

2024 Joint North-Central/South-Central Section Meeting Program

Vol. 56, No. 3



Smallin Civil War Cave. Photo credit: Springfield CVB.

Springfield, Missouri | 21–23 April

www.geosociety.org/nc-mtg

Sponsors (as of press time)

We are grateful to several societies, companies, and agencies that made substantial contributions to underwrite the cost of the 2024 meeting. Look for their names prominently displayed on signs throughout the meeting. Please take time to thank these sponsors for their contributions to help make this meeting a success. Listed below are sponsorships received by time of press in April 2024.

Silver Level



Copper Level



Zinc Level



Lead Level



NOTICE

By registering for this meeting, you have acknowledged that you have read and will comply with the GSA Code of Conduct for Events (full code of conduct listed on inside back cover).

If you have any concerns about behavior that may violate the Code:

- Please ask questions or report concerns—openly or anonymously—to our third-party hotline provider via:
 - Internet: geosociety.ethicspoint.com
 - Phone: +1-844-237-8688
 - Mobile: geosociety.navexone.com
- Or, direct any questions or concerns to ethics@geosociety.org or any GSA staff member or RISE Liaison.

**FINAL PROGRAM FOR
ABSTRACTS WITH PROGRAMS**

**58th Annual Meeting
JOINT NORTH-CENTRAL & SOUTH-CENTRAL SECTION
GEOLOGICAL SOCIETY OF AMERICA
21-23 April 2024
Oasis Hotel & Convention Center
Springfield, Missouri**



Meeting in the Mid-Continent

Co-Hosted By

Missouri State University – School of Earth, Environment, and Sustainability
And
University of Arkansas – Department of Geosciences

North-Central Section GSA Officers for 2023–2024

Chair: Douglas Gouzie
Vice Chair: Kevin Mickus
Secretary-Treasurer: Tandis Bidgoli
Past Chair: Tara Kneeshaw
Student Representative: Zeke King Phillips
Members-at-Large: William S. Elliott, Jr, Stuart M. Kenderes, James Zambito

South-Central Section GSA Officers for 2023–2024

Chair: Mohamed Aly
Vice Chair: Scott M. Ausbrooks, Angela Chandler
Secretary-Treasurer: Michael DeAngelis
Past Chair: Todd Halihan
Student Representative:
Members-at-Large: Antonio Cardona Benavides; Stephen K. Boss; Todd Halihan;
. Juan Alonso Ramirez Fernandez; Jay B. Sims, III; Wendi J. W. Williams

Committee for the 2024 Meeting

General Co-Chairs: Douglas Gouzie and Mohamed Aly
Technical Program Chair: Kevin Mickus
Field Trip Chairs: Charles Rovey and Matthew McKay
Exhibit and Sponsorship Chairs: Gary Michelfelder and Adriana Potra
Student Volunteers Chairs: Damon Bassett and Gregory Dumond
Short Course Chairs: Melanie Carden-Jessen and Melinda Gutierrez
Welcome Party Chair: Nancy Williams
Student Presentation Judging | South-Central Section: Celina Suarez

Message from Missouri Department of Natural Resources



On behalf of the Missouri Department of Natural Resources and our geosciences division, the Missouri Geological Survey, I welcome you to the city of Springfield, Missouri. Missouri is a wonderful place to live, work, and recreate, and Springfield has much to offer in the way of arts, entertainment, food, and scenery. Springfield is the home of Route 66, Bass Pro Shops, and Wilson's Creek National Civil War Battlefield; it is a city rich in history that ties back to the local geography and geology. Springfield is known for high calcium limestone deposits rich with caves, freshwater springs, and sinkholes. This unique geology is the source of economic prosperity in the form of show caves, aggregate, agricultural lime, and dimension stone, some of which was used on the face of the State's capitol building in Jefferson City and many other prominent structures in the state and nation. Springfield is located in the heart of the gently rolling Springfield Plateau physiographic region and is rimmed to the south by deeply incised Ozark hills and mountains that stretch into Arkansas. These two geographic regions are examples of the geographic and geologic diversity in our state that our citizens and the scientific community appreciate.

As an agency that works to protect our air, land, water, and mineral resources, the Missouri Department of Natural Resources, along with academia, industry, and other government entities, see the need to build scientific expertise in the STEM areas to produce the geoscience workforce of the future. We give our full support to the Geological Society of America to challenge Midwest students in the geosciences. The organizing committee has planned a meeting program that looks to be an exciting assemblage of scientific and career-building activities that we hope you'll take full advantage of.

I want to personally thank the GSA planning committee for asking my team to be a part of this exciting opportunity and the future it represents for students and growing the geosciences in the Midwest. I wish you a fruitful and successful meeting in Springfield.

A handwritten signature in black ink that reads "Dru Buntin".

Dru Buntin, Director

Missouri Department of Natural Resources



General Information



Geology of the Springfield Area

Springfield is the gateway to the Ozarks region – an area of many scenic vistas and interesting geology- from the Buffalo National River in Arkansas to the Ozark Scenic Riverways in Missouri, from Impact Structures in Missouri to the Boston mountains in Arkansas. The Ozarks are bounded on the eastern edge by the St. Francois Mountains – host to well-known igneous rocks and the MVT lead-zinc deposits. In the Ozarks themselves, over 1500 feet of mostly carbonates offer great stratigraphy and an abundance of karst features (Missouri is sometimes called “The Cave State”). We hope you will enjoy one of the Field Trips in this meeting, or will create your own exploration of whichever rocks most interest you in this area!

Directions

The Oasis Hotel and Convention Center is located at 2546 N. Glenstone Avenue (Business Loop I-44), just south off of Exit 80 on Interstate 44.

Parking

Free Parking is available for the hotel (in front of hotel) and the Convention Center (behind the main hotel lobby- follow signs for Convention Center)

Convention Center

The convention center is connected to the east side of the Oasis Hotel

Climate

Late April can be pleasant in Springfield. Typically, spring is here with flowers in full bloom. Temperatures typically range from 45° F to 70° F. It is also a month of relatively high precipitation. Pack with layers in mind, as there can be a significant temperature variation from morning to night.

Registration

Registration is required to participate in all events associated with the meeting, including technical sessions, field trips, short courses, exhibits, special meetings, and planned social events. Registration badges must be worn for access to all activities, and guest registration is required for attendance at the welcoming reception, scheduled lunches, breakfasts, dinners, and field trips. A current student ID is required to obtain student registration rates. K–12 professionals are invited to attend at reduced rates.

Registration Schedule

On-site registration and badge pick-up is in the lobby of the Grand Ballroom, Oasis Hotel & Convention Center. Registration hours are:

Sunday, 21 April | 9 a.m.–7 p.m.
Monday, 22 April | 7 a.m.–5:00 p.m.
Tuesday, 23 April | 7 a.m.–12 p.m.

On-site Registration Fees shown in U.S. dollars.

	Full Mtg.	One Day
Professional Member	\$ 375	\$ 265
Professional Member 70+ & 30-year member	\$ 250	\$ 175
Professional Nonmember	\$ 395	\$ 275
Early Career Professional	\$ 275	\$ 225
Student Member	\$ 150	\$ 120
Student Nonmember	\$ 190	\$ 155
K-12 Professional	\$ 125	\$ 100
Guest or Spouse	\$ 90	n/a
Field Trip/Short Course Only	n/a	\$ 90

Guest registration is intended for non-geoscientist spouses or friends and does not include attendance at technical sessions, field trips, or short courses. A registered professional, a student, or a K–12 professional must accompany guest registrants. Students and K–12 teachers must show a current ID at check-in to obtain special rates.

Cancellations, Changes, and Refunds

All requests for additions, changes, and cancellations must have been made in writing to GSA Headquarters and received by 25 March 2024. There will be no refunds for cancellations received after this date and no refunds for on-site registrations. Preregistration refunds will be mailed from GSA Headquarters after the meeting.

Meeting Program and Abstracts

A web-based program is available for this meeting. This program allows you to view and search the meeting program and create your own schedule of events to attend, as well as view the full text of abstracts. Please view the program at <https://gsa.confex.com/gsa/2024NC/meetingapp.cgi>. If you would prefer a paper version of the program book, please print the pdf version of this program book available on the meeting website.

Accessibility

GSA is committed to ensuring full participation for all meeting attendees. You may indicate special requirements on your registration form; please inform the local organizing committee of these requirements at least one month prior to the meeting. Accessible rooms at the hotel are available and can be reserved.

Continuing Education Credits

Continuing Education Unit (CEU) credits are available for attending GSA Meetings, Field Trips, and Short Courses. This is an excellent opportunity to earn CEUs toward your requirements for your employer, K–12 school, or professional license. A contact hour is defined as a typical 60-minute classroom instructional session or its equivalent. Each meeting day equals 0.8 CEU, offering 2.4 CEUs for the joint

meeting technical program, with additional CEUs available from field trips and short courses. Please check the meeting website after the meeting to download your CEU certificate.

Accommodations

A block of rooms has been reserved at the Oasis Hotel (Ascend Collection, Choice Hotels), 2546 N. Glenstone Ave, Springfield, Missouri, 65803, USA, located near I-44 and Business US-65. The hotel offers many amenities (restaurants, bar, pool, wi-fi) and a complimentary shuttle to/from Springfield-Branson National Airport. Parking is available at the hotel and convention center (behind the hotel). Complimentary breakfast is available for hotel guests only.

