

# 2019

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# PROGRAM

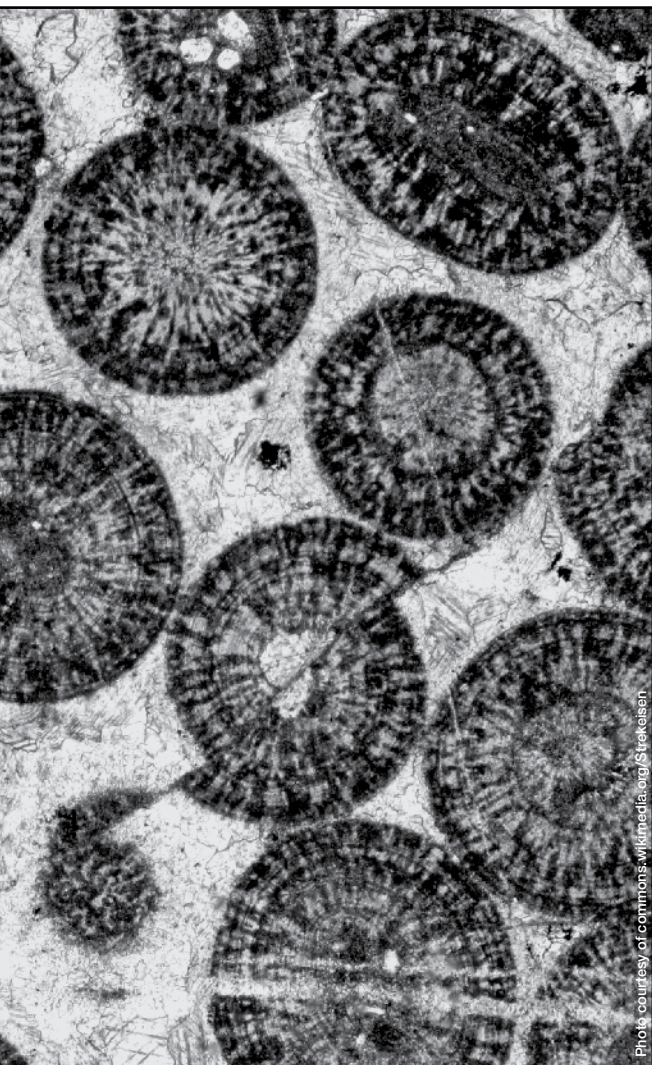


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## South-Central/ North-Central/ Rocky Mountain Joint Section Meeting

25–27 March

Manhattan, Kansas, USA

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

*Edited by Gary D. Rosenberg and Renee M. Clary*

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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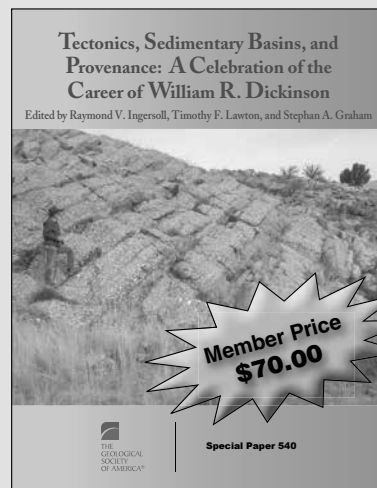
## Tectonics, Sedimentary Basins, and Provenance: A Celebration of the Career of William R. Dickinson

*Edited by Raymond V. Ingersoll,  
Timothy F. Lawton, and Stephan A. Graham*

Through a remarkable combination of intellect, self-confidence, engaging humility, and prodigious output of published work, William R. Dickinson influenced and challenged three generations of sedimentary geologists, igneous petrologists, tectonicists, sandstone petrologists, archaeologists, and other geoscientists. A key figure in the plate-tectonic revolution of the 1960s and 1970s, he explained how the distribution of sediments on Earth's surface could be traced to tectonic processes, and is widely recognized as a founder of modern sedimentary basin analysis. This volume consists of 31 chapters related to Dickinson's research interests; many of the authors are his former students, their students, and their students' students, demonstrating his continuing profound influence. The papers in this volume are an impressive tribute to the depth and breadth of Bill Dickinson's contributions to the geosciences.

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## Program

**Joint section meeting of the Geological Society of America**

**53<sup>rd</sup> SOUTH-CENTRAL, 53<sup>rd</sup> NORTH-CENTRAL,  
and 71<sup>st</sup> 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

General Chairs ..... Matthew Kirk, Tina Niemi, Shannon Mahan  
Technical Program Chairs..... Joel Spencer, Alison Graettinger, Shari Kelley  
Field Trip Chairs ..... Susan Stover, Rex Buchanan  
Graphics Chair ..... Alexandria Richard  
Student Volunteer Coordinator ..... Aida Farough  
Exhibits Coordinator..... Matthew Brueseke  
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### GSA Section Officers for 2018–2019

#### South-Central Section

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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

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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](mailto:vmconnell@geosociety.org)

GSA Ethics and Compliance Officer, Nan Stout, [gsaeventscode@gmail.com](mailto: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 Midcontinent 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 Alithermal 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 cyclothems 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 Brueseke, 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 (“cyclothems”). Stacked paleosol horizons that are part of the Wolfcampian cyclothems 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 Brueseke, [brueseke@ksu.edu](mailto:brueseke@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](mailto: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](mailto: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](mailto: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
<b>SATURDAY, 23 MARCH</b>		
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
<b>SUNDAY, 24 MARCH</b>		
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
<b>Welcome Reception</b>	5–7 p.m.	Big Basin/Kaw Nation Rooms
<b>MONDAY, 25 MARCH</b>		
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
<b>Morning Oral Technical Sessions</b>		
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
<b>Poster Sessions:</b> 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
<b>Poster Sessions:</b> <i>Authors will be present from 10 to 11:45 AM</i>		
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
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# Technical Sessions

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



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

## NOTICE

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



## NOTE INDEX SYSTEM

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

\* denotes speaker

## MONDAY, 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, Alexandro\*; 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 BRITTLINESS INDEX CORRELATIONS FOR UNCONVENTIONAL TIGHT AND ULTRA-TIGHT RESERVOIRS**

- 1-8 10:20 AM Djezzar, Sofiane\*; Rasouli, Vamegh; Boualam, Aldjia; Rabiei, Minou: **INTEGRATION OF SEISMIC CURVATURE AND ILLUMINATION ATTRIBUTES IN FRACTURE DETECTION ON A DIGITAL ELEVATION MODEL: METHODOLOGY AND INTERPRETATIONAL IMPLICATIONS**
- 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**
- 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**
- 1-11 11:20 AM Zhao, Wenyu\*: **NUMERICAL SIMULATION OF OVERPRESSURE DURING SEDIMENTATION**
- 1-12 11:40 AM Zheng, Han\*; Sun, Xiaomeng; Wang, Pujun; Chen, Wei: **CHARACTERISTICS AND FACTORS CONTROLLING RESERVOIR SPACE IN FELSIC LAVAS**

#### 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**
- 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**
- 2-3 8:40 AM Nelson, W. John\*; Elrick, Scott D.; Lucas, Spencer G.: **LARAMIDE DEFORMATION IN THE FRA CRISTOBAL RANGE, SOUTHERN NEW MEXICO**



- 2-4 9:00 AM Kelley, Shari\*: **THERMAL STRUCTURE AND EXHUMATION HISTORY OF THE SAN JUAN BASIN, NEW MEXICO**
- 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**
- 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**
- 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**
- 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**
- 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**
- 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**
- 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**
- 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**
- 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**
- 10:00 AM **BREAK**
- 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**
- 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**

### OF MESOPROTEROZOIC HALOGEN-RICH GRANITIC MAGMAS

- 3-9 10:55 AM Piccione, Gavin G.; Rasbury, Troy; Elliott, Brent A.\*; Kyle, J. Richard; Jaret, Steven J.; Acerbo, Alvin; Lanzirrotti, 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**
- 3-10 11:15 AM Mahaffey, Nova\*; Finkelman, Robert B.: **MICRO-MINERALOGY OF A SINGLE KEOKUK GEODE; HOW COMPLEX CAN IT GET?**
- 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**

### SESSION NO. 4

#### *T18. Unconventional Aquifers and Aquifer Management (GSA Hydrogeology Division; GSA Geology and Health Division; GSA Geology and Society Division)*

