECTRICAL RESISTIVITY AND HYDROLOGICAL SURVEY OF A SOLUTE PLUME'S MIGRATION PATHWAY THROUGH A SANDY LOAM WITHIN NACOGDOCHES COUNTY, TEXAS**

SESSION NO. 19

D8. Paleontology (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

19-1 17 Munoz, Christopher Joaquín*; Gonzalez, Juan L.; Cheng, Chu-Lin: **THE ROLE OF SAND THICKNESS AND PALEOTOPOGRAPHY ON PHREATOPHYTE AND NON-PHREATOPHYTE SPECIES DISTRIBUTION ALONG A NORTH - SOUTH TRANSECT OF THE SOUTH TEXAS SAND SHEET**

19-2 18 Hartley, James C.*: **SMALL MAMMAL EXTINCTION THROUGH THE PLEISTOCENE IN THE AMERICAN SOUTHWEST**

19-3 19 Khameiss, Belkasim*: Fluegeman, Richard; Muftah, Ahmed; Hoyt, William H.; Malone, Shawn J.; Grigsby, Jeffry D.; Bernot, Randall; Zubkuf, Tykhon; El Ebaidi, Saad K.: **CORAL-ALGAL COMPETITION ON TERTIARY REEFS: GREENHOUSE TO ICEHOUSE TRANSITIONS**

19-4 20 Polsak, Jake*; Nace, Keifer E.; Currano, Ellen; Foreman, Brady Z.; Dechesne, Marieke; Dunn, Regan E.: **VARIABILITY IN VEGETATION DENSITY ACROSS LATERALLY COEVAL STRATIGRAPHIC SECTIONS WITHIN THE HANNA BASIN, WY**

19-5 21 Nace, Keifer E.*; Polsak, Jake; Dunn, Regan E.; Foreman, Brady Z.; Currano, Ellen D.: **VEGETATION AND LITHOLOGY RESPONSE TO THE PALEOCENE-EOCENE THERMAL MAXIMUM IN THE HANNA BASIN, WY**

19-6 22 Buntin, Rogers C.C.*; Hasiotis, Stephen T.; Flraig, Peter P.: **EVALUATING THE ICHNOFOSSIL TEREDOLITES AS AN INDICATOR OF SALINITY AND PALEOENVIRONMENT IN THE GEOLOGICAL RECORD, EXAMPLES FROM CRETACEOUS STRATA KANSAS, COLORADO, UTAH**

19-7 23 Hanks, H. Douglas*: Westgaard, John; Haire, Scott A.: **THE SECOND EXTINCTION OF THE LATE CRETACEOUS COLERAINE FORMATION (CENOMANIAN) AT THE HILL-ANNEX MINE, CALUMET, MINNESOTA**

19-8 24 Hanks, H. Douglas*: Haire, Scott A.; Erickson, Bruce R.: **A NEW OCCURANCE OF *POLYACRODUS*, (CHONDROTHYES; POLYACRODONTIDAE) FROM THE LATE CRETACEOUS CARLILE SHALE (TURONIAN) OF GRANT COUNTY, SOUTH DAKOTA**

19-9 25 Byrum, Steven*; Lieberman, Bruce S.: **PHYLOGENETIC AND BIOGEOGRAPHIC PATTERNS IN SPATANGOID ECHINIDS FROM THE CRETACEOUS WESTERN INTERIOR SEAWAY**

19-10 26 Grove, Joseph*: Voegele, Kristyn K.; Ullmann, Paul Victor; Nellermoe, Ron: **ASSESSING THE IDENTITY OF A NEW *ALLOSAURUS* SKELETON FROM THE JURASSIC MORRISON FORMATION OF WYOMING**

19-11 27 Shell, Ryan*: Ciampaglio, C.N.; Palmer, William: **MARINE PLATYSOMID FISHES FROM THE EARLY PERMIAN OF KANSAS AND TEXAS**

19-12 28 Ciampaglio, C.N.*; Shell, Ryan; Ginter, Michal; Cicimurri, David J.: **SYMMORIIFORM SHARKS OF THE INDIAN CAVE SANDSTONE (PENNSYLVANIAN OF NEBRASKA) AND THEIR STRATIGRAPHIC CONTEXT**

19-13 29 Thomas, Christopher D.*; Thomka, James R.: **MICROFOSSILS FROM THE MIDDLE ORDOVICIAN ICEBOX MEMBER OF THE WINNIPEG FORMATION, NORTHERN BLACK HILLS,**

SOUTH DAKOTA: COMPARISON TO 'BUTTER SHALES' OF THE CINCINNATI ARCH REGION

19-14 30 Dorward, Rebecca Ashley*; Selden, Paul A.: A NEW HALKIERIID FROM THE MIDDLE CAMBRIAN SPENCE SHALE, UTAH

19-15 31 Thomka, James R.*: THE TRACE FOSSIL ZOOPHYCOS IN THE CAMBRIAN-AGE GALLATIN FORMATION, BIGHORN MOUNTAINS, WYOMING

SESSION NO. 20

T1. Conventional and Unconventional Reservoir Rocks: Advances in Experiments, Modeling, and Simulations (Posters) (GSA Continental Scientific Drilling Division; GSA Energy Geology Division)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

20-1 32 Djezzar, Sofiane*; Rasouli, Vamegh; Boualam, Aldjia; Rabiei, Minou: FRACTAL ANALYSIS OF 2-D FRACTURE NETWORKS OF NATURALLY FRACTURED RESERVOIRS ANALOG IN SOUTH ALGERIA

20-2 33 Rijfkogel, Luke*: INTEGRATED ANALYSIS OF SEISMIC ATTRIBUTES AND WELL-LOGS IN RESERVOIR CHARACTERIZATION: SEISMO-FACIES CLASSIFICATION AND RESERVOIR MAPPING