Cultural and Recreational Amenities

Experience Springfield

Looking for fun and easy things to do outside meeting hours? Near the GSA Registration Desk in the Ballroom Lobby, we will have coupon books and flyers about local attractions, including Bass Pro Shops main store (Springfield is home office of Bass Pro Shops), the Wonders of Wildlife Museum and National Aquarium (one of the newer large aquariums in the US), information about local show caves, and other local activities. We do note that most activities will require you to have a vehicle or car service available to you, and walking at night near Glenstone Avenue is not recommended.

Also, be sure to check out some of downtown Springfield's best restaurants and microbreweries when we offer shuttle bus service to the downtown area for Monday night dinner options.

Special Events & Activities

Sunday, 21 April

Session Chairs/Student Volunteer Orientation. 9–9:30 a.m., Coco Ballroom, Oasis Convention Center. This meeting includes a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions.

Roy J. Shlemon Mentors Program in Applied Geoscience. Noon–1:30 p.m., Sahara Room, Oasis Hotel. GSA student members will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors over a FREE lunch. Please note this is on a first-come, first-served basis and there is a limit to the number of attendees.

Welcoming Reception. 5:30–7 p.m., Grand Ballroom, Oasis Convention Center. Connect with your colleagues and make new acquaintances while entertained by One More Dollar.

Monday, 22 April

Fitness Class. 6:15–7 a.m., Grand Ballroom Stage, Oasis Convention Center.

GSA North-Central Section Management Board Meeting. 6:30–8 a.m., Bora Bora Room, Oasis Convention Center.

Session Chairs/Student Volunteers Orientation. 7–7:30 a.m., Coco Ballroom, Oasis Convention Center. This meeting will

include a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions.

GSA Campus Representative Appreciation Breakfast. 7–8 a.m., Sahara Room, Oasis Hotel. This complimentary light 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.

Geoscience Career Program Workshop Part 1. Career Planning and Informational Interviewing. 9–10 a.m., Sahara Room, Oasis Hotel. This workshop will help you begin the job-hunting process and will introduce you to informational interviewing.

Geoscience Career Program Workshop Part 2. Geoscience Career Exploration. 10–11 a.m., Sahara Room, Oasis Hotel. What do geologists in various sectors earn? What do they do? What are the pros and cons to working in academia, government, and industry? Workshop presenters and professionals in the field will address these issues.

John Mann Mentors Program in Applied Hydrogeology. Noon–1:30 p.m., Sahara Room, Oasis Hotel. GSA student members interested in applied hydrogeology or hydrology as a career will have the opportunity to network with professionals in these fields over a FREE lunch. Please note this is on a first-come, first-served basis and there is a limit to the number of attendees.

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

Geoscience Career Program Workshop Part 4. GeoGradApp Workshop: Illuminating the Pathway to Graduate School in the Geosciences. 3–5 p.m., Sahara Room, Oasis Hotel. Interested in grad school? Complimentary to geogradapp.com, this workshop will lead you through the tips and tricks needed to apply to graduate school in the geosciences! Attendees will be invited to participate in a research study involving a post-workshop online survey and a follow up online survey six months after their participation in the workshop to assess both their understanding of the graduate application process and their experiences with the workshop. Any student who agrees to participate in the study will receive a \$5 Starbucks gift card, regardless of whether they complete the surveys.

GSA North-Central Section OPEN Business Meeting. 5:30–5:45 p.m., Maui Ballroom, Oasis Convention Center.

GSA Town Hall with Melanie Brandt, CEO of GSA. 5:45–6:30 p.m., Maui Ballroom, Oasis Convention Center. The perfect occasion to stratify your network, crystallize new connections and enjoy an open bar and Earth Day treats with GSA's Executive Director/CEO, Melanie Brandt.

Tuesday, 23 April

Fitness Class. 6:15–7 a.m., Grand Ballroom Stage, Oasis Convention Center.

GSA South-Central Section Management Board Meeting. 7–8 a.m., Bora Bora Room, Oasis Convention Center.

Session Chairs/Student Volunteers Orientation. 7–7:30 a.m., Coco Ballroom, Oasis Convention Center. This meeting

will include a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions.

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

SHORT COURSES

One Short Course will be offered on Saturday, 20 April, pre-meeting. This course required pre-registration and may not have any remaining seats at onsite registration. For additional information, please contact the short course co-chairs: Melanie Carden-Jessen, Missouri State University, <mailto:mcardinjessen@missouristate.edu>, and Melida Gutierrez, Missouri State University, mgutierrez@missouristate.edu.

SC 501 | Introduction to Visualizing and Interpreting 3D Geologic Data Using X-ray Tomographic Microscopy.

Tara Selly, University of Missouri, sellyt@missouri.edu; Sarah Jacquet, University of Missouri, jacquets@missouri.edu; James Schiffbauer, University of Missouri, schiffbauerj@missouri.edu.

Description: Join our workshop to explore the wide-ranging applications of 3D X-ray tomography in the earth sciences. Gain insights into acquisition techniques, data processing, and analytical methods. The MizzouX lab will provide free data collection prior to the meeting, enabling participants to focus on data visualization, assessment, and curation during the course.

Field Trips

GSA's Commitment to Care prioritizes your safety. For additional information, please contact the field trip co-chairs: Charles Rovey, charlesrovey@missouristate.edu, or Matt McKay, matthewmckay@missouristate.edu. All field trips depart from the Oasis Convention Center. Field trips are listed below chronologically. Check-in is the first time listed with the respective field trips on the Schedule of Events, starting on page 12. Full itineraries are sent directly to attendees.

Pre-Meeting:

FT 406 | Petrology and Structure of the Mesoproterozoic Igneous Rocks of the St. Francois Mountains, Southeast Missouri.

Gary Michelfelder, Missouri State University, garymichelfelder@missouristate.edu; Hanlin Zhang, Missouri State University, h423s@missouristate.edu.

Description: This two-day (Friday–Saturday) field trip will explore the mid-continent granites and rhyolites of the St. Francois Mountains. Field stops will visit classic locations on the volcanic stratigraphy of rhyolites and associated ring granitoid plutons of the Mesoproterozoic calderas. We will also visit lesser-known locations related to younger plutons.

FT 401 | Ordovician and Mississippian Stratigraphy in Southwestern Missouri.

Charles Rovey, Missouri State University, charlesrovey@missouristate.edu; Damon Bassett, Missouri State University, dbassett@missouristate.edu.

Description: This one-day trip (Saturday) provides an overview of Paleozoic carbonate stratigraphy in southwest Missouri. Stops display evidence for: (1) seismic activity during deposition of Ordovician peritidal strata; (2) proximal-to-distal facies changes within the Mississippian carbonate platform; and (3) a brief influx of deltaic siliciclastics during the Middle Mississippian.

FT 402 | Urbanization in a Karst Terrane.

Wendell Barner, Barner Consulting, LLC, Wendell.barner@gmail.com; Doug Gouzie, Missouri State University, douglasgouzie@missouristate.edu.

Description: This one-day field trip (Saturday) will visit several sinkhole sites within the Springfield area and discuss historical development issues that led to the city-wide and eventually to a county-wide regulatory approach to construction near sinkholes. We will also visit sinkholes that have occurred since regulations were implemented and review current approaches to dealing with sinkholes in urban areas.

FT 404 | Spectacular Trace-Fossil Assemblages within the Northview Formation, SW Missouri.

Charles Rovey, Missouri State University, charlesrovey@missouristate.edu; Damon Bassett, Missouri State University, dbassett@missouristate.edu.

Description: The trace-fossil density in the Northview Formation of SW Missouri is so high that local residents have called it “worm rock.” This half-day trip (Sunday morning) will view associations of common ichnogenera, their vertical successions, and associated sedimentary structures to help decipher the Northview's depositional environment(s).

Post-Meeting:

FT 403 | Phenix Rising: Restoration and Revitalization of a Major Dimension-Stone Manufacturer in Southwest Missouri.

Kevin Ray Evans, Missouri State University, kevinrayevans@missouristate.edu; Joseph T. Hannibal.

Description: The historic Phenix quarry, located between Ash Grove and Walnut Grove, Missouri, has provided building stone from the upper part of the Mississippian Burlington-Keokuk Limestone since 1888 and finished dimension stone since the early 1900s. The Phenix Marble Company produced Napoleon Gray® and Ozarks Fleuri® varieties, cut perpendicular and parallel with bedding, respectively. Production was curtailed during the Great Depression and World War II, but the need for repairs and renovations of existing applications and installation of new applications has brought renewed interest, reviving production of Phenix marble. Since the mid-2010s, the reorganized Phenix Marble Company has installed state-of-the-art cutting, polishing, and finishing equipment to fulfill increased demand for finished dimension stone. This half-day field trip

(Tuesday afternoon) will visit exposures of the Burlington-Keokuk Limestone near Willard, Missouri, and facilities of the Phenix Marble Company.

FT 408 | The Geology and Genesis of the World-Class Pb-Zn-Cu Ores of the Viburnum (MO) Trend. Aaron W. Johnson, The American Institute of Professional Geologists, awj@aipg.org.

Description: This two-day trip (Tuesday–Wednesday) will focus on geology of the host rocks and the processes by which these world-class deposits were emplaced. This field trip will include a tour of one of the active underground mines in the Viburnum Trend with other potential stops at surface outcrops if time and weather permit.