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

Andrea Croskrey, Mandy L. Stone and Craig Painter, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 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**
- 4-2 8:25 AM Spencer, Kevin J\*; Leal, Jesus: **DEVELOPMENT OF BRACKISH GROUNDWATER RESOURCES IN THE LOWER RIO GRANDE VALLEY, TEXAS**
- 4-3 8:45 AM Finch, Steve\*: **EXPLOITATION POTENTIAL FOR THE CAPITAN REEF COMPLEX AQUIFER, DELAWARE BASIN, SOUTHEASTERN NEW MEXICO AND FAR WEST TEXAS**
- 4-4 9:05 AM Cameron, Katie A.\*; Olafsen Lackey, Susan: **HYDROGEOLOGIC FRAMEWORK OF EASTERN NEBRASKA – RECENT DEEPER (EARLY CRETACEOUS TO CENOMANIAN) EXPLORATION**
- 9:25 AM **BREAK**
- 4-5 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**
- 4-6 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**
- 4-7 10:20 AM Juracek, Kyle E.\*: **STREAMFLOW ALTERATION IN KANSAS: ASSESSMENT, CAUSES AND HABITAT IMPLICATIONS**
- 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**
- 5-3 8:45 AM Shore, Dominique\*; Rittenour, Tammy; Yanites, Brian J.: **UNDERSTANDING DYNAMICS AND PATTERNS OF RIVER INCISION IN SOUTHERN TAIWAN**
- 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**
- 9:25 AM **BREAK**
- 5-5 9:40 AM Cornachione, Harriet S.\*; Rittenour, Tammy; Nelson, Michelle S.: **HOLOCENE DUNE ACTIVITY IN SOUTHERN UTAH**
- 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!**
- 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 MORAIN DEPOSITS, FLATHEAD VALLEY, MONTANA**
- 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**

## 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**
- 6-2 2 Harrington, Matthew\*; Widga, Chris; Wanamaker, Alan D.; Walker, Douglas: **IDENTIFYING DIETARY AND MIGRATORY PATTERNS OF ILLINOIS MAMMUTHUS PRIMIGENIUS POPULATIONS USING ISOTOPE ANALYSIS OF CARBON, OXYGEN, AND STRONTIUM**
- 6-3 3 Perkins, Andrew J.\*; Rittenour, Tammy: **AGE CONTROL FOR THE BIG WATER MAMMOTH SITE, BIG WATER, UTAH**
- 6-4 4 Manker, Jaclyn\*; Teed, Rebecca: **MOLLUSKS AS LAKE-LEVEL INDICATORS IN CRYSTAL LAKE, OHIO**
- 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**
- 6-6 6 Kindley, Sierra N.\*: **IDENTIFYING SPATIAL VARIANCE IN THE GEOCHEMISTRY OF SHALLOW MARINE SEDIMENTS: A STUDY OF GRAND CAYMAN**
- 6-7 7 Saavedra, Marcelo A.\*; Gonzalez, Juan Luis: **MINERALOGICAL AND TEXTURAL CHARACTERIZATION OF MIXED-SOURCE EOLIAN SANDS ON THE SOUTH TEXAS SAND SHEET**
- 6-8 8 Reger, Brandi; Hinthorne, James; Flores, Adam; Perez, Julian; Flores, Madelyn; Trevino, Mia\*; Garza, Rocky: **THE ZIRCON PICKERS: AN UNDERGRADUATE GEOLOGY CLUB PROJECT**

- 6-9 9 Smith, Lindsey Michelle\*; Houston, W.S.: **GROUND PENETRATING RADAR OF BAY MILLS POINT: STRATIGRAPHIC ARCHITECTURE AND BASE STRUCTURE**
- 6-10 10 Sealander, Alessandra\*; Pujana, Ignacio: **CALCISPHERES FROM THE LOWER CRETACEOUS, NORTH TEXAS DUCK CREEK FORMATION**
- 6-11 11 Cook, Alex D.\*; Stafford, Kevin W.: **GIS-BASED CHARACTERIZATION AND SPELEOGENESIS OF GYPSUM KARST, ALABASTER CAVERNS STATE PARK, WOODWARD COUNTY, OKLAHOMA**
- 6-12 12 Francis, David\*; Kambesis, Patricia N.; Sumrall, Jeanne Lambert: **MORPHOLOGICAL COMPARISON OF CAVES ON SAN SALVADOR ISLAND, THE BAHAMAS**
- 6-13 13 Atchison, Erin\*: **MODELING POTENTIAL BIOTIC PROCESSES IN THE GALE CRATER ON MARS USING LAKE SULFUR AND CARBON CYCLES**
- 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**
- 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 WISCONSINAN LANDSCAPE EVOLUTION**
- 6-16 16 Broadus, Carson L.\*; Hannula, Kimberly A.; Krantz, Robert W.: **THE EFFECT OF FAULT GOUGE ON FLUID FLOW, LISBON VALLEY, UT**
- 6-17 17 Morgan, Tanner F.\*; Hannula, Kimberly A.; Krantz, Robert W.: **MAPPING SURFACE GEOCHEMICAL DATA WITH GIS IN LOWER LISBON VALLEY, UTAH**
- 6-18 18 Broadus, Connor M.\*; Hannula, Kimberly A.; Giannini, Gary L.; Krantz, Robert W.: **THE IMPACT OF FACIES HETEROGENEITY ON FLUID STORAGE AND TRANSPORT IN THE LOWER BURRO CANYON FORMATION, LISBON VALLEY, UTAH**
- 6-19 19 Adams, Colleen A.\*: **ENHANCED BIOMETHANATION FROM MUNICIPAL SOLID WASTE (MSW): CONCENTRATION AND MESH SIZE EFFECTS OF ZERO VALENT IRON (ZVI)-MEDIATED HYDROGEN PRODUCTION**
- 6-20 20 Lashley, Victoria\*; Straley, Charlotte; Sumrall, Jeanne Lambert; Kambesis, Patricia N.: **ENVIRONMENTAL AND HUMAN EFFECTS OF PRODUCING AND USING COOKING OIL BIODIESEL**
- 6-21 21 Bell, Matt Ede\*; Duthler, Brandon; Rocheford, M. Kathryn: **REMOTE SENSING EVALUATION OF HUMAN IMPACTS ON THE LOWER MUSKEGON RIVER, MI**
- 6-22 22 Carlson, Claire\*; Milbrandt, Eric; Cramer, Bradley D.: **MACROALGAE AQUACULTURE IN SOUTHWESTERN FLORIDA AS A POTENTIAL TOOL FOR NUTRIENT SEQUESTRATION**
- 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**
- 6-28 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**
- 6-29 29 Tomlinson, Zachary Dean; Pfeifer, Lily S.\*; Soreghan, Gerilyn: **ROLE OF GLACIAL POLISH IN THE FORMATION OF LOESS DEPOSITS**
- 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**
- 6-31 31 Pletnikoff, Paula M.\*; Harvey, Jonathan E.: **WHEN A RIVER DISAPPEARS: ANALYZING THE EFFECTS OF STREAM CAPTURE IN THE YUKON TERRITORY, CANADA**
- 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)**
- 6-33 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**
- 6-34 34 Pearson, Joshua\*: **HOLOCENE PALEOCLIMATE RECORD OF NORTHERN IOWA RECORDED IN FLOWSTONE**
- 6-35 35 Waltz, Robin\*; Goswami, Arghya: **PALEOCENE-EOCENE THERMAL MAXIMUM (PETM, 56 MA) RECONSTRUCTED PALEOBATHYMETRY WITH UPDATED OESBATHY 1.022**
- 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**
- 6-37 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**
- 6-38 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**
- 6-39 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**
- 6-45 45 Pate, Olivia L.\*; DeAngelis, Michael T.: **REFINING THE SOL-GEL SYNTHESIS METHOD OF INTERMEDIATE, NANO-SCALE OLIVINE**
- 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**
- 6-47 47 Bryson, Alexis N.\*; Kenderes, Stuart M.; Whittington, Alan: **THROUGH A GLASS DARKLY: AN INVESTIGATION INTO THE VC-1 RHYOLITE, SW VALLES CALDERA, NM**
- 6-48 48 Ludwig, Katherine G.\*: **GEOCHRONOLOGY OF THE CHINCHÍN FORMATION IN SOUTHERN ECUADOR**
- 6-49 49 Parcher, Sara\*; Maher, Harmon; Redfield, Tim F.: **GEOLOGIC HISTORY OF A METAMORPHIC CORE COMPLEX IN NW SPITSBERGEN**
- 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**
- 6-51 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**
- 6-52 52 Sailor, Matthew\*; Faulkner, Melinda: **REMOTE SENSING AND FIELD INVESTIGATIONS OF GEOLOGIC STRUCTURES IN THE OWL MOUNTAIN PROVINCE, FORT HOOD MILITARY INSTALLATION, TEXAS**
- 6-53 53 Pope, Jeffrey J\*; Maher, Harmon; Knapp, Kasie: **MAPPING SLIM BUTTES STRATIGRAPHIC AND STRUCTURAL FEATURES BY UAV PHOTOGRAMMETRY**
- 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**
- 6-55 55 Wilkerson, Paul\*; Mickus, Kevin L.; Pavlowsky, Robert T.: **SEISMIC MONITORING FOR BLAST DISTURBANCES TO THREATENED AND ENDANGERED SPECIES IN MISSOURI**
- 6-56 56 Molina, Zalma P.\*; Nolte, Keith A.; Tsofilas, George: **ANALYSIS OF EARTHQUAKE LOCATION ACCURACY IN THE WELLINGTON SEISMIC NETWORK**