20-3 34 Orso, Joseph Francis*; Hasiuk, Franciszek; Dawson, M. Robert: CHARACTERIZING PORE SIZE DISTRIBUTIONS OF WELL-CUTTINGS UTILIZING WATER INTRUSION POROSIMETRY

20-4 35 Sholanke, Seyi D.*; Pashin, Jack C.; Meng, Jingyao: THE ROLE OF FAULTS IN THE MISSISSIPPI CANYON AREA, CENTRAL GULF OF MEXICO: POTENTIAL FOR MIGRATION OF CO₂ FROM THE STORAGE COMPLEX

20-5 36 Wei, Duan*; Zhang, Chi: A NEW METHOD LINKING NUCLEAR MAGNETIC RESONANCE RELAXATION DATA AND PORE SIZE IN CARBONATE

20-6 37 Peng, Ling*; Zhang, Chi: NMR SIGNALS OF UNSATURATED CLAY SEDIMENTS

SESSION NO. 21

T3. Injection-Induced Seismicity in the U.S. Midcontinent: Where Are We after a Decade? (Posters) (GSA Continental Scientific Drilling Division; GSA Energy Geology Division; GSA Hydrogeology Division; GSA Geology and Society Division)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

21-1 38 Chase, Brandon F.*; Kolawole, Folarin; Atekwana, Estella A.; Walter, Jake; Carpenter, Brett M.: THE SEISMIC HAZARD OF BURIED STRUCTURES AROUND THE WICHITA-AMARILLO UPLIFTS IN THE SOUTHERN OKLAHOMA AULACOGEN

21-2 39 Hollenbach, Andrew Michael*; Bidgoli, Tandis S.; Ansari, Esmail: SIMULATING INJECTION-PRESSURE RESPONSE WITH REAL-WORLD DATA AND A HIGH-RESOLUTION MODEL OF THE ARBUCKLE GROUP, SOUTH-CENTRAL KANSAS

21-3 40 Sundberg, Sarah A.*; Chen, Xiaowei; Walter, Jake; Qin, Yan: HYDRAULIC FRACTURING INDUCED SEISMICITY IN OKLAHOMA

21-4 41 Tsolias, George*; Nolte, Keith A.; Molina, Zalma P.; Proffitt, Hannah R.; Freking, Collin J.; Bidgoli, Tandis S.; Watney, W. Lynn: FAULT DETECTION IN SOUTH-CENTRAL KANSAS USING CLUSTER ANALYSIS OF INDUCED EARTHQUAKES

21-5 42 Ansari, Esmail*; Bidgoli, Tandis S.; Hollenbach, Andrew Michael: HISTORY MATCHING PRESSURE IN THE ARBUCKLE GROUP AQUIFER TO MANAGE MIDCONTINENT SEISMICITY

SESSION NO. 22

T8. Cenozoic Magmatic and Tectonic Processes of Colorado-New Mexico: Understanding Voluminous Volcanism during the Transition from Laramide Contraction to Rio Grande Rift Extension (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

22-1 43 Burberry, Caroline M.*; Hatfield, Marques E.; Lowe, James B.: ANALOG MODELING OF PENETRATIVE STRAIN AROUND LARAMIDE STRUCTURES AND IN THE LARAMIDE FORELAND

22-2 44 Hoffman, Charles F.*; Michelfelder, Gary S.: TIMING AND SOURCE OF HYDROTHERMAL FLUIDS IN THE MOGOLLON MINING DISTRICT, CATRON COUNTY, NM

22-3 45 Humphreys, Mary*; Michelfelder, Gary S.; Benz, Brooke E.: PETROLOGY AND U-PB ZIRCON GEOCHRONOLOGY OF OLIGOCENE AND MIOCENE RHYOLITE TUFFS FROM THE NORTHERN MOGOLLON-DATIL VOLCANIC FIELD

22-4 46 Wegmann, Mackenzie*; Michelfelder, Gary S.: CHARACTERIZING THE MANTLE BENEATH THE SOUTHERN RIO GRANDE RIFT: INSIGHTS FROM MINERAL CHEMISTRY OF PERIDOTITE XENOLITHS FROM THE POTRILLO VOLCANIC FIELD, NEW MEXICO

22-5 47 Constantopoulos, James T.*: RAILROAD MOUNTAIN, CHAVES COUNTY, NEW MEXICO: A GEOCHEMICALLY UNIFORM, SINGLE-PHASE MAFIC DIKE EMPLACED AT THE CRATONIC MARGIN

SESSION NO. 23

T24. Karst Processes and Speleology (Posters) (GSA Hydrogeology Division)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

23-1 48 Salinas, Robert B.*; Gao, Yongli; Tian, Lijun; Li, Yunxia: INVESTIGATION OF WATER QUALITY AND GROUNDWATER FLOW IN A KARST WATERSHED IN BLANCO COUNTY, TEXAS

23-2 49 Okpokho, Ini S.*; White, John Charles: DETECTION OF SINKHOLES AND OTHER KARST FEATURES USING ELECTRICAL RESISTIVITY TOMOGRAPHY IN RICHMOND, KENTUCKY

23-3 50 Emerson, Elizabeth M.*; Sumrall, Jonathan B.; Kambesis, Patricia N.: USING PETROLOGY TO DETERMINE MORPHOLOGY CONTROLS ON PASSAGE DEVELOPMENT IN RUSSELL CAVE, ALABAMA

23-4 51 Barnett, Rebecca M.*; Sumrall, Jonathan B.: ANALYSIS OF TUFACEOUS SPELEOTHEMS FROM BARBADOS

23-5 52 Howard, Larissa A.*; Sumrall, Jonathan B.; Kambesis, Patricia N.: LITHOLOGIC INFLUENCE ON THE FORMATION OF DOGWOOD CAVE IN WESTERN KENTUCKY, USA

23-6 53 Camelo, Jonathan M.*; Sumrall, Jonathan B.; Kambesis, Patricia N.: FLOOD BANK ANALYSIS OF CAVE SEDIMENT IN RUSSELL AND MONTAGUE CAVES IN NORTHEASTERN ALABAMA