Students and First-time Attendees

The Local Organizing Committee extends a special welcome to students and first-time attendees of this meeting. In particular, we want to draw your attention to a series of special events in the program, such as the **GeoCareers Workshops**, the **Roy J. Shlemon Mentors Program in Applied Geoscience**, the **John Mann Mentors Program in Applied Hydrogeology**, and the **Geology Club Meet-Up**.

Have questions about what it is like to attend a section meeting of GSA? We encourage you to check out a fantastic resource created by GSA for first-time meeting attendees: <https://speakingofgeoscience.org/2022/09/27/tips-for-first-time-attendees-of-gsa-connects/>. Their suggestions cover a range of topics such as preparing your presentation, networking, following-up with contacts after the meeting, and more!

Student Volunteers

Students accepted as meeting volunteers must check in at the registration desk. Students who are volunteering in session rooms are required to attend a Session Chairs/Student Volunteer Orientation, being held Sunday from 9–9:30 a.m., and Monday and Tuesday from 7–7:30 a.m. in the Coco Ballroom, Oasis Convention Center.

Exhibits

Exhibits are located in the Grand Ballroom, Oasis Hotel & Convention Center.

Exhibit Hall Hours:

Setup: Sunday, 21 April: 9 a.m.–12 p.m.

Open: Sunday, 21 April: 1:30–7 p.m.

Open: Monday, 22 April: 8 a.m.–5 p.m.

Open: Tuesday, 23 April: 8 a.m.–noon.

Tear down: Tuesday, 23 April: noon–3 p.m.

Exhibitors (as of press time)

- American Institute of Professional Geologist (AIPG)
- Association of State Boards of Geology (ASBOG)
- Association of Engineering Geologists
- Baylor University
- Brunton
- Environmental Works, Inc. (EWI)
- Eureka Water Probes
- Geological Society of America Bookstore

- Geological Society of America Divisions
- Geological Society of America Foundation
- Geological Society of America North-Central Section 2025 Meeting (Joint with Northeastern)
- Geological Society of America South-Central Section 2025 Meeting
- Kansas Geological Survey
- Miami University-Ohio
- Michigan Technological University
- Midwestern State University
- Missouri Board of Geologists Registration
- Missouri Geological Survey/ MO DNR–Missouri Department of Natural Resources
- Missouri State University, School of Earth, Environment and Sustainability (SEES)
- Mizzou–University of Missouri
- Oklahoma State University, Boone Pickens School of Geology
- Ozark Environmental and Water Resources Institute (OEWRI)
- Stephen F. Austin University
- University of Arkansas
- University of Missouri at Kansas City
- University of Wisconsin
- U.S. Geospatial Intelligence Agency

Information for Presenters

Oral Sessions

Unless otherwise noted, each speaker will be allotted 20 minutes for oral presentations (17 minutes for presentation; 3 minutes for questions, discussion, and transition). Presentations must be prepared using PowerPoint or PDF formats. One laptop with Windows PowerPoint, one LCD projector, and one screen will be provided for all oral sessions. In addition, each room is equipped with a lectern microphone, wireless microphone, wireless computer mouse and PowerPoint advancer, and a speaker timer. **Speakers may not use their own laptops for presentations.**

The Speaker Ready Room

The Speaker Ready Room (SRR) is located in Arabian Room in the Oasis Hotel. The SRR is open for checking your presentation and speaker assistance as follows:

Sunday, 21 April: 9 a.m.–6 p.m.

Monday, 22 April: 7 a.m.–5:30 p.m.

Tuesday, 23 April: 7–10 a.m.

Each speaker must bring their PowerPoint or PDF presentation on a USB compatible flash drive (a.k.a. thumb drive or memory stick) to the Speaker Ready Room for checking and uploading to their session's folder according to the deadlines below. Failure to do so may result in presentations being omitted from session sequences.

Morning presentations must be uploaded by the end of the day prior to the presentation, and afternoon presentations must be uploaded by noon on the day of the

presentation. For presentations on Sunday afternoon, please come to the SRR as soon as you are able to on Sunday morning. If you aren't able to make it to the Speaker Ready Room by the requested time, please stop by at your earliest convenience when the SRR is open, and the staff there will assist you to get your talk uploaded in the correct location.

Poster Sessions

All poster sessions are in the Grand Ballroom, Oasis Convention Center. Authors are asked to have their posters in place by 9 a.m. and taken down at 5:30 p.m. Authors of posters should be present at their posters for 2 hours from 2:30–4:30 p.m. for the Sunday and Monday sessions, and from 9–11 a.m. for Tuesday's sessions.

Poster presenters have one poster display area that is 58" wide by 46" tall, please limit the size of your poster to fit within this space. This is smaller than the poster board size commonly provided at GSA meetings. Numbers on the poster boards correspond to the poster booth numbers listed in the Program. Clips to hang your poster will be provided. For student presenters, please discuss the fonts and layout of your poster with your mentor(s) so you can have the highest impact for your visitors.

Lightning Talks

If your acceptance notice said that your abstract is in a Lightning Talk session, that means that you have a poster

presentation as well as a lightning talk. For the poster presentation, prepare your poster as you normally would, using the guidelines for poster presenters detailed above.

Your lightning talk takes place in a five-minute time slot, which includes three minutes for the talk and two minutes for Q&A or transitioning to the next talk.

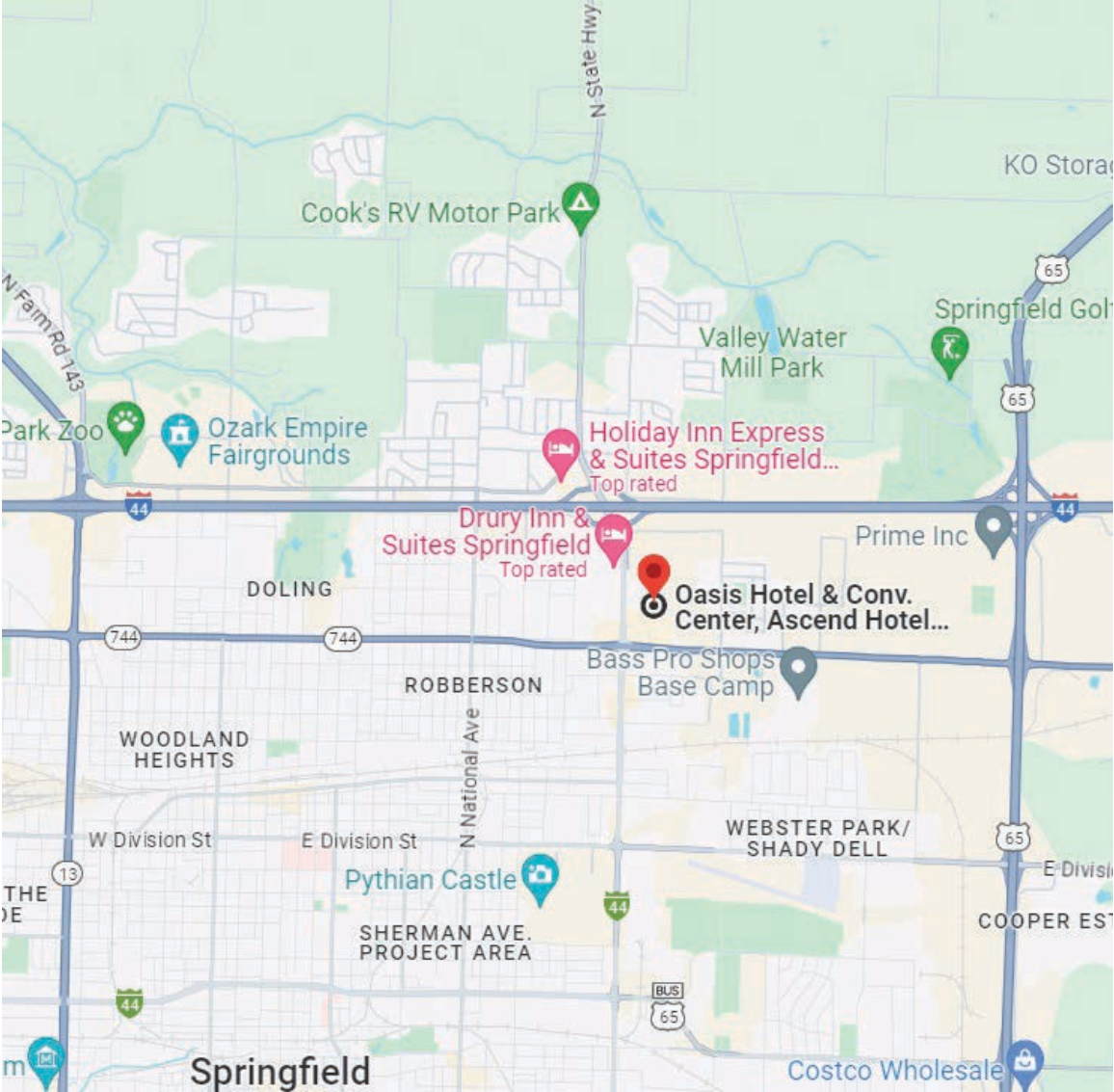
You may have one slide to project in the session room during your lightning talk, this can be a PDF of your poster, or any other slide of your choosing. Please upload your slide (in PowerPoint or PDF format) in the Speaker Ready Room using the guidelines under "Speaker Ready Room" above.