## 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 DECADE-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**
- 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**
- 7-6** 3:30 PM Ries, Rosamie\*; Currie, Brian\*; Skoumal, Robert; Brudzinski, Michael; Cunningham, J. Connor: **INVESTIGATING OPERATIONAL PARAMETERS ASSOCIATED WITH EARTHQUAKES INDUCED BY HYDRAULIC FRACTURING IN OKLAHOMA**
- 7-7** 3:50 PM Nolte, Keith A.\*; Tsofilas, George: **TIME-LAPSE OBSERVATIONS OF INJECTION-INDUCED EARTHQUAKE SHEAR-WAVE SPLITTING**
- 7-8** 4:10 PM Barnes, Caitlin\*; Halihan, Todd; Weingarten, Matthew: **PRESSURE MIGRATION ASSESSMENT IN USGS AREAS OF POTENTIALLY INDUCED SEISMICITY**

### SESSION NO. 8

#### ***T9. 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**
- 8-2** 1:50 PM Dunn, Dennis\*: **A POSSIBLE ARCHEAN SOURCE FOR ARKANSAS DIAMONDS?**
- 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**
- 8-4** 2:30 PM Kempton, Pamela D.\*; Brueseke, Matthew E.; Rogers, Kayleigh: **WHY DOES KANSAS HAVE KIMBERLITES – A REVIEW**
- 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**

#### **PEBBLE PUPS/EARTH SCIENCE SCHOLARS: INNOVATIVE OUTREACH METHODS THAT ENGAGE STUDENTS**

- 9-2** 1:50 PM Lamm, Sarah N.\*; Bosch, Jeanette S.; Bosch, Lynette D.: **ONLINE OUTREACH PRESENTING GEOLOGY CAREERS TO UNDERREPRESENTED OR RURAL COMMUNITIES**
- 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**
- 9-4** 2:30 PM Maxson, Julie\*: **A COMMUNITY-UNIVERSITY COLLABORATION FOR SOIL HEALTH IN URBAN AGRICULTURAL SETTINGS IN ST. PAUL, MN**
- 2:50 PM **BREAK**
- 9-5** 3:05 PM Westgaard, John\*; Hanks, H. Douglas; Willging, Steve; Korf, Jason J.: **HILL ANNEX PALEONTOLOGY PROJECT: ADAPTING TO A NEW HOME**
- 9-6** 3:25 PM Caruthers, Andrew H.; Gillespie, Robb; Voice, Peter J.\*: **DINOSAUR PARK: THE MULTI-PURPOSE GEOLOGICAL PLATFORM AT WESTERN MICHIGAN UNIVERSITY**
- 9-7** 3:45 PM Honey, Jeannine\*; Ivis, Dawn: **USGS CORE RESEARCH CENTER: A GATEWAY TO SUBTERRANEAN DISCOVERY FOR GEOSCIENCE RESEARCH**
- 9-8** 4:05 PM Voice, Peter J.\*; Grammer, Susan; Grammer, G. Michael; Harrison, William B.; Petrovic, Heather; Yellich, John A.: **WESTERN MICHIGAN UNIVERSITY'S COREKIDS PROGRAM: K-12 OUTREACH USING STUDENT EDUCATORS**

### SESSION NO. 10

#### ***T20. Advances in the Measurement and Modeling of Integrated Surface and Subsurface Hydrologic Systems (GSA Hydrogeology Division)***

1:30 PM, Hilton Garden Inn Manhattan , Flint Hills Room

Andrea Brookfield, Behzad Ghanbarian, Vahid Rahmani, J.F. Devlin and Brian Kelly, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 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 MACROPOROUS 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

- 8:00 AM **INTRODUCTORY REMARKS**
- 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 MAGMATISM IN THE SOUTHERN OKLAHOMA AULACOGEN**



- 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.; Connelly, 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 Sebastien 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, Ganming; Vázquez-Ortega, Angélica; Gomezdelcampo, 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, Jeffrey 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.; Flaig, 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*, (CHONDRICHTHYES; 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 ECHINOIDS FROM THE CRETACEOUS WESTERN INTERIOR SEAWAY**
- 19-10 26 Grove, Joseph\*; Voegele, Kristyn K.; Ullmann, Paul Victor; Nelleremoe, 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 Djeddar, 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 Rijfkgel, 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 CO<sub>2</sub> 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 Tsofilias, 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 NEMAH 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, Alexandro\*; Nakata, Nori: **EVIDENCE OF HYDROTHERMAL VEINS IN BASAMENT ROCKS, INTEGRATING POTENTIAL DATA WITH ROCK-PHYSICS AND P-IMPEDANCE SEISMIC INVERSION AND ITS**

### RELATIONSHIP WITH SALT WATER DISPOSAL WELLS AT NORTHERN OKLAHOMA

- 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.: **GYP SUM KARST SPELEOGENESIS IN SOUTH-CENTRAL KANSAS**
- 2:55 PM **BREAK**

- 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) CYCLOTHERMS AND EARLIEST PERMIAN (WOLFCAMPAN) CYCLOTHERMS 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, Aldjia; 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, Chanse\*; 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, JUNGGAR 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 ISOTOPE MASS-BALANCE MODELING OF SMALL LAKE SYSTEMS AND IMPLICATIONS FOR RECONSTRUCTING HOLOCENE**

# HYDROCLIMATE USING LACUSTRINE SEDIMENT OXYGEN ISOTOPE RECORDS

- 31-6 9:55 AM Duarte, Edward\*; Obrist-Farner, Jonathan; Wattrus, Nigel:  
**SEDIMENTARY PROCESSES AND FACIES IN AN ACTIVE  
PULL-APART: INTERPRETATIONS OF SHORT-SEDIMENT  
CORES AND GEOPHYSICAL DATA FROM LAKE IZABAL  
BASIN, GUATEMALA**
- 31-7 10:15 AM Mongol, Erdoo\*; Oboh-Ikuenobe, Francisca E.; Obrist-Farner,  
Jonathan: **A 1,000-YEAR PALYNOLOGICAL RECORD OF  
LAKE IZABAL, EASTERN GUATEMALA**

## SESSION NO. 32

### D5. Structural Geology

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

Shari Kelley, Presiding

- 32-1 8:00 AM Muller, Simone R.\*; Baird, Graham B.; Hooker, Jake:  
**DATING DEFORMATION IN THE BIG THOMPSON CANYON  
AREA, NORTHERN COLORADO FRONT RANGE:  
DISCRIMINATING BETWEEN ACCRETIONARY OROGEN  
MODELS**
- 32-2 8:20 AM Nso, Peter\*; Eckert, Andreas: **LOCALIZATION OF  
CONCENTRIC RING FAULTS IN SEDIMENTS OVERLYING  
EVAPORITE SEQUENCES DURING ACTIVE SALT DIAPIR  
EMPLACEMENT: INSIGHTS FROM NUMERICAL MODELING**
- 32-3 8:40 AM Maher, Harmon\*; Helmer, Kelly Elizabeth; Pope, Jeffrey J:  
**HISTORY OF CENOZOIC FRACTURE DEVELOPMENT AT  
SLIM BUTTES, SOUTH DAKOTA**
- 32-4 9:00 AM Chandonia, William\*; Hogan, John P.; Eckert, Andreas:  
**ROLLOVER BREAK-THRUST FORMATION AND  
ADVANCEMENT OF THE LEADING EDGES OF FOLD AND  
THRUST BELTS THROUGH FAULT PIRACY**
- 32-5 9:20 AM Liu, Chao\*; Hogan, John P.; Eckert, Andreas: **THE ORIGIN OF  
PERICLINES IN THE OZARK PLATEAU, MISSOURI**
- 32-6 9:40 AM Hogan, John P.\*; Welker, Avery Joseph; Eckert, Andreas;  
Tindall, Sarah E.: **CONICAL FOLDS: A POINTLESS  
MISREPRESENTATION OF PERICLINES**