SESSION NO. 24

T32. Geology of the Greater Kansas City Area (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 4 to 5:45 PM

Booth #

24-1 54 Layzell, Anthony L.*; Newell, K. David; Mandel, Rolfe D.; Dunham, John W.: PRELIMINARY SURFICIAL GEOLOGIC MAP OF MIAMI COUNTY, KANSAS

24-2 55 Gentile, Richard J.*; Daniels, Robyn L.: THE GEOLOGY OF SIGNBOARD HILL AND THE CONSTRUCTION OF THE CROWN CENTER COMPLEX

24-3 56 Gentile, Richard J.*; Daniels, Robyn L.: **THE TRAVELING GEOLOGY EXHIBIT - BRINGING GEOLOGY TO THE PEOPLE**

24-4 57 Gentile, Richard J.*; Daniels, Robyn L.: **GEOLOGIC MAP OF CASS COUNTY, MISSOURI**

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 25

D2. Environmental Geology

1:30 PM, Hilton Garden Inn Manhattan , Flint Hills Room,
Vahid Rahmani; Lucy Rose; and Matthew F. Kirk Presiding

1:30 PM **INTRODUCTORY REMARKS**

25-1 1:35 PM Abdelaal, Ahmed*; Sultan, Mohamed; Krishnamurthy, R.V.; Emil, Mustafa Kemal; Alshehri, Fahad: **ASSESSING THE ENVIRONMENTAL IMPACTS OF GOLD MINING ACTIVITIES, SUKARI MINE, CENTRAL EASTERN DESERT, EGYPT**

25-2 1:55 PM Pompeani, David P.*; McLauchlan, Kendra K.; Chileen, Barrie V.; Calder, W. John; Shuman, Bryan N.; Higuera, Philip E.: **THE BIOGEOCHEMICAL CONSEQUENCES OF LATE HOLOCENE WILDFIRES IN THREE SUBALPINE LAKES FROM NORTHERN COLORADO**

25-3 2:15 PM Tupper, Stephen*: **EXPLORATION OF THE UTILITY OF GEOLOGICAL ENGINEERING FOR MILITARY ENGINEERS**

25-4 2:35 PM Chileen, Barrie V.*; McLauchlan, Kendra K.; Higuera, Philip E.: **VEGETATION RESPONSE TO WILDFIRE AND CLIMATE FORCING IN A ROCKY MOUNTAIN LODGEPOLE PINE FOREST OVER THE PAST 2500 YEARS**

2:55 PM **BREAK**

25-5 3:10 PM Loecke, Terry D.*; Franz, Trenton; Burgin, Amy J.: **NEAR SURFACE SOIL OXYGEN DYNAMICS: PATTERNS FROM SIX YEARS OF HIGH FREQUENCY MONITORING**

25-6 3:30 PM Vega, Michael*; Brady, Adam; Lundeen, Evelyn; Mikkelsen, Kristin M.; Sharp, Jonathan O.: **SPATIAL AND TEMPORAL CONTROLS ON NITROGEN BIOGEOCHEMISTRY IN A PHOTOSYNTHETIC, REDOX STRATIFIED WETLAND BIOMAT**

25-7 3:50 PM Estrada Diaz Flores, Fabiola*: **TRACKING THE PRIMARY SOURCES OF FECAL POLLUTION IN THE RECHARGE AND CONTRIBUTING ZONES OF EDWARDS AQUIFER IN BEXAR COUNTY, TX USING MOLECULAR TOOLS**

25-8 4:10 PM Richardson, Christina*: **IMPACT OF LAND USE ON MICROBIAL COMMUNITIES IN THE GREAT BEND PRAIRIE AQUIFER**

SESSION NO. 26

T4. Crustal Structure of the Midcontinent using Geophysical and Geodynamic Data

1:30 PM, Hilton Garden Inn Manhattan , Tuttle Room

Kevin L. Mickus, Presiding

26-1 1:30 PM Delong, Ashley*; Mickus, Kevin L.: **THREE-DIMENSIONAL MAGNETOTELLURIC MODEL OF THE MIDCONTINENTAL RIFT AND PRECAMBRIAN TERRANES IN IOWA**

26-2 1:50 PM Carlson, Marvin P.*: **THE MIDCONTINENT RIFT SYSTEM AND THE NEMAHIA UPLIFT - A TECTONIC TANGLE**

26-3 2:10 PM Ratre, Pranshu*; Behm, Michael: **UNRAVELLING THE DEEP CRUSTAL STRUCTURE OF OKLAHOMA THROUGH 3D PROCESSING OF LOCAL EARTHQUAKE WAVEFORMS**

26-4 2:30 PM Vera, Alejandro*; Nakata, Nori: **EVIDENCE OF HYDROTHERMAL VEINS IN BASAMENT ROCKS, INTEGRATING POTENTIAL DATA WITH ROCK-PHYSICS AND P-IMPEDANCE SEISMIC INVERSION AND ITS**

26-5 2:50 PM Kinsland, Gary L.*: **KINEMATIC DECONSTRUCTIONS/RECONSTRUCTIONS FROM RODINIA TO THE PRESENT GULF OF MEXICO BASIN**

26-6 3:10 PM Rogers, KayLeigh*; Adam, Claudia; Kempton, Pamela D.: **A DETAILED ANALYSIS BETWEEN GROUND LOCAL GRAVITY KIMBERLITE SURVEY AND STATE-WIDE GRAVITY SURVEY WITHIN KANSAS**

SESSION NO. 27

T10. Rhyolite/Granite Magmatism II

1:30 PM, Hilton Garden Inn Manhattan , Konza Prairie Room

Don F. Parker, Matthew E. Brueseke and Richard Hanson, Presiding

27-1 1:30 PM Pearce, Julian A.*: **GRANITE (AND RHYOLITE) FINGERPRINTING REVISITED**

27-2 1:50 PM Werts, Kevin; Barnes, Calvin G.*; Memeti, Vali; Ratschbacher, Barbara: **WHY BULK-ROCK COMPOSITIONS SHOULD NOT BE USED TO DIRECTLY COMPARE GRANITES AND RHYOLITES**