Information for Session Chairs

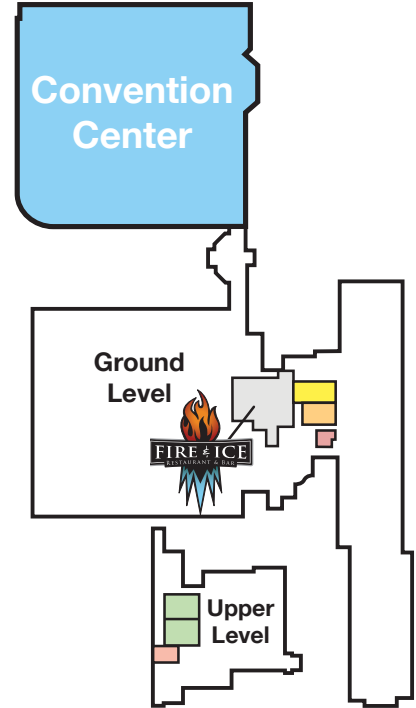
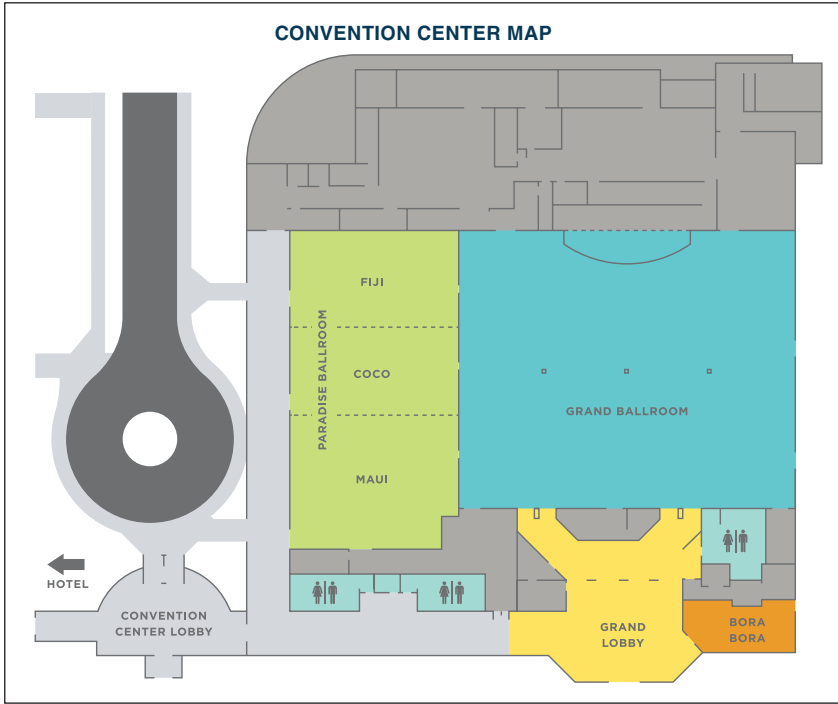
Session chairs are required to attend a Session Chairs Orientation, being held Sunday from 9–9:30 a.m. and Monday and Tuesday from 7–7:30 a.m. in the Coco Ballroom, Oasis Convention Center. Session chairs are requested to adhere to the schedule and to encourage the strict time limits provided to speakers.

Session chairs are asked to strictly adhere to the technical program schedule and to limit speakers to their allotted time. If a speaker does not appear for an assigned time slot, session chairs should call for a break or discussion period and begin the following presentation at its scheduled time.

OASIS HOTEL & CONVENTION CENTER AREA MAP



OASIS CONVENTION CENTER AND OASIS HOTEL FLOOR PLANS



Room	Square Feet	Length x Width	Ceiling Height	Theater	Classroom	"U" Shape	H-Square	Conference	Banquet (Rounds)	Reception (Flow)	8x10 Booths
Convention Center	22,171	160x120	14'	2,483	952	547	547	639	1,400	3,000	160
Grande Ballroom	12,876	100x110	18.5'	1,429	500	367	367	429	800	1,500	118
Paradise Ballroom	6,328	56x112	14'	1,054	452	180	180	210	575	1054	45
Fiji Ballroom	1,792	32x56	14'	298	128	51	51	59	162	298	15
Coco Ballroom	1,848	33x56	14'	308	132	52	52	61	168	308	15
Maui Ballroom	2,632	46x60	14'	438	188	75	75	87	239	438	17
CC Boardroom	667	35x20	8'	60	30	20	24	20	50	80	7
CC Lobby	2,300	50x45	10'	150	65	26	30	26	100	300	12
Sahara	1,480	48x30	8'	154	94	44	60	44	112	200	16
Sahara A	740	30x24	8'	60	40	26	34	26	48	80	7
Sahara B	740	30x24	8'	60	40	26	34	26	48	80	7
Arabian	313	14x21	7.5'	50	18	8	8	20	16	50	1
Kalahari	770	40x20	12'	80	44	34	40	34	64	100	4
Mojave	610	32x20'	12'	60	30	29	32	26	48	80	3
Sonoran	245	15x15'	8'	20	12	7	7	10	10	20	1

SCHEDULE OF EVENTS
(see maps for locations noted below)

EVENT	TIME	LOCATION
FRIDAY, 19 APRIL		
Field Trip 406. Petrology and Structure of the Mesoproterozoic Igneous Rocks of the St. Francois Mountains, Southeast Missouri	6:00 am-5:00 pm	Oasis CC Lobby
SATURDAY, 20 APRIL		
Field Trip 401. Ordovician and Mississippian Stratigraphy in Southwestern Missouri	7:30 am-5:00 pm	Grand Lobby, Oasis CC
Field Trip 402. Urbanization in a Karst Terrane	8:00 am-5:30 pm	Grand Lobby, Oasis CC
Short Courses 501. Introduction to Visualizing and Interpreting 3D Geologic Data Using X-ray Tomographic Microscopy	12:45-5:30 pm	Sahara Room, Oasis Hotel
SUNDAY, 21 APRIL		
Field Trip 404. Spectacular Trace-Fossil Assemblages within the Northview Formation, SW Missouri	7:30 am-noon	Grand Lobby, Oasis CC
Registration Open	9:00 am-7:00 pm	Grand Lobby, Oasis CC
Speaker Ready Room	9:00 am-6:00 pm	Arabian Room, Oasis Hotel
Session Chairs/Student Volunteer Orientation	9:00-9:30 am	Coco Ballroom, Oasis CC
Exhibit Hall Exhibitor Set-up	9:00 am-noon	Grand Ballroom, Oasis CC
Roy J. Shlemon Mentors Program in Applied Geoscience (Workshop)	12:00-1:30 pm	Sahara Room, Oasis Hotel
Afternoon Oral Technical Sessions		
T2. Using Near Surface Geophysics to Solve Geological Problems	1:30-5:30 pm	Maui Ballroom, Oasis CC
T6. Future Directions in Mineralogy and Petrology: A Session for Undergraduate and Graduate Researchers	1:30-5:30 pm	Fiji Ballroom, Oasis CC
T25. General Topics in Geochemistry	1:30-5:30 pm	Coco Ballroom, Oasis CC
T32. Building the Pipeline - 4th Grade through 2-Year Colleges	1:30-5:30 pm	Kalahari Room, Oasis Hotel
T36. New Insights on the Wichita Mountains: A Failed Aulacogen?	1:30-5:30 pm	Mojave Room, Oasis Hotel
Afternoon Poster Sessions (authors present from 2:30-4:30 p.m.)		
D4. Paleontology/Paleoclimatology (Posters)	1:30-5:30 pm	Grand Ballroom, Oasis CC
T18. Undergraduate Research Poster Session (Posters)	1:30-5:30 pm	Grand Ballroom, Oasis CC
T30. Emerging Voices in Paleontology (Posters)	1:30-5:30 pm	Grand Ballroom, Oasis CC
Exhibit Hall Open	1:30-7:00 pm	Grand Ballroom, Oasis CC
Welcoming Reception with One More Dollar	5:30-7:00 pm	Grand Ballroom, Oasis CC
MONDAY, 22 APRIL		
Whole Body Fitness Class	6:15-7:00 am	Grand Ballroom Stage, Oasis CC
GSA North-Central Section Management Board Meeting	6:30-8:00 am	Bora Bora Boardroom, Oasis CC
Registration Open	7:00 am-5:00 pm	Grand Lobby, Oasis CC
Speaker Ready Room	7:00 am-5:30 pm	Arabian Room, Oasis Hotel
Session Chairs/Student Volunteer Orientation	7:00-7:30 am	Coco Ballroom, Oasis CC
GSA Campus Representative Appreciation Breakfast	7:00-8:00 am	Sahara Room, Oasis Hotel
Exhibit Hall Open	8:00 am-5:00 pm	Grand Ballroom, Oasis CC
Geoscience Career Program Workshop Part 1: Career Planning and Informational Interviewing	9:00-10:00 am	Sahara Room, Oasis Hotel
Geoscience Career Program Workshop Part 2: Geoscience Career Exploration	10:00-11:00 am	Sahara Room, Oasis Hotel
Morning Oral Technical Sessions		
D3. History of Geology	8:00-9:00 am	Mojave Room, Oasis Hotel
T4. Geological Applications of Potential Field Geophysics	8:00 am-noon	Maui Ballroom, Oasis CC
T19. Undergraduate and Graduate Geoscience Student Showcase Lightning Talks (L)	8:00-10:00 am	Fiji Ballroom, Oasis CC
T22. Agricultural Impacts on Hydrology and Water Quality in the Midwest	8:00 am-noon	Kalahari Room, Oasis Hotel
T24. Recent Trends in Environmental Geology	8:00 am-noon	Coco Ballroom, Oasis CC
T29. Recent Advances in Remote Sensing and GIScience and their Applications in Geosciences	9:15 am-noon	Mojave Room, Oasis Hotel
T7. Ultramafic and Mafic Magmatism	10:15 am-noon	Fiji Ballroom, Oasis CC