## SESSION NO. 33

### T5. Mantle Dynamics and Lithospheric Deformation

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

Claudia Adam, Presiding

- 33-1 8:00 AM Ichihara, Mie; Adam, Claudia; Grosse, Pablo; Vidal,  
Valérie\*: **ANOMALOUS BACK-ARC VOLCANISM DUE TO  
SUBDUCTING LINEAR TOPOGRAPHIC FEATURES**
- 33-2 8:20 AM Sparks, C. Renee\*; Jacques, Issac J.: **GEOLOGIC  
MAPPING AND LITHOSPHERIC DEFORMATION IN THE  
STRUCTURALLY COMPLEX REGION OF CENTRAL-  
WESTERN HONDURAS**
- 33-3 8:40 AM Sun, Qiaoqi\*; Eckert, Andreas; Obrist-Farner, Jonathan:  
**TITLE: STRAIN PARTITIONING ACROSS THE POLOCHIC-  
MOTAGUA FAULT SYSTEM, GUATEMALA: INSIGHTS  
FROM KINEMATIC NUMERICAL MODELING**
- 33-4 9:00 AM Alemu, Tadesse B.\*; Abdelsalam, Mohamed G.:  
**TOPOGRAPHIC AND CRUSTAL THICKNESS VARIATIONS  
ALONG THE WESTERN ESCARPMENTS OF THE AFAR  
DEPRESSION**
- 33-5 9:20 AM Pandit, Bimal\*; Adam, Claudia: **CHARACTERIZATION  
OF SECONDARY MANTLE CONVECTION FROM  
GEOPHYSICAL DATA AND MODELS**
- 33-6 9:40 AM Adam, Claudia\*: **STRESS MODELS OVER THE CENTRAL  
NORTH AMERICAN CONTINENT**

# 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

Booth #

- 35-1 5 Alotaibi, Mislal\*; 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.; Ukstins,  
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

Booth #

- 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 PHOTOGRAMMETRY 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, CADDO 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

Booth #

- 38-1 18 Loope, David B.\*; Burberry, Caroline M.; Searles, Mindi L.: **THERMAL CONTRACTION CRACKS IN UTAH SLICKROCK**
- 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

Booth #

- 39-1 30 Hernández González, Paola N.\*; Santos-Mercado, Hernan; Ramirez, Wilson: **PLIO-PLEISTOCENE SEA-LEVEL CURVE OF THE DUVERGÉ PROVINCE IN THE DOMINICAN REPUBLIC**
- 39-2 31 Shonnard, Christine\*; Chisholm, James; Zambito, James J.; Foreman, Brady Z.; Currano, 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.; Currano, 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

Booth #

- 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

Booth #

- 41-1 41 Jordan, Nicolas C.\*; Evans, Kevin R.: **GEOCHEMICAL AND SIDEROPHILE ELEMENT ANALYSIS TO DETERMINE IMPACTOR CLASSIFICATION OF THE VISTA CORES, WEAUBLEAU IMPACT STRUCTURE, ST. CLAIR COUNTY, MISSOURI**
- 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

Booth #

- 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**
- 42-2 45 Szopinski, Patrick Henry\*: **POTENTIAL FIELD GEOPHYSICAL ANALYSIS OF THE MID-CONTINENT RIFT IN SOUTHEASTERN NEBRASKA**
- 42-3 46 Callahan, Owen A.\*; Eichhubl, Peter; Hennings, Peter H.; Smye, Katie; Horne, Elizabeth A.; Savvaidis, Alexandros; Huang, Guo-Chin Dino; Li, Peng; Lemons, Casee; Breton, Caroline; Dommissse, Robin: **TEXAS BASEMENT SYNTHESIS PROJECT: CHARACTERIZING GEOLOGICAL RISK FACTORS OF BASEMENT-INVOLVED SEISMICITY**

**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

Booth #

- 43-1 47 Cole, Brenna G.\*; Andrews, Graham D.M.; Brown, Sarah R.; Pettus, Holly D.; Prellwitz, Henry: **THE MASONTOWN KIMBERLITE, FAYETTE COUNTY, PENNSYLVANIA: INSIGHTS INTO EMPLACEMENT PROCESSES BY THE CHARACTERIZATION OF XENOCRYST SIZES AND SHAPES USING COMPUTED TOMOGRAPHY**
- 43-2 48 Spencer, Jason P.\*; Colby, Thomas A.; DeAngelis, Michael T.: **PETROLOGICAL AND GEOCHRONOLOGICAL INVESTIGATION OF THE BLUE BALL LAMPROITE NEAR WALDRON, ARKANSAS, USA**
- 43-3 49 Bennis, Kadie\*; Graettinger, Alison: **CONSTRAINTS ON SEDIMENT-MAGMA MINGLING FROM PEPERITES FORMED IN A SUBAQUEOUS BASALTIC FISSURE ERUPTION**
- 43-4 50 Rogers, KayLeigh\*; Kempton, Pamela D.; Brueseke, Matthew E.; Adam, Claudia: **A PETROGRAPHIC AND GEOCHEMICAL ANALYSIS OF OFF-CRATON KIMBERLITES FROM RILEY AND MARSHALL COUNTY, KANSAS (USA)**
- 43-5 51 Hough, David M.\*; Colby, Thomas A.; Cannon, Corbin G.; DeAngelis, Michael T.: **INVESTIGATING THE AGE AND SIGNIFICANCE OF A RARE OCCURRENCE OF METAGABBRO IN THE OUACHITA MOUNTAINS, CENTRAL ARKANSAS**
- 43-6 52 Kusick, Allison R.\*; Clark, Ryan J.; Horkley, L. Kenneth; Peate, David W.: **PETROLOGY & GEOCHEMISTRY OF THE OSBORNE MAFIC INTRUSION, NW IOWA**

# Index of Authors



How to use the indexing system:

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

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

Example: Qin, Yan ... 7-4\*

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

Page numbers are not listed in this index. Refer to session number and order of presentation to locate the author you are searching for.

\*denotes presenter



## A

Abbott, Mark B. 31-5, 38-8  
Abdelaal, Ahmed 25-1\*  
Abdelsalam, Mohamed 40-3  
Abdelsalam, Mohamed G. 33-4  
Abesh, Bidisha Faruque 18-9\*  
Acerbo, Alvin 3-9  
Achang, Mercy 1-4\*  
Ackley, Stephen 10-1  
Adam, Claudia 26-6, 33-1, 33-5, 33-6\*, 43-4  
Adams, Colleen A. 6-19\*  
Adedugbe, Emmanuel 6-15  
Agbogun, Henry M.D. 1-2\*  
Ahumada, David 6-28\*  
Aiello, Ivano 6-36, 6-38  
Alemu, Tadesse B. 33-4\*  
Alexander, E. Calvin Jr. 31-2  
Alhubail, Mustafa M. 1-7  
Ali, Hendratta 14-1\*  
Allred, Isaac 29-2\*  
Alotaibi, Mislal Sr. 35-1\*  
Alshehri, Fahad 25-1  
Aly, Mohamed H. 35-1  
Anderson, Raymond R. 8-5  
Andrews, Graham D.M. 8-3\*, 43-1  
Andrews, William 17-4\*, 39-5\*  
Anglim, Trey 12-1\*  
Ansari, Esmail 21-2, 21-5\*  
Arbuzov, Sergey I. 17-3  
Arkle, Kelsey M. 6-5  
Artz, Joe 35-3\*  
Ataee, Nina 5-4\*  
Atchison, Erin 6-13\*  
Atekwana, Eliot 1-4, 17-4  
Atekwana, Estella A. 6-46, 21-1  
Ausbrooks, Scott M. 7-1\*  
Ayuso, R. 13-2

## B

Baird, Graham B. 13-4, 32-1  
Balco, Greg 16-7  
Balumi, Wakil Bunu 17-2\*  
Bancroft, Alyssa M. 6-32, 6-33  
Barati, Reza Gh. 1-7  
Barber, Jeneane T. 38-2\*  
Barnes, Caitlin 7-8\*  
Barnes, Calvin G. 27-2\*  
Barnes, Melanie A. 13-1\*  
Barnett, Rebecca M. 23-4\*  
Bassoo, Roy Jr. 3-1\*  
Befus, Kenneth 3-1  
Behm, Michael 26-3  
Beierle Pavek, Karissa 6-28  
Bell, Matt Ede 6-21\*, 37-2  
Benito Granell, Xavier 38-10  
Bennis, Kadie 8-6, 43-3\*  
Benz, Brooke E. 3-7\*, 22-3  
Beresh, Stephen C.M. 40-3\*  
Bernot, Randall 19-3  
Bidgoli, Tandis S. 21-2, 21-4, 21-5