27-3 2:10 PM Stern, Robert J.*: **THE NORTHERN ARABO-NUBIAN FELSIC LIP (NAN-FLIP) PROVINCE: AN EDIACARAN ANALOGUE FOR THE MID-CONTINENT GRANITE-RHYOLITE PROVINCE?**

27-4 2:30 PM Brueseke, Matthew E.*; Martin, David A.: **GLASS AND CRYSTAL CHEMISTRY FROM MIocene JARBIDGE RHYOLITE LAVAS (NEVADA, USA): CONSTRAINTS ON CRYSTAL-RICH RHYOLITE PETROGENESIS AND EFFUSIVE VOLCANISM**

2:50 PM **BREAK**

27-5 3:05 PM Quevy, Amber L.*; Price, Jonathan D.: **PLEISTOCENE SILICIC DOMES AND THEIR MINERAL POPULATIONS, EASTERN HIGH CASCADES, CENTRAL OREGON**

27-6 3:25 PM Parker, Don F.*: **CONTRASTING METALUMINOUS AND PERALKALINE SILICIC MAGMATISM IN THE TRANS-PECOS TEXAS MAGMATIC PROVINCE**

27-7 3:45 PM Elliott, Brent A.*; Ugurhan, Mert; Kyle, J. Richard: **CHARACTERIZATION OF THE MARBLE CANYON AND CAVE PEAK GRANITOIDS IN TRANS-PECOS, TEXAS: INSIGHTS INTO THE PETROGENESIS OF HIGH-SILICA Y+REE-ENRICHED MAGMAS**

27-8 4:05 PM White, John Charles*: **A REVIEW OF RECENT WORK ON THE GREEN TUFF (PANTELLERIA, SICILY CHANNEL RIFT ZONE, ITALY), A COMPOSITIONALLY STRATIFIED PANTELLERITIC TO TRACHYTIC IGNIMBRITE**

SESSION NO. 28

T24. Karst Processes and Speleology (GSA Hydrogeology Division)

1:30 PM, Hilton Garden Inn Manhattan , Alcove Room

Kaitlyn Gauvey and Jonathan B. Sumrall, Presiding

1:30 PM **INTRODUCTORY REMARKS**

28-1 1:35 PM Ford, Joshua Alexander*; Kulkarni, Harshad Vijay; Blank, Jennifer G.; Moser, Duane; Datta, Saugata: **LAVA TUBE SPELEOTHEMS AS PUTATIVE ANALOG EXTRATERRESTRIAL BIOMARKER TARGETS**

28-2 1:55 PM Jenson, Aubri*; Schwartz, Benjamin: **ESTIMATING AQUIFER PROPERTIES IN A COASTAL KARST BASIN FROM OBSERVATIONS AT THE WATER TABLE: QUINTANA ROO, MEXICO**

28-3 2:15 PM Sumrall, Jonathan B.*; Gauvey, K.L.: **KARST RECONNAISSANCE OF CENTRAL BARBER COUNTY, KANSAS**

28-4 2:35 PM Gauvey, K.L.*; Sumrall, Jonathan B.: **GYPSUM KARST SPELEOGENESIS IN SOUTH-CENTRAL KANSAS**

2:55 PM **BREAK**

TUESDAY, 26 MARCH

28-5 3:10 PM Hagni, Richard D.*; Hagni, Ann M.: **KARST OCCURRENCE, CHARACTER, AND PHOSPHATE MINERALOGY OF JAMAICA BAUXITES ORES**

28-6 3:30 PM Moore, Brittney Paige*: **THE EFFECTS OF LAND COVER CHANGE ON STORM WATER RUNOFF AT THE KISSING TREE DEVELOPMENT IN SAN MARCOS, TEXAS**

28-7 3:50 PM Roque Martinez, Lorena*; Schwartz, Benjamin F.: **EVALUATION OF STATISTICALLY-DESIGNED SURVEY METHODS FOR DETERMINING KARST FEATURE DENSITY IN A PORTION OF THE EDWARDS AQUIFER RECHARGE ZONE**

4:10 PM **CONCLUDING REMARKS**

SESSION NO. 29

T26. Midcontinent Paleoclimatology (GSA Continental Scientific Drilling Division)

1:30 PM, Hilton Garden Inn Manhattan , Kings Room

Karin Goldberg and Keith B. Miller, Presiding

1:30 PM **INTRODUCTORY REMARKS**

29-1 1:35 PM Nazworth, Caroline M.*; Blum, Mike: **EVALUATING MODELS FOR CRETACEOUS PALEODRAINAGE AND SEDIMENT ROUTING USING DETRITAL ZIRCON U-PB PROVENANCE AND GEOCHRONOLOGY IN THE COLORADO FRONT RANGE**

29-2 1:55 PM Allred, Isaac*; Blum, Mike: **INSIGHTS INTO EARLY PENNSYLVANIAN SEDIMENT ROUTING FROM DETRITAL ZIRCON U-PB AND HF ISOTOPIC DATA, DEEPWATER OUACHITA BASIN**

29-3 2:15 PM Ross, Jeffrey Bryce*; Ludvigson, Greg A.; Schroder-Adams, Claudia J.; Suarez, Marina B.: **ADDRESSING THE PROXY DATA-MODEL MISFIT REGARDING LOW OXYGEN ISOTOPIC VALUES OF CRETACEOUS ARCTIC PALEOPRECIPITATION: NEW DATA FROM THE BASTION RIDGE FORMATION, SVERDRUP BASIN OF NORTHERN CANADA**