EVENT	TIME	LOCATION
Food Truck: London Calling	11:00 am-7:00 pm	Parking lot, Oasis Hotel
John Mann Mentors Program in Applied Hydrogeology	12:00-1:30 pm	Sahara Room, Oasis Hotel
Afternoon Oral Technical Sessions		
T5. Patterns, Drivers, and Implications of Natural and Induced Continental Intraplate Earthquakes	1:30-5:30 pm	Maui Ballroom, Oasis CC
T9. Topics in Volcanology, Geochemistry, and Igneous/Metamorphic Petrology	1:30-5:30 pm	Fiji Ballroom, Oasis CC
T12. Appalachian & Ouachita-Marathon Orogenesis: Records of Late Paleozoic Supercontinent Assembly Along Southern and Eastern Laurentia	1:30-5:30 pm	Coco Ballroom, Oasis CC
T27. Professional Applied Geology—Case Studies and Practice	1:30-5:30 pm	Kalahari Room, Oasis Hotel
T31. Echinoderm Paleobiology: Evolution, Ecology, and Earth History	1:30-5:30 pm	Mojave Room, Oasis Hotel
Poster Sessions (authors present from 2:30-4:30 p.m.)		
D1. Environmental Geology/Hydrology/Geomorphology/Geochemistry (Posters)	8:00 am-5:30 pm	Grand Ballroom, Oasis CC
T19. Undergraduate and Graduate Geoscience Student Showcase (Posters)	8:00 am-5:30 pm	Grand Ballroom, Oasis CC
Geology Club Meet-Up	2:00-3:00 pm	Sahara Room, Oasis Hotel
Geoscience Career Program Workshop Part 4: GeoGradApp Workshop: Illuminating the Pathway to Graduate School in the Geosciences	3:00-5:00 pm	Sahara Room, Oasis Hotel
GSA North-Central Section OPEN Business Meeting	5:30-5:45 pm	Maui Ballroom, Oasis CC
GSA Town Hall with Melanie Brandt, Executive Director and CEO of GSA Open Bar and Earth Day Treats	5:45-6:30 pm	Maui Ballroom, Oasis CC
Complimentary Downtown Dinner Shuttles	6:30-9:00 pm	Grand Lobby, Oasis CC
TUESDAY, 23 APRIL		
Whole Body Fitness Class	6:15-7:00 am	Grand Ballroom Stage, Oasis CC
Registration Open	7:00 am-noon	Grand Lobby, Oasis CC
Speaker Ready Room	7:00-10:00 am	Arabian Room, Oasis Hotel
Session Chairs/Student Volunteer Orientation	7:00-7:30 am	Coco Ballroom, Oasis CC
GSA South-Central Section Management Board Meeting	7:00-8:00 am	Bora Bora Boardroom, Oasis CC
Exhibit Hall Open	8:00 am-noon	Grand Ballroom, Oasis CC
Morning Oral Technical Sessions		
T21. Urbanization in a Karst Terrane	8:00-9:45 am	Coco Ballroom, Oasis CC
T17. Critical Mineral Studies in the Midcontinent US	8:00 am-noon	Maui Ballroom, Oasis CC
T26. Case Histories of Practicing Environmental and Engineering Geologist Investigations	8:00 am-noon	Kalahari Room, Oasis Hotel
T30. Emerging Voices in Paleontology	8:00 am-noon	Fiji Ballroom, Oasis CC
T28. Pleistocene-Age Continental Deposits Beyond the Glacial Border	10:00 am-noon	Coco Ballroom, Oasis CC
Morning Poster Sessions (authors present from 9-11 a.m.)		
D5. Structural Geology/Tectonics/Petrology (Posters)	8:00 am-noon	Grand Ballroom, Oasis CC
D6. Stratigraphy and Sediments (Posters)	8:00 am-noon	Grand Ballroom, Oasis CC
T6. Future Directions in Mineralogy and Petrology: A Session for Undergraduate and Graduate Researchers (Posters)	8:00 am-noon	Grand Ballroom, Oasis CC
T13. New Basement Perspectives on the Precambrian Evolution of North America (Posters)	8:00 am-noon	Grand Ballroom, Oasis CC
Geoscience Career Program Workshop Part 3: Cover Letters, Résumés, and CVs	9:00-10:00 am	Sahara Room, Oasis Hotel
Exhibits Tear-down	Noon-3 pm	Grand Ballroom, Oasis CC
Field Trip 403. Phenix Rising: Restoration and Revitalization of a Major Dimension-Stone Manufacturer in Southwest Missouri	11:00 am- 5:45 pm	Grand Lobby, Oasis CC
Field Trip 408. The Geology and Genesis of the World-Class Pb-Zn-Cu Ores of the Viburnum (MO) Trend	2:30 pm; returns Wed. 6:30 pm	Oasis Lobby Oasis CC

REACH NEW HEIGHTS

With Your GSA Membership

LEARN

- Expand your career by attending professional meetings
- Amplify science by publishing in our top-rated scientific journals
- Explore with our field trips and short courses while earning CEUs

GROW

- Discover internships, research grants, and scholarships
- Build your network to improve your future
- Connect with an international community doing cutting-edge science

LEAD

- Express yourself—We advocate on your behalf to affect change
- Support and promote diversity, equity, and inclusion
- Make your résumé stand out with GSA membership

GIVE

- Guide and motivate others to inspire the future
- Gain recognition as an active leader
- Find your place where everyone is welcome and respected

*JOIN or RENEW your MEMBERSHIP
in person at the GSA Membership &
Publications Booth and SAVE 20%!*



Mario Arango/E+ via Getty Images

Technical 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

SUNDAY, 21 APRIL 2024

ORAL TECHNICAL SESSIONS

SESSION NO. 1

T2. Using Near Surface Geophysics to Solve Geological Problems (GSA Geophysics and Geodynamics Division)

1:30 PM, Oasis Hotel & CC, Maui Ballroom

Kevin Mickus and Doro Kennedy, Presiding

- 1-1 1:30 PM Castillo, Anthony*; Katumwehe, Andrew; Mahmud, Kashif; Price, Jonathan D.: **USING ERT AND LIDAR TO DETECT VOID SPACE IN CRETACEOUS FORMATIONS AT NATURAL BRIDGE CAVERNS IN COMAL COUNTY, TX**
- 1-2 1:50 PM Moghtaderi, Nooshin*; Ita, Valentina; Doro, Kennedy; Fisher, Tim: **ARE RIDGES WITHIN CHANNELS ESKERS, SENECA COUNTY, OHIO?**
- 1-3 2:10 PM Atiti, Prince*; Ogunsola, Olawale Quadri; Urom, Obinna; Doro, Kennedy; Fisher, Tim: **MELT WATER CHANNELS IN THE KARST BELLEVUE-CASTALIA PLAIN, SENECA COUNTY, OHIO**
- 1-4 2:30 PM Emmanuel, Efemena*; Doro, Kennedy: **FIELD ASSESSMENT OF SOIL PERMEABILITY CHANGES FOLLOWING FRESHWATER AND SALTWATER FLOODING USING INDUCED POLARIZATION METHOD**
- 1-5 2:50 PM Schneider, Blair*; Norman, Lauren E.Y.: **REVISITING A 150-YEAR-OLD COLD CASE: UTILIZING NON-INVASIVE GEOPHYSICS TO SEARCH FOR THE BENDER FAMILY HOMESTEAD (SITE 14LB24)**
- 3:10 PM **BREAK**
- 1-6 3:25 PM Fields, Jon*: **QUESTIONS RELATING TO THE QUALITY ASSURANCE AND QUALITY CONTROL OF ELECTRICAL RESISTIVITY METHODS**
- 1-7 3:45 PM Honings, Joseph*; Bancroft, Alyssa M.; Brennan, Greg; Kerr, Phil; Tassier-Surine, Stephanie: **APPLICATIONS OF TROMINO® PASSIVE AND ACTIVE SEISMIC**

TECHNIQUES TO HYDROGEOLOGICAL QUESTIONS ACROSS IOWA

- 1-8 4:05 PM Alexis, Christopher*; Katumwehe, Andrew; Price, Jonathan D.; Mahmud, Kashif: **MACHINE LEARNING APPLICATION IN PREDICTIVE MINERAL MAPPING OF SOUTHWESTERN UGANDA: LEVERAGING AIRBORNE MAGNETIC, RADIOMETRIC, AND ELECTROMAGNETIC DATA**
- 1-9 4:25 PM Harris, James B.*: **NEAR-SURFACE CHARACTERIZATION OF THE COMMERCE GEOPHYSICAL LINEAMENT USING S-WAVE SEISMIC METHODS**