Biebesheimer, Ellie J. 6-33\*  
Blake, Daniel 6-15  
Blank, Jennifer G. 28-1  
Blum, Mike 29-1, 29-2  
Bogart, Destin 9-1  
Bohling, Geoffrey C. 15-4  
Bonin, Pieter G. 6-51\*  
Borgetti, Adam J. 6-27\*  
Borrok, David 1-9  
Borrok, David M. 1-10\*  
Bosch, Jeanette S. 9-2  
Bosch, Lynette D. 9-2  
Bostick, Wyatt Andrew 37-2\*  
Boulam, Aldia 1-8, 20-1, 30-2  
Bourke, Mary 5-6  
Brady, Adam 25-6  
Breckenridge, Andy J. 29-6  
Breton, Caroline 42-3  
Brill, Kathleen A. 38-3  
Broaddus, Carson L. 6-16\*  
Broaddus, Connor M. 6-18\*  
Brookfield, Andrea E. 15-4\*  
Brown, Sarah R. 8-3, 43-1  
Brown, Victoria 38-11\*  
Brown, Wesley 18-10  
Bruce, Hallie R. 6-50\*  
Bruck, Victoria J. 6-42\*  
Brudzinski, Michael 7-6  
Brueseke, Matthew E. 3-5, 8-4, 27-4\*, 43-4  
Brugger, Keith A. 16-3, 16-4\*  
Bryson, Alexis N. 6-47\*  
Buntin, Rogers C.C. II 19-6\*  
Burberry, Caroline M. 22-1\*, 38-1  
Burgin, Amy J. 25-5  
Burney, David 8-7  
Butler, James J. Jr. 10-2  
Byrum, Steven 19-9\*

## C

Caffee, Marc W. 16-2, 16-3  
Calder, W. John 25-2  
Callahan, Owen A. 42-3\*  
Camelo, Jonathan M. 23-6\*  
Cameron, Katie A. 4-4\*  
Campbell, Alisha 38-11  
Cannon, Corbin G. II 43-5  
Carlson, Claire 6-22\*  
Carlson, Marvin P. 26-2\*  
Carpenter, Brett M. 6-46, 7-5\*, 21-1, 42-1  
Carsrud, Corbin T. 2-8\*  
Caruthers, Andrew H. 9-6  
Castro, Adrian E. 3-2\*  
Caves, Lindsay R. 36-1  
Cayes, Hannah Beauchesne 3-8\*  
Ceperley, Elizabeth G. 11-4\*  
Chandonia, William 32-4\*  
Chapman, Alan D. 12-10  
Chapman, Jenna 6-36\*  
Chase, Brandon F. 21-1\*  
Chavez, Eduardo A. 13-3\*  
Chen, Wei 1-12

Chen, Xiaowei 7-3, 7-4, 21-3  
Cheng, Chu-Lin 19-1  
Cheng, Hai 31-2  
Cherry, Mikaela 15-2  
Chileen, Barrie V. 25-2, 25-4\*  
Chisholm, James 17-5\*, 39-2  
Christner, Claire M. 6-30\*  
Chumley, Adam S. 13-4  
Ciampaglio, C.N. 19-11, 19-12\*  
Cicimurri, David J. 19-12  
Clark, C. Kit 12-4  
Clark, Ryan J. 8-5\*, 43-6  
Clay, Hayden D. 6-54\*  
Cockrell, Jay Alan 14-7\*  
Colby, Thomas A. 43-2, 43-5  
Cole, Brenna G. 8-3, 43-1\*  
Cole, Callie 37-1  
Collins, Joe D. 41-2  
Connelly, Jeffrey B. 14-9  
Conrad, Lily 18-3\*  
Constantopoulos, James T. 22-5\*  
Cook, Alex D. 6-11\*  
Cori, Madsen 31-3  
Cornachione, Harriet S. 5-5\*  
Costa, Aristides G. 6-46  
Costigan, Katie H. 18-5  
Craddock, John P. 39-3  
Cramer, Bradley D. 6-22, 6-32, 6-33  
Croskrey, Andrea 4-1\*  
Crow, Ryan S. 2-2  
Cruickshanks, Alister 9-1  
Cunningham, J. Connor 7-6  
Currano, Ellen 19-4, 39-4  
Currano, Ellen D. 17-5, 19-5, 39-2  
Currie, Brian 6-15, 7-6\*  
Curry, B. Brandon 16-5, 16-6\*  
Cyr, Andrew J. 11-6\*

## D

Daniels, Robyn L. 24-2, 24-3, 24-4  
Datta, Saugata 28-1  
Davis, Chantelle 18-2\*  
Davis, Jeremy 29-4  
Dawson, M. Robert 20-3  
Day, Michael M. 3-4\*  
Day, Warren 13-2\*  
De La Garza, Randolph G. 38-7  
De Santis, Laura 6-37  
DeAngelis, Michael T. 6-45, 14-6, 14-9, 43-2, 43-5  
Dechesne, Marieke 17-5, 19-4, 39-2, 39-4  
Delong, Ashley 26-1\*  
Dere, Ashlee L. 6-25, 6-26  
Diefendorf, Aaron F. 29-6  
Diffendal, Jr., R.F. 9-3\*  
Dillon, Jeremy S. 6-30  
Divine, D.P. 15-2\*  
Djezzar, Sofiane 1-8\*, 20-1\*, 30-2\*  
Dommissie, Robin 42-3  
Donovan, R. Nowell 13-6, 13-7  
Dorale, Jeffrey A. 16-8\*  
Dorward, Rebecca Ashley 19-14\*

Doss, Paul K. 6-14  
Drop, Stephen 36-2\*  
du Bray, E.A. 13-2  
Duarte, Edward 31-6\*  
Duke, Edward F. 3-4  
Dunham, John W. 24-1  
Dunn, Dennis 8-2\*  
Dunn, Regan E. 17-5, 19-4, 19-5, 39-2, 39-4  
Duthier, Brandon 6-21

## E

EchoHawk, Barbara 35-4, 38-2  
Eckert, Andreas 32-2, 32-4, 32-5, 32-6, 33-3  
Edwards, Dwayne 18-6  
Edwards, R. Lawrence 31-2  
Eichhubl, Peter 42-3  
El Baidi, Saad K. 19-3  
Elick, Benjamin Hayden 9-1  
Elliott, Brent A. 3-9\*, 27-7\*  
Erick, Scott D. 2-3  
Elswick, Erika R. 6-24  
Emerson, Elizabeth M. 23-3\*  
Emil, Mustafa Kemal 25-1  
Engelbart, Tyler W. 18-7\*  
Erickson, Bruce R. 19-8  
Estrada Diaz Flores, Fabiola 25-7\*  
Evanoff, Emmett 12-2\*, 38-3\*  
Evans, Kevin R. 41-1  
Evans, Kevin Ray 35-5\*  
Ewing, Thomas E. 13-1

## F

Fang, Xiang 30-5, 30-6\*  
Faulkner, Melinda 6-52, 14-8, 18-4, 37-5\*  
Feitl, Melina 38-10\*  
Fernandez, Alejandro 31-5\*  
Field, Holly L. 15-5  
Finch, Steve 4-3\*  
Finkelman, Robert B. 3-10, 17-3  
Firkins, Max 42-1\*  
Flaig, Peter P. 19-6  
Fleming, Ciara 5-6  
Flores, Adam 6-8  
Flores, Madelyn 6-8  
Fluegeman, Richard 19-3  
Ford, Joshua Alexander 28-1\*  
Foreman, Brady Z. 12-3\*, 17-5, 19-4, 19-5, 39-2, 39-3, 39-4  
Fox, David L. 15-6  
Fox, Garey 10-4  
Francis, David 6-12\*  
Franz, Trenton 25-5  
Freking, Collin J. 21-4  
Fritz, Sherilyn C. 38-10  
Frothingham, Michael G. 16-3  
Fryar, Alan 18-6  
Fryxell, J.E. 17-5

**G**

Gaco, Cameron 40-1  
 Gao, Yongjun 8-8  
 Gao, Yongli 10-1, 23-1, 31-2\*  
 Garza, Rocky 6-8  
 Gatewood, Michael 41-3\*  
 Gauvey, K.L. 28-3, 28-4\*  
 Gellis, Allen C. 18-6  
 Gentile, Richard J. 24-2\*, 24-3\*, 24-4\*  
 Gerhart, Paige K. 6-40\*  
 Ghanbarian, Behzad 1-3\*  
 Gianniny, Gary L. 6-18  
 Gibson, Kelly 6-38  
 Gillespie, Robb 9-6  
 Gilmore, Troy 15-2  
 Ginter, Michal 19-12  
 Goebel, Thomas 7-3  
 Goehring, Brent M. 16-2, 16-3  
 Goff, Kathleen R. 38-5  
 Gomezdelcampo, Enrique 18-9  
 Gonzales, David A. 2-5  
 Gonzalez, Juan L. 19-1, 37-4, 38-7\*  
 Gonzalez, Juan Luis 6-7  
 Gorman, Seth L. 6-14  
 Gorman-Sanisaca, Lillian 18-6  
 Goswami, Arghya 6-35  
 Gouzie, Douglas 18-1, 18-7  
 Graettinger, Alison 8-6\*, 43-3  
 Graham, Maggie 15-7  
 Grammer, G. Michael 9-8, 34-4  
 Grammer, Susan 9-8  
 Gray, Harrison 5-1  
 Grigsby, Jeffrey D. 19-3  
 Grosse, Pablo 33-1  
 Grosskopf, Jacob 12-7\*, 39-7  
 Grove, Joseph 19-10\*  
 Grund, Denay M. 6-26\*  
 Guertault, Lucie 10-4  
 Guo, Xuguang 30-6  
 Gutierrez, Pedro E. 12-8