29-4 2:35 PM Robertson, Clay Henry*; Ludvigson, Greg A.; Joeckel, R.M.; Kirkland, J.I.; Davis, Jeremy: **STABLE ISOTOPE PALEOHYDROLOGY OF THE LOWER CRETACEOUS (APTIAN) POISON STRIP SANDSTONE MEMBER OF THE CEDAR MOUNTAIN FORMATION, EASTERN UTAH**

29-5 2:55 PM Ludvigson, Greg A.*; Joeckel, R.M.; Layzell, Anthony L.; Möller, Andreas; Mandel, Rolfe D.: **EXPRESSION OF THE MIDDLE CENOMANIAN EVENT ALONG THE CRATONIC MARGIN OF THE CRETACEOUS WESTERN INTERIOR SEAWAY (WIS)**

3:15 PM **BREAK**

29-6 3:30 PM Norris, Nathaniel*; Lowell, Thomas V.; Diefendorf, Aaron F.; Breckenridge, Andy J.; Moretto, Michael: **EVIDENCE FOR INCREASED LATE GLACIAL AEOLIAN ACTIVITY FROM KYLEN LAKE, MINNESOTA**

29-7 3:50 PM Holmes, Stevie L.*: **CHARACTERIZATION OF SEDIMENTS DEPOSITED ON THE SIOUX RIDGE OF SOUTHEASTERN SOUTH DAKOTA DURING THE LATE CRETACEOUS PERIOD**

29-8 4:10 PM Miller, Keith B.*; McCahon, Thomas J.: **PALEOCLIMATE CONTRASTS BETWEEN THE LATEST PENNSYLVANIAN (VIRGILIAN) CYCLOTHEMS AND EARLIEST PERMIAN (WOLFCAMPIAN) CYCLOTHEMS OF KANSAS**

WEDNESDAY, 27 MARCH 2019

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 30

D1. Energy Geology

8:00 AM, Hilton Garden Inn Manhattan , Konza Prairie Room

Marc L. Buursink and Behzad Ghanbarian, Presiding

30-1 8:00 AM Halford, Daniel T.*: **ISOTOPIC ANALYSES OF HELIUM FROM WELLS LOCATED IN THE FOUR CORNERS AREA, SOUTHWESTERN, US**

30-2 8:20 AM Djezzar, Sofiane*; Rasouli, Vamegh; Boualam, Aldja; Rabiei, Minou: **FRACTOGRAPHY ANALYSIS OF CAMBRO-ORDOVICIAN RESERVOIRS THROUGH SURFACE ANALOG. MOUYDIR BASIN, ALGERIA**

30-3 8:40 AM Wang, Lan*; Lin, Tong: **A LACUSTRINE BLACK SHALE DEPOSITIONAL MODEL IN THE SONGLIAO BASIN, NORTHEASTERN CHINA**

30-4 9:00 AM Rinderknecht, Chancé*; Hasiuk, Franciszek: **SCANNING ELECTRON MICROSCOPY AND ENERGY DISPERSIVE SPECTROSCOPY PARAMETERS: ANALYZING SURFACE CHEMISTRY OF EKOFISK TOR FORMATION TO PREDICT PROPER WETTABILITY ALTERING IONIC COMPOSITIONS**

30-5 9:20 AM Wu, Yinye*; LV, Jialei; Fang, Xiang; Yang, Zhi; Wang, Lan: **SEDIMENTARY CHARACTERISTICS OF LACUSTRINE STROMATOLITE LIMESTONE AND ITS PETROLEUM GEOLOGICAL SIGNIFICANCE IN QAIDAM BASIN**

30-6 9:40 AM Fang, Xiang*; Guo, Xuguang; Wu, Yinye: **TIGHT OIL FORMATION AND DISTRIBUTION OF MIDDLE PERMIAN LUCAOGOU FORMATION IN JIMSAR SAG, JUNGJAR BASIN, NORTHWESTERN CHINA**

SESSION NO. 31

D3. Quaternary Geology, Geomorphology, Paleoclimate, and Limnogeology

8:00 AM, Hilton Garden Inn Manhattan , Alcove Room

Aubrey L. Hillman, Presiding

31-1 8:00 AM Ismail, Ahmed*; Stumpf, Andrew J.: **TOWARDS ENHANCED IMPLEMENTATION OF THE HIGH-RESOLUTION SEISMIC TECHNIQUES IN GEOLOGICAL AND HYDROGEOLOGICAL MAPPING**

31-2 8:20 AM Gao, Yongli*; Tan, Liangcheng; Nissen, Julia; Edwards, R. Lawrence; Cheng, Hai; Alexander, E. Calvin: **HYDROCLIMATE VARIABILITY IN THE MID-HOLOCENE BASED ON HIGH-RESOLUTION SPELEOTHEM RECORDS IN SE MINNESOTA**

31-3 8:40 AM Meier, Meagan*; Kasey, Warmington; Cori, Madsen; Headley, Rachel: **ANALYSIS OF RAVINE EROSION IN A SOUTHEASTERN WISCONSIN WATERSHED**

31-4 9:00 AM Hernandez, Elisandra*; Obrist-Farner, Jonathan; Kenney, William: **TOXIC HEAVY METAL POLLUTION IN MODERN SEDIMENTS NEAR LAKE IZABAL, EASTERN GUATEMALA**

9:20 AM **BREAK**

31-5 9:35 AM Fernandez, Alejandro*; Steinman, Byron A.; Stansell, Nathan D.; Abbott, Mark B.: **HYDROLOGIC AND ISOTYPE MASS-BALANCE MODELING OF SMALL LAKE SYSTEMS AND IMPLICATIONS FOR RECONSTRUCTING HOLOCENE**