SESSION NO. 2

T6. Future Directions in Mineralogy and Petrology: A Session for Undergraduate and Graduate Researchers (GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division; GSA Energy Geology Division)

1:30 PM, Oasis Hotel & CC, Fiji Ballroom

Gary Michelfelder, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 2-1 1:35 PM Crowley, Clinton*; Stern, Robert: **A VIDEO SERIES TO EXPLAIN THE CRUST AND SEDIMENTARY BASINS OF THE UNITED STATES, AND ITS ASSESSMENT: A PROGRESS REPORT**
- 2-2 1:55 PM Burke, Gabrielle*; Hummer, Daniel: **REVERSALS IN PHASE STABILITY OF AL-O MINERALS AT THE NANOSCALE**
- 2-3 2:15 PM Curtis, Juliana*; Velazquez Santana, Liannie; Ventura-Valentin, Wilnelly; Krekeler, Mark: **INSIGHTS INTO ISLAND-ARC MAGMATISM: A PETROGRAPHIC STUDY OF MAFIC ENCLAVES IN THE UTUADO PLUTON, PUERTO RICO**
- 2-4 2:35 PM Caro, Kenia*; Kenderes, Elizabeth; Kenderes, Stuart: **HOW DO CHANGES IN PRECIPITATION AFFECT HYDROTHERMAL AND VOLCANIC ACTIVITY AT YELLOWSTONE CALDERA?**
- 2:55 PM **BREAK**

- 2-5 3:10 PM Bilodeau, Remy*; Michelfelder, Gary: **SHORT ERUPTION WINDOWS FOR LARGE VOLUME DOMES IN THE ALTIPLANO PUNA VOLCANIC COMPLEX, CHILE**
- 2-6 3:30 PM Wagner, Ethan*; Rentz, Shannon Porter; Michelfelder, Gary; Ickert, Ryan: **MILLION-YEAR MELT-PRESENCE IN MOGOLLON-DATIL VOLCANIC FIELD RHYOLITES: CONSTRAINING THE HISTORIES OF THE BURSUM CALDERA RESURGENT DOMES**
- 2-7 3:50 PM Zhang, Hanlin*; Michelfelder, Gary; Brown, Ken: **SPACE-TIME EVOLUTION OF MESOPROTEROZOIC GRANITES FROM THE ST. FRANCOIS MOUNTAIN TERRANE, SOUTHEAST MISSOURI: INSIGHTS FROM HORNBLende AND ZIRCON**
- 4:10 PM **DISCUSSION**
- 4:20 PM **CONCLUDING REMARKS**

SESSION NO. 3

T25. General Topics in Geochemistry (GSA Environmental and Engineering Geology Division; GSA Energy Geology Division)

1:30 PM, Oasis Hotel & CC, Coco Ballroom

Tara Kneeshaw and Melida Gutierrez, Presiding

- 3-1 1:30 PM Brengman, Latisha*; Eyster, Athena: **WORKING TOWARDS A COMPREHENSIVE DIAGENETIC MODEL FOR IRON-RICH SEDIMENTARY ROCKS**
- 3-2 1:50 PM Bristy, Mridula Mamun*; Appold, Martin; Lamadrid, Hector M.: **EXPERIMENTAL QUANTIFICATION OF THE PARTITIONING OF COPPER BETWEEN DOLOMITE AND SEDIMENTARY BRINE AT TEMPERATURES OF 150 TO 200° C**
- 3-3 2:10 PM McCool, Jon-Paul*: **IDENTIFYING NILE PALEOFLOOD EXTENTS IN CENTRAL SUDAN: THE ROLE OF GENERAL GEOCHEMISTRY IN A MIXED-METHODS APPROACH**
- 3-4 2:30 PM Anderson, Stephen*; Dimova, Natasha; Brande, Scott: **VALIDATING EX²¹⁰PB SEDIMENT DATING METHODS APPLIED TO A LARGE ANTHROPOGENICALLY-IMPACTED RIVER BASIN**
- 3-5 2:50 PM Maguigan, Michael*: **USING A GPS ORB TO DETERMINE LAKE CURRENTS: APPLICATIONS TO ENVIRONMENTAL ISSUES**
- 3-6 3:10 PM Kneeshaw, Tara*: **USING SEDIMENT-WATER MICROCOSMS AS TEACHING TOOLS FOR UNDERSTANDING LOW-TEMPERATURE GEOCHEMICAL PROCESSES**
- 3-7 3:30 PM Agbogun, Henry*; Ali, Hendratta; A. Atekwana, Eliot: **ENHANCING TEACHING AND LEARNING EXPERIENCES IN GEOCHEMISTRY THROUGH INTERNATIONAL RESEARCH EXPERIENCE FOR STUDENTS PROGRAM**

SESSION NO. 4

T32. Building the Pipeline - 4th Grade through 2-Year Colleges (GSA Energy Geology Division)

1:30 PM, Oasis Hotel & CC, Kalahari

Melanie Carden-Jessen, Presiding

- 4-1 1:30 PM Lummus, Myron*; Schneider, Blair; Stearns, Leigh A.: **ILLUMINATING PATHWAYS TO GRADUATE SCHOOL IN THE GEOSCIENCES WITH GEOGRADAPP WORKSHOPS**
- 4-2 1:50 PM Siomades, Sunday*; Connolly, Andrew; Orduña Alegría, Malena; Schneider, Blair: **OGALLALA: A NEW EDUCATIONAL GEOSCIENCE GAME DESIGNED TO TEACH MIDDLE SCHOOL STUDENTS ABOUT THE ROLE OF AQUIFERS IN AGRICULTURE**
- 4-3 2:10 PM Horinek, Hannah*; Connolly, Andrew; Schneider, Blair; López Carranza, Natalia; Gardner, Eleanor: **DISCOVERING KANSAS GEOLOGIC HISTORY IN THE K-12 CLASSROOM USING 3D FOSSIL TOOLKITS**

- 4-4 2:30 PM Thomas, Christopher*; Cole, Gerri; Tyler, Lori; Ruff, Kelly: **TEAM AND SKILLS-FOCUSED APPROACHES TO INTERNSHIP AND RESEARCH OPPORTUNITIES BETWEEN HIGH SCHOOL STUDENTS AND PROFESSIONALS**
- 2:50 PM **BREAK**
- 4-5 3:05 PM Chatwin, Shannon*; Burkett, Ashley; Puckette, James; Quan, Tracy; Ivey, Toni: **GETTING STUDENTS IN THE FIELD: COOPERATION BETWEEN HIGH SCHOOL STUDENTS AND UNIVERSITY FACULTY TO BUILD RESEARCH NETWORKS THAT ENHANCE RECRUITMENT SUCCESS**
- 4-6 3:25 PM Keane, Christopher*: **AI/ML IMPACTS ON GEOSCIENCE WORKFORCE DYNAMICS SINCE 2008 AND OUT TO 2050**
- 4-7 3:45 PM Tan, Lean Hong*; Nyarko, Samuel; Gilhooly, William; Kenderes, Stuart: **I THINK THEY STUDY SEAWATER: CLASSROOM CAREER PANEL DISCUSSION AS A TOOL TO PROMOTE STUDENTS' NATURE OF GEOSCIENCE UNDERSTANDING**
- 4-8 4:05 PM Carden-Jessen, Melanie*: **YES, YOU CAN MAKE A CAREER OUT OF THIS: OUTREACH PROGRAMS TO INCREASE YOUNG PEOPLE'S INTEREST IN GEOLOGY AS A PROFESSION**

SESSION NO. 5

T36. New Insights on the Wichita Mountains: A Failed Aulacogen?

1:30 PM, Oasis Hotel & CC, Mojave

James Knapp and Brandon Spencer, Presiding

- 5-1 1:30 PM MacGregor, Jacqueline J.*; Spencer, Brandon; Knapp, James; Smith, Bryston P.: **GEOCHEMICAL AND *IN SITU* GEOCHRONOLOGICAL ANALYSES OF CAMBRIAN RHYOLITES IN THE WICHITA MOUNTAINS, SW OKLAHOMA**
- 5-2 1:50 PM Price, Jonathan D.*; Hillard, Aaron; Schmidt, Megan; Stevenson, Alexandria M.; Quevy, Amber L.: **RECENT FINDINGS REGARDING THE EASTERN WICHITA GRANITE GROUP, WICHITA MOUNTAINS, SOUTHWEST OKLAHOMA**
- 5-3 2:10 PM Tompkins, Emily*; Knapp, James; Spencer, Brandon M.: **A GIS APPROACH TO MAPPING FORMATIONAL CONTACTS IN THE WICHITA IGNEOUS PROVINCE**
- 5-4 2:30 PM Moseby, Hudson*; Kallenberg, Ian; Smith, Bryston P.; Spencer, Brandon M.; Knapp, James: **NEW INSIGHTS ON THE SOUTHERN OKLAHOMA AULACOGEN: PETROGENETIC AND GEOCHEMICAL ANALYSES OF MAFIC ROCKS FROM THE WICHITA IGNEOUS PROVINCE**
- 5-5 2:50 PM Knapp, James*; Spencer, Brandon: **A FAILED AULACOGEN? CONCEPTUAL ORIGIN OF THE WICHITA MOUNTAINS AS A FAILED CONTINENTAL RIFT**
- 3:10 PM **BREAK**
- 5-6 3:25 PM Smith, Bryston P.*; Spencer, Brandon M.; Knapp, James: **RECOGNITION OF FAULTING IN THE CENTRAL LOWLANDS, WICHITA MOUNTAINS, U.S.A.: THE QUANAH CREEK FAULT ZONE**
- 5-7 3:45 PM Kallenberg, Ian*; Spencer, Brandon M.; Moseby, Hudson; Knapp, James H.; Smith, Bryston P.: **PETROLOGIC RELATIONSHIPS AND *IN SITU* U-PB ZIRCON GEOCHRONOLOGY IN FELSIC ROCKS FROM THE WICHITA IGNEOUS PROVINCE, OKLAHOMA**
- 5-8 4:05 PM Bryant, Jason*; Knapp, James H.; Spencer, Brandon: **RE-EXAMINATION OF GEOPHYSICAL CONSTRAINTS ON ORIGIN AND EVOLUTION OF THE WICHITA MOUNTAINS**