**H**

Haas, Lisa D. 12-11  
 Hager, John P. 10-4\*  
 Hagni, Ann M. 28-5  
 Hagni, Richard D. 28-5\*  
 Hair, Jonathan David 9-1\*  
 Haire, Scott A. 19-7, 19-8  
 Halford, Daniel T. 30-1\*  
 Halihan, Todd 7-8, 10-4, 18-8  
 Hallett, Benjamin 3-3\*  
 Hallman, Jason A. 15-7  
 Hallum, Douglas R. 10-3\*  
 Halverson, Brenna Ayn 34-2\*  
 Hanger, Brendan Joseph 8-1\*  
 Hanks, H. Douglas 9-5, 19-7\*, 19-8\*  
 Hannula, Kimberly A. 6-16, 6-17, 6-18, 6-54, 40-1  
 Hanson, Richard 13-9  
 Hanson, Richard E. 13-6, 13-7\*, 36-1  
 Hardage, Sarah 37-4  
 Harding, Chris 1-1  
 Harrington, Matthew 6-2\*  
 Harrison, William B. III 9-8, 12-9  
 Hartke, Emma R. 6-32\*  
 Hartley, James C. 19-2\*  
 Hartwig, Emily 6-28  
 Harvey, Jonathan E. 6-31, 37-1  
 Hasiotis, Stephen T. 19-6  
 Hasiuk, Franciszek 1-1\*, 20-3, 30-4  
 Hatfield, Marques E. 22-1  
 Headley, Rachel 11-7\*, 31-3  
 Helm, Tyler R. 6-1\*  
 Helmer, Kelly Elizabeth 32-3  
 Hennings, Peter H. 42-3  
 Hermann, Jörg 8-1  
 Hernandez, Elisandra 31-4\*  
 Hernández González, Paola N. 39-1\*  
 Higuera, Philip E. 25-2, 25-4  
 Hill, Mary C. 15-4  
 Hillman, Aubrey L. 38-9\*  
 Hinthorne, James 6-8  
 Hobart, Bethany Michelle 6-39\*  
 Hoffman, Charles F. 22-2\*  
 Hoffmann, Anna A. 1-9\*, 1-10  
 Hogan, John P. 12-10, 32-4, 32-5, 32-6\*  
 Holbourn, Ann 6-36, 6-38  
 Hollenbach, Andrew Michael 21-2\*, 21-5  
 Holm-Denoma, Christopher S. 3-8  
 Holmes, Mary Anne 14-2, 14-3\*  
 Holmes, Stevie L. 29-7\*

Honey, Jeannine 9-7\*  
 Hooker, Jacob C. 13-4\*  
 Hooker, Jake 32-1  
 Horkley, L. Kenneth 43-6  
 Horn, Jonathon 37-3\*  
 Horne, Elizabeth A. 42-3  
 Horton, Stephen P. 7-1  
 Hough, David M. 43-5\*  
 Houston, W.S. 6-9  
 Howard, Larissa A. 23-5\*  
 Hoyt, William H. 19-3  
 Hrpcek, Mark 11-7  
 Huang, Guo-Chin Dino 42-3  
 Hudson, Adam M. 11-6, 16-2, 16-3  
 Humphreys, Mary 22-3\*  
 Hunt, Allen G. 1-3  
 Huot, Sebastien 5-6\*

**I**

Ichihara, Mie 33-1  
 Ioannidis, Marios 1-3  
 Iqbal, Mohammad 18-3  
 Ismail, Ahmed 31-1\*, 40-3  
 Ivis, Dawn 9-7

**J**

Jacques, Issac J. 33-2  
 Jaret, Steven J. 3-9  
 Jenson, Aubri 28-2\*  
 Joeckel, R.M. 11-3\*, 15-1, 15-5, 15-7, 29-4, 29-5  
 Johnson, Beth A. 14-5\*  
 Johnson, William C. 15-3  
 Johnstone, Samuel 11-6  
 Jollands, Michael C. 8-1  
 Jonas, Trey S. 6-24\*  
 Jordan, Nicolas C. 41-1\*  
 Judge, Lauren E. 6-5\*  
 Juracek, Kyle E. 4-7\*

**K**

Kairies-Beatty, Candace L. 6-24  
 Kambesis, Patricia N. 6-12, 6-20, 23-3, 23-5, 23-6  
 Karlstrom, Karl E. 2-2  
 Kasey, Warmington 31-3  
 Kelley, Shari 2-2, 2-4\*  
 Kelly, Brian 10-6\*  
 Kempton, Pamela D. 2-6, 8-4\*, 26-6, 43-4  
 Kendall, Jerry 2-2  
 Kenderes, Stuart M. 6-47, 34-2  
 Kenney, William 31-4  
 Kerr, Phillip J. 11-5\*, 38-5, 38-6  
 Key, Amanda 17-6\*  
 Khomeiss, Belkasim 19-3\*  
 Kibikas, William 7-5  
 Kindley, Sierra N. 6-6\*  
 Kinsland, Gary L. 26-5\*  
 Kirkland, J.I. 29-4  
 Klager, Brian 4-5\*, 4-6  
 Klein, Dillon J. 6-25\*  
 Klinger, Ralph E. 11-8  
 Kluessendorf, Joanne 35-6  
 Knapp, Kasie 6-53  
 Kneedy, Sheyanne 34-4\*  
 Knubley, Christopher 12-8, 17-6, 34-1, 41-3  
 Knutson, Ellie 6-15  
 Kohl, Barry 16-5\*, 16-6  
 Kohrt, Casey 11-5  
 Kolawole, Folarin 6-46, 7-5, 21-1, 42-1  
 Kopera, Kristin 38-4\*  
 Kopper, Martha 7-1  
 Korf, Jason J. 9-5  
 Korus, Jesse T. 15-1\*  
 Kramer, Ariele 10-5\*  
 Krantz, Robert W. 6-16, 6-17, 6-18, 6-54, 40-1  
 Krishnamurthy, R.V. 25-1  
 Kulhanek, Denise K. 6-36, 6-37, 6-38  
 Kulkarni, Harshad Vijay 28-1  
 Kusick, Allison R. 43-6\*  
 Kyle, J. Richard 3-9, 27-7

**L**

Laabs, Benjamin J. 16-4  
 Lacroix, Brice J. 5-4, 6-50  
 Lamm, Sarah N. 9-2\*

Lancaster, Van 40-1  
 Lanier, Hayley C. 14-4  
 Lanzirrotti, Antonio 3-9  
 Lao-Davila, Daniel 6-46  
 Lashley, Victoria 6-20\*  
 Lawhon, Hunter 12-7, 39-7  
 Layzell, Anthony L. 11-1\*, 15-5, 15-6, 24-1\*, 29-5, 40-2  
 Leal, Jesus 4-2  
 LeBlanc, Catherine G. 6-44\*  
 Lee, Yung Ping 8-8\*  
 Lefler, Nick 38-5  
 Lemons, Casee 42-3  
 Leonard, Karl W. 6-28  
 Li, Peng 42-3  
 Li, Yunxia 23-1  
 Lieberman, Bruce S. 19-9  
 Lin, Tong 30-3  
 Little, Nolan 15-2  
 Liu, Chao 32-5\*  
 Liu, Ganming 18-9  
 Loecke, Terry D. 25-5\*  
 Loiacomo, Dallia 10-8\*  
 Longman, Mark 12-4  
 Loomis, Bryant 15-4  
 Loope, David B. 38-1\*  
 Lori, Lisa M. 13-2  
 Lovelace, David M. 5-2  
 Lowe, James B. 22-1  
 Lowell, Thomas V. 29-6  
 Lucas, Spencer G. 2-3  
 Ludvigson, Greg A. 15-5, 15-6\*, 15-7, 29-3, 29-4, 29-5\*, 40-2  
 Ludwig, Katherine G. 6-48\*  
 Lundeen, Evelyn 25-6  
 Lupia, R. 38-12  
 LV, Jialei 30-5