POSTER TECHNICAL SESSIONS

SESSION NO. 34

D1. Energy Geology (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

Booth #

34-1	1 Schneider, Marcus*; Testa, Maurice P.; Mayo, Dave P.; Knubley, Christopher: PETROGRAPHIC ANALYSIS OF THE SMACKOVER FORMATION IN SOUTHERN ARKANSAS
34-2	2 Halverson, Brenna Ayn*; Kenderes, Stuart M.; Merriman, Jesse; Whittington, Alan: COOKING WITH SALT 2.0: THERMAL PERTURBATIONS CAUSED BY SALT DIAPIRS, AND THE RAMIFICATIONS FOR THE MATURATION OF SURROUNDING HYDROCARBONS
34-3	3 Toth, Kevin J.*; Puckette, James O.: INFLUENCE OF MISSISSIPPIAN PALEOTOPOGRAPHY AND PALEOSTRUCTURE ON DISTRIBUTION OF THE PENNSYLVANIAN LOWER SKINNER AND RED FORK SANDSTONES IN PARTS OF NOBLE, PAWNEE AND OSAGE COUNTIES
34-4	4 Kneedy, Sheyanne*; Wang, Yulun; Grammer, G. Michael: CORRELATING REBOUND HARDNESS TO MINERALOGY AND POROSITY OF CARBONATE RESERVOIRS- APPLICATION TO GROUNDWATER AQUIFERS AND PETROLEUM RESERVOIRS

SESSION NO. 35

D10. Science and Society (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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35-1	5 Alotaibi, Mislat*; Aly, Mohamed H.; Nanis, Hafid: FUZZY LOGIC MODELING FOR SUSTAINABLE URBAN DEVELOPMENT IN MAKKAH, SAUDI ARABIA
35-2	6 Wethington, Conn*; Pashin, Jack C.: GEOLOGIC FRAMEWORK OF AN ANTHROPOGENIC CARBON CAPTURE AND SEQUESTRATION SYSTEM AT THE KEMPER COUNTY ENERGY FACILITY, EAST-CENTRAL MISSISSIPPI
35-3	7 Artz, Joe*: PRESERVATION OF HOLOCENE ALLUVIAL SEQUENCES BENEATH HEAVILY DEVELOPED CITYSCAPES IN IOWA: IMPLICATIONS FOR THE ARCHAEOLOGICAL POTENTIAL OF "DISTURBED" URBAN LAND
35-4	8 Schoenfeld, Taylor Earl*: EchoHawk, Barbara: DIGGING FOR DIAMONDS: COULD COLORADO FOLLOW THE ARKANSAS MODEL?
35-5	9 Evans, Kevin Ray*: HUGH MILLER (1802-1856), SCOTTISH GEOLOGIST AND ADVENTURE WRITER
35-6	10 Mikulic, Donald G.*; Kluessendorf, Joanne: FIRST GEOLOGICAL MAP OF MILWAUKEE AND ITS ROLE IN THE DISCOVERY OF FOSSIL REEFS

SESSION NO. 36

D11. Volcanoes and Igneous Rocks (Posters)

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

Booth #

36-1	11 Ohrmundt, Sierra C.*; Hanson, Richard E.; Caves, Lindsay R.: COMPLEX SHALLOW-LEVEL ANDESITIC MAGMA PLUMBING SYSTEMS AND MAGMA/SEDIMENT INTERACTION IN A MESOPROTEROZOIC VOLCANIC ARC SETTING IN NAMIBIA
36-2	12 Drop, Stephen*; van Alderwerelt, Brennan; Peate, David W.; Ukkstins, Ingrid: PETROLOGY & GEOCHEMISTRY OF THE EL NEGRILLAR VOLCANIC FIELD, NORTHERN CHILE

SESSION NO. 37**D2. Environmental Geology (Posters)**

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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37-1 13 Montano, Jonathan*; Cole, Callie; Harvey, Jonathan E.: **QUANTIFICATION OF RESIDUAL URANIUM IN SOIL AT THE DURANGO DOG PARK, DURANGO, COLORADO**

37-2 14 Bostick, Wyatt Andrew*; Bell, Matt Ede; Rocheford, M. Kathryn: **APPLIED TERRESTRIAL PHOTGRAMMETRY OF SOIL SLUMPS ON ASHMUN CREEK, SAULT SAINTE MARIE, MI**

37-3 15 Horn, Jonathon*; Paladino, Patrick; McMillan, Margaret E.: **ANALYSIS OF SHORT-TERM CHANGES IN BANK EROSION AND SEDIMENT DISTRIBUTION IN COLEMAN CREEK, LITTLE ROCK, AR**

37-4 16 Reger, Brandi*; Gonzalez, Juan L.; Hardage, Sarah: **AN ISOLATED SAND DUNE'S RESPONSE TO SEVERE DROUGHT IN SOUTHERN BROOKS COUNTY, TEXAS**

37-5 17 Faulkner, Melinda*; Stafford, Kevin W.: **HEAVY METAL CONCENTRATIONS IN BIG CYPRESS AND BLACK CYPRESS BAYOUS, CADDY LAKE WATERSHED, TEXAS**

SESSION NO. 38**D3. Quaternary Geology, Geomorphology, Paleoclimate, and Limnogeology (Posters)**

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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38-2 19 Barber, Jeneane T.*; EchoHawk, Barbara: **SAND AND SAGE: A MATCH MADE IN WYOMING**

38-3 20 Evanoff, Emmett*; Wanless, Harold R.; Brill, Kathleen A.: **GEOLOGIC CHANGES IN THE WHITE RIVER BADLANDS, SOUTH DAKOTA, AS RECORDED BY THE HISTORICAL PHOTOGRAPHS OF HAROLD ROLLIN WANLESS**

38-4 21 Kopera, Kristin*; Teed, Rebecca: **VEGETATION SENSITIVITY DURING THE MID-HOLOCENE WARMING IN WESTERN OHIO**

38-5 22 Tassier-Surine, Stephanie*; Kerr, Phillip J.; Goff, Kathleen R.; Lefler, Nick: **APPLICATION OF PORTABLE XRF TO STRATIGRAPHIC STUDIES AND EVENT TIMING IN IOWA GLACIAL DEPOSITS**