POSTER TECHNICAL SESSIONS

SESSION NO. 6

D4. Paleontology/Paleoclimatology (Posters)

1:30 PM, Oasis Hotel & CC, Grand Ballroom

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

Booth

- 6-1 1 Lacherez, Lena Jude; Thomka, James*; Zaffos, Andrew; Lewis, Ronald: **ARE BIFURCATED PIRASOCRINID CRINOID TEGMEN SPINES THE RESULT OF A NORMAL GROWTH PROCESS OR A PATHOLOGICAL RESPONSE TO PREDATION-INDUCED DAMAGE? PRELIMINARY STATISTICAL RESULTS**
- 6-2 2 Jean, Alicia L.; Peterson, Joseph*: **AN IDIOPATHIC EROSION LESION ON THE SURANGULAR OF ALLOSAURUS FRAGILIS WITH COMPARISONS TO COMMON TYRANNOSAURID PATHOLOGIES**
- 6-3 3 Habeck, Jonah; Peterson, Joseph*: **MORPHOLOGY OF A PATHOLOGICAL STROPHOMENID FROM THE CINCINNATIAN WAYNESVILLE FORMATION, BROOKVILLE, INDIANA, USA**
- 6-4 4 Brenton, Mikayla*; St.Pierre, Jade G.A.: **AEOLIAN RECORD OF MEGADROUGHTS FROM A CONTINUOUS LAKE CORE RECORD IN THE GREAT PLAINS**
- 6-5 5 Hartzell, Samantha*; Johnson, Claudia: **CLARIFYING THE ORIGIN OF ORDER SCLERACTINIA (CLASS ANTHOZOA, SUBCLASS HEXACORALLIA)**

SESSION NO. 7

T18. Undergraduate Research Poster Session (Posters) (Council on Undergraduate Research Geosciences Division; GSA Energy Geology Division)

1:30 PM, Oasis Hotel & CC, Grand Ballroom

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

Booth

- 7-1 6 Bell, Jace*; Iqbal, Mohammad: **AGRICULTURE'S IMPACT ON WATER QUALITY: A CEDAR RIVER AND MISSISSIPPI RIVER ANALYSIS**
- 7-2 7 Markel, Cass L.*; Balogh-Brunstad, Zsuzsanna: **CHEMICAL WEATHERING BY ECTOMYCORRHIZAL FUNGI UNDER WATER AND NUTRIENT-LIMITED CONDITIONS**
- 7-3 8 Opfer, Korbin*; Colwell, Jack; Janowiak, Doc; McCool, Jon-Paul: **ENVIRONMENTAL RESTORATION TARGET ESTIMATION AROUND ENGQUIST NATURE PRESERVE**
- 7-4 9 Detweiler, Derek*; Hill, Katarina; Holmberg, Anthony; Masso, Sophie; Tran, My Ty; Treece, James; Affholter, Dr. Kathleen: **RELATIONSHIP OF PH AND CO₂ TO RAINFALL AMOUNTS AT A DOLOMITE CAVE**
- 7-5 10 Casaquite, Eulle Stann*; McCall, Brittany; Reisner, Michael: **UBIQUITOUS MICROPLASTICS IN FLUVIAL SEDIMENTS OF URBAN STREAM SYSTEMS IN DAVENPORT AND BETTENDORF, IOWA**
- 7-6 11 Gann, Madeline*; Adams, Merrick; McCool, Jon-Paul: **SEDIMENT AND EROSION ANALYSIS OF AN ANTHROPOGENICALLY STRAIGHTENED STREAM**
- 7-7 12 Wilwerding, Abigail*; Penprase, Shanti; Wickert, Andrew: **UNRAVELING EARLY HOLOCENE GLACIOFLUVIAL ACTIVITY IN THE UPPER MISSISSIPPI VALLEY, USA: INSIGHTS FROM SLACKWATER DEPOSITS IN THE WHITEWATER RIVER REGION**
- 7-8 13 Martin, Emily*; Wolf, Michael: **EVALUATION OF INDOOR RADON CONCENTRATIONS FOR THE QUAD CITIES (ROCK ISLAND COUNTY, IL, AND SCOTT COUNTY, IA)**
- 7-9 14 Klene, Mary*: **STRATIGRAPHIC, PETROGRAPHIC, AND GEOCHEMICAL STUDY OF INTERBEDDED GYPSUM AND**

CU-ORE DEPOSITS IN THE BOLEO FORMATION IN BAJA CALIFORNIA SUR, MEXICO

- 7-10 15 Plambeck, Kacey*: **EXPERIMENTAL GROWTH OF MVT SULFIDE MINERALIZATION**
- 7-11 16 Al Hadidi, Nutaila*; Burberry, Caroline: **THIN SECTION REVELATIONS: UNRAVELING THE MICROSCALE COMPLEXITY OF CARBONATE FRACTURES**
- 7-12 17 Truong, Lam*; Voice, Peter; Zambito, James: **PRELIMINARY GEOLOGIC MAPS OF ALPENA COUNTY, MICHIGAN**
- 7-13 18 Johnson, Isabel*; Quiroz, Connor; Voice, Peter; Zambito, James: **CHARACTERIZING THE ELLSWORTH FORMATION OF THE MICHIGAN BASIN USING LITHOSTRATIGRAPHY AND CHEMOSTRATIGRAPHY**
- 7-14 19 Giehler, Mikayla*; Gugino, Jack; Voice, Peter; Zambito, James: **LITHOLOGICAL & GEOCHEMICAL ANALYSIS OF THE MIDDLE TO UPPER DEVONIAN ANTRIM SHALE, MICHIGAN BASIN: INSIGHTS INTO DETRITAL INPUT DYNAMICS**
- 7-15 20 Barker-Edwards, Tiffany*; Voice, Peter; Zambito, James: **MAGNETIC SUSCEPTIBILITY OF THE LATE DEVONIAN ANTRIM SHALE OF THE MICHIGAN BASIN**
- 7-16 21 O'Bryan, Holiday*; Thole, Jeffrey; Voice, Peter; Zambito, James: **DIAGENESIS OF A PYRITIZED CONTACT AT THE MIDDLE TO LATE DEVONIAN TRANSITION FROM CARBONATE TO BLACK SHALE IN THE MICHIGAN BASIN**
- 7-17 22 Wiesner, Ainsley*; Judge, Shelley; Voice, Peter; Zambito, James: **AN ANALYSIS OF STRATIGRAPHIC AND PALEOECOLOGIC VARIABILITY IN THE "SQUAW BAY FORMATION," MICHIGAN BASIN**
- 7-18 23 Winget, Marcella*; Beck, Catherine; Wegter, Bruce; Voice, Peter; Zambito, James: **COMPARING LITHOLOGIES AND GEOCHEMICAL SIGNALS OF THE MIDDLE DEVONIAN THUNDER BAY FORMATION (MICHIGAN BASIN) IN CORE AND AT THE TYPE SECTION**
- 7-19 24 Hughes, Jack*; Morales, Narciso; Guice, George; Martin, Celine: **ULTRAMAFIC ROCKS IN NORTH CAROLINA: USING SPINEL-GROUP MINERAL CHEMISTRY TO UNDERSTAND THEIR TECTONIC SIGNIFICANCE**
- 7-20 25 Schempp, Cavit*: **ANALYSIS AND DESCRIPTION OF THE IRIDESCENT THIN-FILM ON CALCITES IN EASTERN IOWA**
- 7-21 26 Harris, Makenna*; Ortega-Ariza, Diana; Goldstein, Robert H.; Franseen, Evan K.; Hess, Anya V.: **STRONTIUM ISOTOPE STRATIGRAPHY FROM OYSTER SHELLS, PLIOCENE, SPAIN**
- 7-22 27 Langford, Travis*; Hunt, Brian: **GROUNDWATER CHEMISTRY AS A METHOD FOR DELINEATING AQUIFER RECHARGE ZONES IN A PORTION OF THE MIDDLE TRINITY AQUIFER, SOUTHWEST TRAVIS COUNTY, TEXAS**
- 7-23 28 Jones, Megan*: **WATER QUALITY OF URBAN SPRINGS IN SPRINGFIELD, MO: DATA REVISITED**
- 7-24 29 Palm, Makayla*: **ECOLOGICAL EVOLUTION THROUGHOUT TIME - COMPARING THE DIVERSITY OF THE JURASSIC MORRISON FORMATION AND THE MODERN ANALOG SERENGETI FAUNA**
- 7-25 30 Methe, Anna E.*; Denniston, Rhawn; Ummenhofer, Caroline C.; Wanamaker, Alan D.; Asmerom, Yemane; Polyak, Victor: **ULTRA-HIGH RESOLUTION STABLE ISOTOPE ANALYSIS OF A NEPAL STALAGMITE REVEALS HYDROCLIMATE ANOMALIES ASSOCIATED WITH THE 1257 CE MT. SAMALAS ERUPTION**
- 7-26 31 Ward, Josiah*; Mickus, Kevin: **GROUND PENETRATING RADAR SURVEY AT AN HISTORICAL SITE NEAR SPRINGFIELD, MISSOURI**