**M**

MacGregor, Kelly 16-1  
 Mahaffey, Nova 3-10\*  
 Mahan, Shannon A. 5-1, 5-2\*, 11-8  
 Maher, Harmon Jr. 6-49, 6-53, 32-3\*  
 Malone, David H. 6-27, 39-3  
 Malone, Shawn J. 19-3  
 Mandel, Rolfe D. 11-1, 24-1, 29-5  
 Manker, Jaclyn 6-4\*  
 Marcott, Shaun A. 11-4  
 Marfurt, Kurt J. 42-1  
 Martin, David A. 27-4  
 Martinez, Dominique 6-38\*  
 Maruszczak, Alex D. 8-7  
 Maxson, Julie 9-4\*  
 Mayo, Dave P. 12-8\*, 17-6, 34-1  
 McCafferty, Anne E. 13-2  
 McCahon, Thomas J. 29-8  
 McKay, Matthew P. 11-2  
 McKay, Robert M. 6-37  
 McLaughlan, Kendra K. 25-2, 25-4  
 McLaughlin, Jack R. 6-37\*  
 McLean, Noah M. 15-7  
 McLeod, Claire 3-6  
 McMillan, Margaret E. 14-9\*, 37-3  
 Meachen, Julie 5-2  
 Meier, Meagan 31-3\*  
 Memeti, Vali 27-2  
 Meng, Jingyao 20-4  
 Merriman, Jesse 34-2  
 Mews, Kim S. 1-7\*  
 Meyer, John 4-1  
 Michelfelder, Gary S. 2-7, 3-7, 3-11, 22-2, 22-3, 22-4  
 Mickus, Kevin L. 6-55, 26-1  
 Mihindukulasooriya, Lorita 38-11  
 Mikkelsen, Kristin M. 25-6  
 Mikulic, Donald G. 35-6\*  
 Milbrandt, Eric 6-22  
 Miller, Keith B. 29-8\*  
 Miller, Merrell A. 16-5, 16-6  
 Mincckley, Thomas 5-2  
 Mitchell, Mark D. 5-1  
 Molina, Zalma P. 6-56\*, 21-4  
 Möller, Andreas 2-6, 15-5, 15-7\*, 29-5  
 Mongol, Erdoo 31-7\*  
 Montano, Jonathan 37-1\*  
 Moore, Brittinity Paige 28-6\*  
 Moretto, Michael Jr. 29-6  
 Morgan, Tanner F. 6-17\*  
 Morton, Dylan 17-4  
 Moser, Duane 28-1  
 Mosquera, Pablo V. 38-10  
 Muftah, Ahmed 19-3

Mugavero, Dominic 6-28  
 Muller, Simone R. 13-4, 32-1\*  
 Munoz, Christopher Joaquin 19-1\*  
 Murbarger, Brodey I. 6-14\*  
 Murphy, Kimberly A. 6-5  
 Muttel, Sage 11-2\*  
 Myrbo, Amy 16-1

**N**

Nace, Keifer E. 19-4, 19-5\*  
 Nakata, Nori 1-5, 26-4  
 Nanis, Hafid 35-1  
 Nash, T. Andrew Jr. 6-15  
 Nazworth, Caroline M. 29-1\*  
 Nellerroe, Ron 19-10  
 Nelson, Michelle S. 5-5  
 Nelson, W. John 2-3\*  
 Newell, K. David 24-1  
 Newman, Jordan 13-5\*  
 Nicovich, Sylvia Rose 11-6, 11-8\*, 16-3  
 Nissen, Julia 31-2  
 Nogueira, Xavier Rojas 39-4\*  
 Nolte, Keith A. 6-56, 7-7\*, 21-4  
 Norris, Nathaniel 29-6\*  
 Northrup, Paul 3-9  
 Nowlin, Weston 10-8  
 Nso, Peter 32-2\*

**O**

O'Dowd, Conor L. 2-7\*  
 Oboh-Ikuenobe, Francisca E. 31-7  
 Oborny, Stephan C. 6-32, 6-33  
 Obrist-Farner, Jonathan 12-1, 12-10, 31-4, 31-6, 31-7, 33-3  
 Ohrmundt, Sierra C. 36-1\*  
 Okpokho, Ini S. 23-2\*  
 Olafsen Lackey, Susan 4-4  
 Onnen, Mike 15-2  
 Orso, Joseph Francis IV 20-3\*  
 Orvis, Kevin 15-2  
 Osborn, Alan 6-26  
 Owen, Lewis A. 5-4

**P**

Page, Nicolina 6-28  
 Paladino, Patrick 37-3  
 Palin, Richard M. 3-8  
 Palko, Emma 6-15  
 Palmer, William 19-11  
 Pandit, Bimal 33-5\*  
 Parcher, Sara 6-49\*  
 Parker, Don F. 27-6\*  
 Parrish, Randall R. 3-9  
 Pashin, Jack C. 1-4, 20-4, 35-2  
 Pate, Olivia L. 6-45\*  
 Patterson, Molly O. 6-37  
 Pavlowsky, Robert T. 6-55  
 Pearce, Julian A. 27-1\*  
 Pearson, Joshua 6-34\*  
 Peate, David W. 8-5, 8-7\*, 36-2, 43-6  
 Peng, Ling 20-6\*  
 Pennington, Colin 7-4  
 Perera, Sonasha G. 6-23\*  
 Perez, Julian 6-8  
 Perkins, Andrew J. 6-3\*  
 Perna, Chris 6-28  
 Petrovic, Heather 9-8  
 Petrovic, Heather L. 14-7  
 Peterman, Cara 18-6\*  
 Peterson, Alan E. 40-2\*  
 Petralia, Joseph 39-5  
 Pettus, Holly D. 43-1  
 Pfeifer, Lily S. 6-29\*  
 Philippe, Marc 38-12  
 Philp, R. Paul 17-1  
 Piccione, Gavin G. 3-9  
 Pletnikoff, Paula M. 6-31\*  
 Polsak, Jake 19-4\*, 19-5  
 Pompeani, David P. 25-2\*  
 Pope, Jeffrey J. 6-53\*, 32-3  
 Pope, John Paul 6-1, 6-42, 6-43  
 Porter, Misty E. 15-4  
 Prasad, Manika 14-1  
 Prellwitz, Henry 43-1  
 Price, Jonathan D. 6-23, 13-6, 13-7, 13-8\*, 13-9, 27-5  
 Proffitt, Hannah R. 21-4  
 Puckett, Robert E. 13-7, 13-9\*  
 Puckette, James 17-2, 39-5

Puckette, James O. 2-1\*, 34-3  
Pujana, Ignacio 6-10

## Q

Qin, Yan 7-4\*, 21-3  
Quevy, Amber L. 27-5\*

## R

Rabiei, Minou 1-8, 20-1, 30-2  
Rader, Mikaela A. 2-6\*  
Ramirez, Wilson 39-1  
Rasbury, Troy 3-9  
Rasmussen, Dirk 12-3  
Rasouli, Vamegh 1-8, 20-1, 30-2  
Ratre, Pranshu 26-3\*  
Ratschbacher, Barbara 27-2  
Ravelo, Ana Christina 6-38  
Rawling, J. Elmo III 11-4  
Reale, Jill R. 6-41\*  
Rechtes, Ze'ev 7-5  
Redfield, Tim F. 6-49  
Reeves, Theodore S. 9-1  
Reger, Brandi 6-8, 37-4\*  
Reher, Blake 9-1  
Reynolds, Emma 8-6  
Richardson, Christina 25-8\*  
Richmond, Dean R. 38-12\*  
Ricketts, Jason W. 2-9  
Ries, Rosamie 6-15, 7-6  
Rijfkoogel, Luke 20-2\*  
Rinderknecht, Chanse 30-4\*  
Rittenour, Tammy 5-3, 5-5, 5-8\*, 6-3  
Robertson, Clay Henry 29-4\*  
Rochefford, M. Kathryn 37-2  
Rochefford, M. Kathryn 6-21  
Rodel, Matthew 15-4  
Rodriguez, Alexander 10-1  
Rodriguez-Gonzalez, Georgina 2-9\*  
Rogers, Kayleigh 8-4, 26-6\*, 43-4\*  
Roque Martinez, Lorena 28-7\*  
Rosenthal, Yair 6-36, 6-38  
Ross, Jeffrey Bryce 29-3\*  
Rosson, Zachary D. 7-2, 7-3\*  
Rougvie, James R. 6-51  
Rovey, Charles II 38-6  
Rovey, Charles W. 16-7\*  
Ruleman, Cal 5-1\*, 11-6, 16-2, 16-3\*  
Russell, J. Kelly 8-3  
Ryuh, Yon-Gyung 15-3

## S

Saavedra, Marcelo A. 6-7\*  
Sailor, Matthew 6-52\*  
Salinas, Robert B. 23-1\*  
Salley, Kaitlin A. 15-3  
Salvat, Jenna M. 9-1  
Sanabria, Mateo 2-5\*  
Santos-Mercado, Hernan 39-1  
Savvaidis, Alexandros 42-3  
Schilling, Keith 38-6\*  
Schmitt, James G. 11-8  
Schmitz, Mark D. 13-6, 13-7  
Schneider, Blair B. 14-2\*  
Schneider, Blair Benson 14-3  
Schneider, Marcus 34-1\*