38-6 23 Schilling, Keith*; Rovey, Charles; Kerr, Phillip J.; Tassier-Surine, Stephanie: **THE FREMONT CHANNEL IN WESTERN IOWA: A POSSIBLE ARCHIVE OF EARLY AND MIDDLE PLEISTOCENE GLACIATIONS IN THE MIDWESTERN U.S.**

38-7 24 De La Garza, Randolph G.; Gonzalez, Juan L.*; Shen, Zhixiong: **THE RAYMONDVILLE FLUVIAL SYSTEM: A SEDIMENTARY UNIT WITH AN IDENTITY CRISIS**

38-8 25 Wiemer, Ali M.*; Steinman, Byron A.; Abbott, Mark B.; Wagner, Zachary C.; Shae, Christopher J.; Woods, Arielle: **HOLOCENE CLIMATE VARIABILITY OF THE SOUTHERN ALBERTA ROCKY MOUNTAINS RECONSTRUCTED USING OXYGEN ISOTOPe ANALYSIS OF CLOSED-BASIN LAKE SEDIMENT**

38-9 26 Hillman, Aubrey L.*; St. Romain, Scott: **RECORDS OF LAKE LEVEL CHANGE FROM THREE PONDS IN SE ALABAMA**

38-10 27 Feitl, Melina*; Benito Granell, Xavier; Fritz, Sherilyn C.; Steinitz-Kannan, Miriam; Mosquera, Pablo V.: **COMPARING ANDEAN AND INTERANDEAN LAKES AT DECADAL AND CENTENNIAL SCALES**

38-11 28 Brown, Victoria*; Mihindukulasooriya, Lorita; Campbell, Alisha: **MEASUREMENTS OF MICROBIAL AND ALGAL COMMUNITIES ASSOCIATED WITH HARMFUL ALGAL BLOOMS IN OLD WOMEN CREEK NATIONAL ESTUARY OF LAKE ERIE USING REFLECTANCE SPECTROSCOPY AND QUANTITATIVE PCR**

38-12 29 Richmond, Dean R.*; Lupia, R.; Philippe, Marc: **FIRST REPORT OF THE FOSSIL WOOD GENUS *PICEOXYLON* FROM THE NORTH AMERICAN JURASSIC (MORRISON FORMATION, CENTRAL MONTANA)**

SESSION NO. 39**D4. Sedimentology and Stratigraphy (Posters)**

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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39-1 30 Hernández González, Paola N.*; Santos-Mercado, Hernan; Ramirez, Wilson: **PLIO-PLEISTOCENE SEA-LEVEL CURVE OF THE DUVERGÉ PROVINC IN THE DOMINICAN REPUBLIC**

39-2 31 Shonnard, Christine*; Chisholm, James; Zambito, James J.; Foreman, Brady Z.; Curran, Ellen D.; Dechesne, Marieke; Dunn, Regan E.: **EVALUATING CYCLES IN DISTAL FLOODPLAIN DEPOSITION WITHIN THE EARLY PALEOGENE HANNA BASIN, WYOMING, USA**

39-3 32 Welch, Jessica Lynn*; Foreman, Brady Z.; Malone, David H.; Craddock, John P.: **COMPREHENSIVE PROVENANCE ANALYSIS OF THE EARLY PALEOGENE STRATA IN THE BIGHORN BASIN (NORTHWEST WYOMING, U.S.A.)**

39-4 33 Nogueira, Xavier Rojas*; Semeraro, Anthony; Sharman, Glenn; Foreman, Brady Z.; Curran, Ellen; Dunn, Regan E.; Dechesne, Marieke: **PROVENANCE CHANGE IN FLUVIAL AND DELTAIC SANDSTONE BODIES ACROSS THE PALEOCENE-EOCENE BOUNDARY WITHIN THE HANNA BASIN**

39-5 34 Andrews, William*; Petralia, Joseph; Puckette, James: **DETERMINING MINERALOGY TO IDENTIFY STRATIGRAPHIC UNITS IN A HIGHLY-WEATHERED ZONE, GRAPE CREEK ECOLOGICAL PARK, CAÑON CITY, COLORADO**

39-6 35 Tunin, Zachery Thomas*: **U-Pb DETRITAL ZIRCON GEOCHRONOLOGY AND PROVENANCE ANALYSIS OF THE BLUEJACKET/BARTLESVILLE SANDSTONE, CHEROKEE PLATFORM, OKLAHOMA**

39-7 36 Vickers, Hunter*; Lawhon, Hunter; Grosskopf, Jacob: **UPPER ATOKA OUTCROP TO SUBSURFACE CORRELATION AND SEDIMENTATION HISTORY USING MAGNETIC SUSCEPTIBILITY**

39-8 37 Stevens, Joshua K.*: **FAYETTEVILLE AND IMO SHALES: PUNCTUATED UPPER MISSISSIPPIAN SHALLOWING UPWARD SEQUENCE, SOUTHERN OZARK REGION, NORTHERN ARKANSAS**

SESSION NO. 40**D5. Structural Geology (Posters)**

8:30 AM, Hilton Garden Inn Manhattan , Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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40-1 38 Wzientek, Eric J.*; Lancaster, Van; Gaco, Cameron; Krantz, Robert W.; Hannula, Kimberly A.: **DETERMINING THE BASEMENT FAULT STRUCTURE OF THE HOGBACK MONOCLINE IN NORTHWEST, NM USING FRACTURE PATTERNS AND GEOMECHANICAL MODELING**

40-2 39 Peterson, Alan E.*; Smith, Jon J.; Layzell, Anthony L.; Ludvigson, Greg A.: **POTENTIAL GEOMORPHIC INDICATORS OF STRUCTURAL DEFORMATION FROM LIDAR AND HIGH RESOLUTION IMAGERY IN EAST-CENTRAL KANSAS**

40-3 40 Beresh, Stephen C.M.*; Ismail, Ahmed; Abdelsalam, Mohamed: **STRUCTURAL ANALYSIS OF THE MID-EGYPTIAN TECTONIC EXTENSIONAL CORRIDOR (METEC)**

SESSION NO. 41**D9. Planetary Geology (Posters)**

8:30 AM, Hilton Garden Inn Manhattan, Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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41-2 42 Tierney, Charlotte P.*; Collins, Joe D.: **MAPPING OF THE ORSON WELLES SOUTHERN FEATURE, XANTHE TERRA, MARS**

41-3 43 Gatewood, Michael*; Testa, Maurice P.; Knubley, Christopher: **AN ANALOG COMPARISON BETWEEN THE PAHRUMP HILLS, GALE CRATER, MARS TO VOLCANOGENIC FLUVIAL-LACUSTRINE ENVIRONMENTS IN ICELAND**

SESSION NO. 42**T4. Crustal Structure of the Midcontinent using Geophysical and Geodynamic Data (Posters)**

8:30 AM, Hilton Garden Inn Manhattan, Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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42-1 44 Firkins, Max*; Kolawole, Folarin; Marfurt, Kurt J.; Carpenter, Brett M.: **BASEMENT DEFORMATION NEAR THE TERMINATION OF A FAILED MAGMATIC CONTINENTAL RIFT: INSIGHTS FROM NORTH-CENTRAL OKLAHOMA**

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SESSION NO. 43**T9. Mafic and Ultramafic Magmatism in the Mid-Continent and Beyond (Posters)**

8:30 AM, Hilton Garden Inn Manhattan, Big Basin/Kaw Nation Rooms

Authors will be present from 10 to 11:45 AM

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- 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.
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- Initiate first aid if appropriate, so trained and necessary.
- Be as observant as possible in order to communicate to emergency staff.

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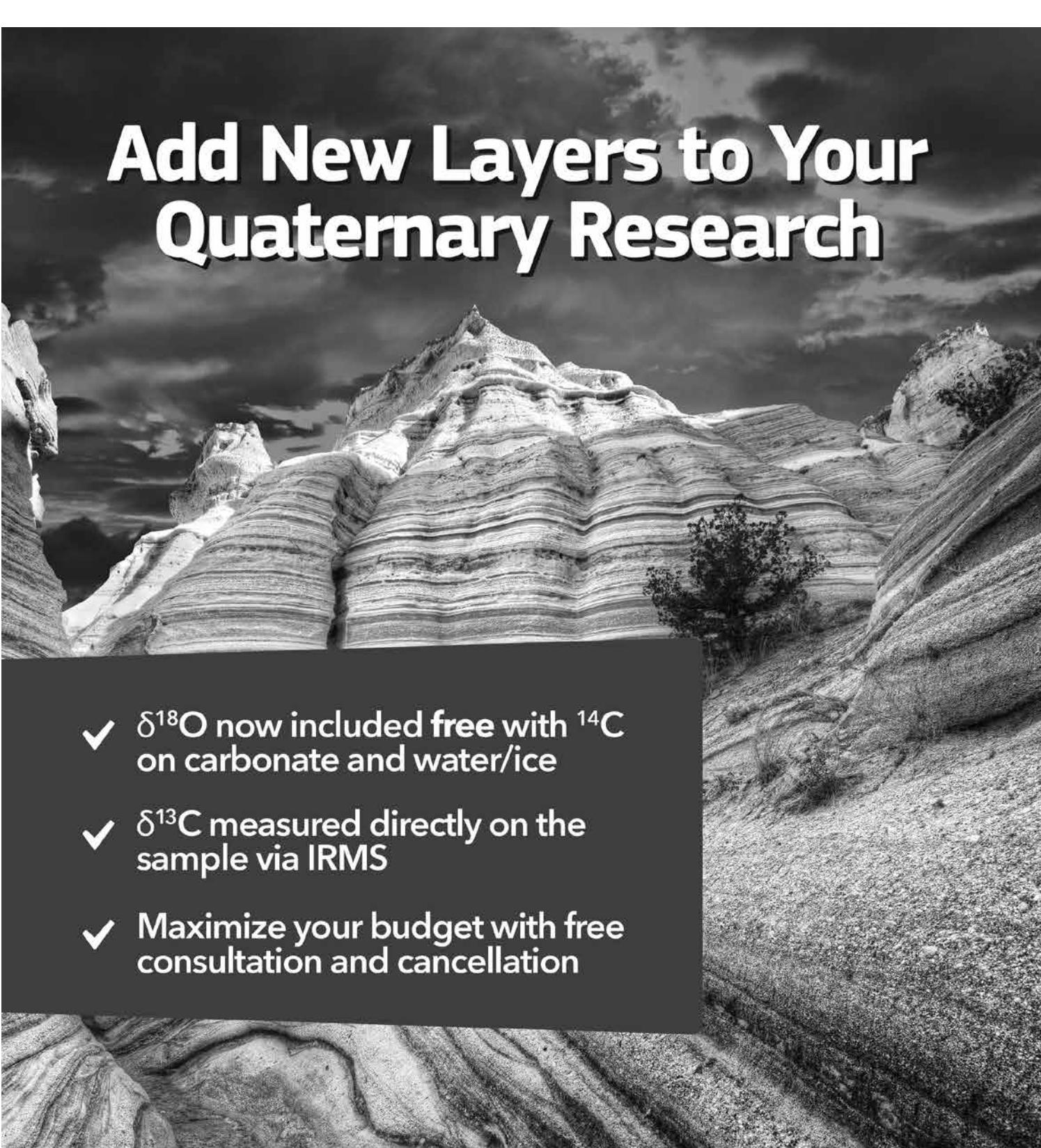
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Always remember that if it is a life-threatening emergency, dial 9-1-1. If you are within the meeting venue or hotel, it is helpful to have someone notify a staff member or building employee if possible to avoid delays with emergency responders.

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