Schoenfeld, Taylor Earl 35-4\*  
Schroder-Adams, Claudia J. 29-3  
Schwartz, Benjamin 28-2  
Schwartz, Benjamin F. 10-8, 28-7  
Scientists, IODP Expedition 374 6-37  
Sealand, Alessandra 6-10\*  
Searles, Mindi L. 38-1  
Seeger, Cheryl 13-2  
Selden, Paul A. 19-14  
Semeraro, Anthony 39-4  
Shae, Christopher J. 38-8  
Shankar, Siddharth 15-4  
Shanley, Keith 12-4  
Sharman, Glenn 39-4  
Sharp, Jonathan O. 25-6  
Shaw, Nicholas D. 12-9  
Shell, Ryan 19-11\*, 19-12  
Shen, Zhixiong 38-7  
Shervais, John 6-44  
Sholanke, Seyi D. 20-4\*  
Shonnard, Christine 17-5, 39-2\*  
Shore, Dominique 5-3\*  
Shroat-Lewis, René A. 14-6  
Shulmeister, James 5-8  
Shuman, Bryan N. 25-2  
Siebach, Jacob A. 8-7  
Sitek, Brian C. 15-7  
Skoumal, Robert 7-6  
Slade, Noah 16-1\*  
Smith, Jon J. 15-4, 15-5\*, 15-6, 15-7, 40-2  
Smith, Lindsey Michelle 6-9\*  
Smye, Katie 42-3  
Snow, Jonathan E. 8-8  
Soreghan, Gerilyn 6-29  
Sortor, Rachel N. 16-2\*, 16-3  
Sparks, C. Renee 33-2\*  
Spear, Frank S. 3-2  
Spencer, Jason P. 43-2\*  
Spencer, Joel Q.G. 5-4, 5-7  
Spencer, Kevin J. 4-2\*  
Spencer, Trevor 5-7\*  
Spinler, Kalyca N. 14-6\*  
St. Romain, Scott 38-9  
Stafford, Kevin W. 6-11, 18-4\*, 37-5  
Stansell, Nathan D. 31-5  
Stearn, Madeline M. 3-11\*  
Stearns, Leigh A. 15-4  
Steinitz-Kannan, Miriam 38-10  
Steinman, Byron A. 31-5, 38-8  
Stern, Robert J. 27-3\*  
Stessman, Holly A.F. 6-5  
Stevens, Joshua K. 39-8\*  
Stevens, Liane M. 14-8\*  
Stolzman, Kacie C. 6-24  
Stone, Mandy L. 4-6\*  
Stotler, Randy L. 15-3\*, 15-4, 15-6  
Stover, Susan G. 14-4\*  
Strachan, Sean 6-43\*  
Straley, Charlotte 6-20  
Stubbins, Blake 6-15  
Stumpf, Andrew J. 31-1  
Suarez, Marina B. 29-3  
Sultan, Mohamed 25-1  
Sumrall, Jeanne Lambert 6-12, 6-20  
Sumrall, Jonathan B. 23-3, 23-4, 23-5, 23-6, 28-3\*, 28-4  
Sun, Qiaoqi 33-3\*  
Sun, Xiaomeng 1-12  
Sundberg, Sarah A. 21-3\*

Suydam, Alysa 4-1  
Swanner, Elizabeth 6-13  
Swearingen, Seth 6-15  
Sweet, Dustin E. 13-1  
Szopinski, Patrick Henry 42-2\*

## T

Tamborello, Brittney Lynn 17-1\*  
Tan, Liangcheng 31-2  
Tandy, Tyler A. 18-10\*  
Tarantolo, Mitchell S. 6-44  
Tassier-Surine, Stephanie 38-5\*, 38-6  
Tassier-Surine, Stephanie A. 11-5  
Teed, Rebecca 6-4, 38-4  
Testa, Maurice P. 12-8, 17-6, 34-1, 41-3  
Thacker, Jacob O. 2-2\*  
Thackray, Glenn D. 5-8  
Thomas, Christopher D. 19-13\*  
Thomka, James R. 19-13, 19-15\*  
Thompson, Audrey 1-9  
Thompson, Leah N. 17-3\*  
Thorburn, John 15-2  
Thoresen, Haley 6-15\*  
Tian, Lijun 10-1\*, 23-1  
Tierney, Charlotte P. 41-2\*  
Tindall, Sarah E. 32-6  
Tomlinson, Zachary Dean 6-29  
Toth, Kevin J. 18-8\*, 34-3\*  
Trevino, Mia 6-8\*  
Tsofilas, George 6-56, 7-7, 21-4\*  
Tucker, S.T. 15-1  
Tucker, Shane T. 15-5  
Tunin, Zachery Thomas 39-6\*  
Tupper, Stephen 25-3\*  
Turner, Elijah 15-7  
Turner, Jonathan 5-6  
Turner, Kenzie J. 5-1

## U

Ugurhan, Mert 27-7  
Ukstins, Ingrid 36-2  
Ullmann, Paul Victor 19-10

## V

Vahling, Jessica 12-4\*  
van Alderwerelt, Brennan 36-2  
Vázquez-Ortega, Angélica 18-9  
Veatch, Steven Wade 9-1  
Vega, Jordan 18-1\*  
Vega, Michael 25-6\*  
Velazquez-Santana, Liannie Coral 3-6\*  
Vera, Alexandro 1-5\*, 26-4\*  
Vetter, Scott 6-44  
Vick, Travis J. 6-46\*  
Vickers, Hunter 12-7, 39-7\*  
Vidal, Valérie 33-1\*  
Vinke, Ali Jo 6-42  
Voegelé, Kristyn K. 19-10  
Voice, Peter J. 9-6\*, 9-8\*

## W

Wagner, Zachary C. 38-8  
Walker, Douglas 6-2  
Wall, Corey J. 13-6\*, 13-7

Wallace, Chester 2-1  
Walter, Jake 7-2\*, 7-3, 21-1, 21-3  
Waltz, Robin 6-35\*  
Wanamaker, Alan D. Jr. 6-2  
Wang, Lan 30-3\*, 30-5  
Wang, Pujun 1-12  
Wang, Yulun 34-4  
Wanless, Harold R. 38-3  
Watney, W. Lynn 21-4  
Wattrus, Nigel 31-6  
Wegmann, Mackenzie 22-4\*  
Wei, Duan 20-5\*  
Wei, Mingzhen 1-10  
Weingarten, Matthew 7-8  
Weinzapfel, Adam M. 6-14  
Weissling, Blake 10-1  
Welch, Jessica Lynn 11-6, 39-3\*  
Welker, Avery Joseph 32-6  
Werts, Kevin 27-2  
Westgaard, John Jr. 9-5\*, 19-7  
Westjohn, David B. 12-9\*  
Wethington, Conn 35-2\*  
White, John Charles 23-2, 27-8\*  
Whitemore, Donald O. 10-2\*  
Whittington, Alan 6-47, 34-2  
Widga, Chris 6-2  
Wierner, Ali M. 38-8\*  
Wierman, Christopher 3-5\*  
Wilkerson, Paul 6-55\*  
Willging, Steve 9-5  
Williams, Thomas J. 10-7\*  
Wilson, B. Brownie 10-2  
Wolf, Michael B. 6-39, 6-41  
Wolfe, Oliver M. 3-2  
Wood, John R. 5-2  
Woods, Arielle 38-8  
Wooten, Kathleen 3-9  
Wu, Tao 17-4  
Wu, Yinye 30-5\*, 30-6  
Wzientek, Eric J. 40-1\*

## X

Xiaojun, Cui 1-4

## Y

Yang, Wan 1-10, 12-6  
Yang, Zhi 1-6\*, 30-5  
Yanites, Brian J. 5-3  
Yaxley, Greg M. 8-1  
Yellich, John A. 9-8  
Young, Ryan K. 6-14

## Z

Zambito, James J. IV 12-11\*, 39-2  
Zdanowski, Sarah E. 18-5\*  
Zhang, Chi 20-5, 20-6  
Zhao, Chen 12-10\*  
Zhao, Wenyu 1-11\*  
Zheng, Dongyu 12-6\*  
Zheng, Han 1-12\*  
Ziegler, Andrew C. 4-6  
Zimmerman, Susan H. 11-4  
Zoet, Lucas K. 11-4  
Zubkuf, Tykhon 19-3

# CODE OF CONDUCT AT GSA EVENTS



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

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

## Expected Behavior

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

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

## Procedures to be followed in an emergency situation:

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

## Unacceptable Behavior includes but is not limited to:

- Harassment, intimidation, or discrimination.

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

Examples of unacceptable behavior include but are not limited to:

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

## Consequences of Unacceptable Behavior

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

## Reporting Unacceptable Behavior

If you are being harassed, notice that someone else is being harassed, or have any other concerns, please locate a GSA Staff Member or GSA Leader (see page 2) with a GSA RISE button. You may also email GSA at [gsaeventscode@gmail.com](mailto:gsaeventscode@gmail.com).

**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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