SESSION NO. 8

T30. Emerging Voices in Paleontology (Posters) (Paleontological Society)

1:30 PM, Oasis Hotel & CC, Grand Ballroom

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

SUNDAY

PM

POSTERS

	Booth #	
8-1	32	Puetz, Emma*; King, Logan; Oboh-Ikuenobe, Francisca: THE CRANIAL ENDOCAST OF LATE CRETACEOUS HADROSAUR MAIASAURA PEBLESORUM AND ITS IMPLICATIONS FOR SENSORY FUNCTIONS
8-2	33	Chandroth, Anupama*; Johnson, Claudia: IMPACT OF MORPHO-FUNCTIONAL GROUP REDUNDANCY ON THE ORIGINATION AND EXTINCTION OF CARIBBEAN CORALS
8-3	34	Williamson, Garrett*; Sweet, Dustin: LATE HEMINGFORDIAN-BARSTOVIAN MAMMALIAN BIOSTRATIGRAPHY OF THE MIDDLE MIOCENE TESUQUE FORMATION, ESPANOLA BASIN, NORTH-CENTRAL NEW MEXICO
8-4	35	McCloskey, Jacob*; Secord, Ross: A SPECIES LEVEL TAXONOMIC ASSESSMENT OF MAMMOTH MOLARS FROM THE CENTRAL GREAT PLAINS, USA

MONDAY, 22 APRIL 2024

ORAL TECHNICAL SESSIONS

SESSION NO. 9

D3. History of Geology

8:00 AM, Oasis Hotel & CC, Mojave

Kevin R. Evans, Presiding

9-1	8:00 AM	Hannibal, Joseph*; Evans, Kevin R.: THE HISTORY OF NAPOLEON GRAY MARBLE: AN AMERICAN HERITAGE STONE NAMED FOR NAPOLEON
9-2	8:20 AM	Forir, Matt*: RECONSTRUCTING THE HISTORY AND GEOLOGY OF THE PEARSON CREEK MINE DISTRICT GREENE COUNTY, MISSOURI
9-3	8:40 AM	Evans, Kevin*: LEGACY OF LT. COL. NATHAN BOONE IN MIDCONTINENT, USA: SURVEYOR, EXPLORER, AND NATURALIST

SESSION NO. 10

T4. Geological Applications of Potential Field Geophysics (GSA Geophysics and Geodynamics Division; GSA Structural Geology and Tectonics Division)

8:00 AM, Oasis Hotel & CC, Maui Ballroom

Luelseged Emishaw, Andrew Katumwehe, Zelalem Demissie, Khumo Leseane, Kevin Mickus and Mohamed G. Abdelsalam, Presiding

10-1	8:00 AM	Rogers, Logan*; Mickus, Kevin: GRAVITY AND MAGNETIC ANALYSIS OF THE AMU DARYA BASIN OF TURKMENISTAN AND UZBEKISTAN
10-2	8:20 AM	Waterman, Michell*; Mickus, Kevin: MAGNETIC AND GRAVITY ANALYSIS AND CRITICAL MINERAL EXPLORATION IN THE NORTHWEST SUPERIOR PROVINCE, MINNESOTA
10-3	8:40 AM	Abdelrahman, Ahmed*; Emishaw, Luel; Abdelsalam, Mohamed G.: ARE CHAD LINEAMENTS DEFORMING THE SAHARAN METACRATON?
10-4	9:00 AM	Krauss, Heidi*; McNamara, Allen K.: SUPERPILES: A LOW DENSITY EXPLANATION FOR LLSVPS
	9:20 AM	BREAK
10-5	9:35 AM	Mickus, Kevin*; Emishaw, Luel; Katumwehe, Andrew; Leseane, Khumo; Demissie, Zelalem; Abdelsalam, Mohamed G.: GRAVITY AND MAGNETIC INVESTIGATIONS OF MAGMA-ASSISTED RIFTING IN CONTINENTAL RIFTS, AN EXAMPLE FROM THE MAIN ETHIOPIAN RIFT

10-6	9:55 AM	Emishaw, Luelseged*; Katumwehe, Andrew; Leseane, Khumo; Demissie, Zelalem; Mickus, Kevin; Abdelsalam, Mohamed G.: DEVELOPMENT OF BROADLY RIFTED ZONE THROUGH GRAVITATIONAL COLLAPSE OF DYNAMIC TOPOGRAPHY AND THREE-DIMENSIONAL (3D) STRAIN PARTITIONING WITHIN CRUSTAL DENSITY STRATIFICATION AND OVERLAPPING RIFTS
10-7	10:15 AM	Katumwehe, Andrew*; Emishaw, Luelseged; Leseane, Khumo; Demissie, Zelalem; Mickus, Kevin; Abdelsalam, Mohamed G.: THE ROLE OF PRE-EXISTING STRUCTURES IN RIFT EVOLUTION: INSIGHTS FROM GRAVITY AND MAGNETIC DATA
10-8	10:35 AM	Leseane, Khumo*; Emishaw, Luelseged; Katumwehe, Andrew; Demissie, Zelalem; Mickus, Kevin; Abdelsalam, Mohamed G.: THE ROLE OF ASCENDING FLUIDS IN WEAKENING THE CRUST DURING THE INITIAL STAGES OF RIFTING, EXAMPLE FROM OKAVANGO RIFT ZONE, EARS

SESSION NO. 11

T19. Undergraduate and Graduate Geoscience Student Showcase Lightning Talks (Council on Undergraduate Research Geosciences Division; GSA Energy Geology Division)

8:00 AM, Oasis Hotel & CC, Fiji Ballroom

Claire McLeod, Ken Brown, Virginia Peterson and Robert Shuster, Presiding

	8:00 AM	INTRODUCTORY REMARKS
16-1	8:05 AM	Sowders, Rebekah*; Yelderman, Joe C.: MONITORING THE TRINITY AQUIFER IN MCLENNAN COUNTY, TEXAS: AN ASSESSMENT AND STRATEGY FOR THE SOUTHERN TRINITY GROUNDWATER CONSERVATION DISTRICT
16-2	8:10 AM	Schuettle, Jaren*; Pashin, Jack: TEMPORAL ANALYSIS OF CO₂ INJECTION HAZARDS FOR OKLAHOMA ON A COMMERCIAL SCALE
16-3	8:15 AM	Olbertz, Madison*; Gran, Karen; Swenson, John; Daniels, William: USING A WATER BUDGET AND ISOTOPE ANALYSIS TO EXPLORE WATER AVAILABILITY IN LOW FLOW CONDITIONS: HARTLEY POND CASE STUDY
16-4	8:20 AM	Bailey, Hunter*; Zor, Ekrem; Ergin, Mehmet; Tapirdamaz, Mustafa Cengiz; Mach, Phuc; Ding, Chang; Tarancioglu, Adil; Sevim, Fatih; Peng, Zhigang; Islam, Mohimanul; Sandvol, Eric: ESTIMATING EARTHQUAKE SITE AMPLIFICATION USING LOCAL SEISMIC PHASES FROM A DENSE NODAL SEISMIC ARRAY IN SOUTHEASTERN TURKIYE
16-5	8:25 AM	Parthasarathy, Bhooma*; McKay, Matthew: MAPPING THE BARTON 7.5-MINUTE QUADRANGLE IN COLBERT COUNTY, ALABAMA AND PROVENANCE ANALYSIS OF THE HARTSELLE SANDSTONE USING U-PB GEOCHRONOLOGY
16-6	8:30 AM	Cote, Lauren A.; Brown, Ken*; Faily, Jessica L.; McCormick, Aidan C.; Schrupp, Madelyn N.; Troutman, Michaela R.; VanHaaren, Elijah T.: INVESTIGATIONS OF HEAVY METAL POLLUTION IN STREET SEDIMENTS FROM AN URBAN COMMUNITY: A CASE STUDY FROM TERRE HAUTE, INDIANA
16-7	8:35 AM	Copp, Kyra E.; Brown, Ken*; Bedwell, Nora A.; Brown, Camden M.; Dugan, Victoria R.; Rivera, Moises; Simmons, Quincie R.: A COMMUNITY-LEVEL INVESTIGATION OF HEAVY METAL POLLUTION IN STREET SEDIMENTS FROM TERRE HAUTE, INDIANA
16-8	8:40 AM	Bhuiyan, Farhan Ahmed*; Brengman, Latisha; Stewart, Esther K.: MAPPING MINERAL REACTIONS IN A MID-PROTEROZOIC IRON FORMATION NEAR BARABOO, WI, USA
16-9	8:45 AM	Wolfe, Claire*; Cope, Tim: DATING THE STE. GENEVIEVE LIMESTONE IN WEST-CENTRAL INDIANA USING SR-ISOTOPE STRATIGRAPHY
	8:50 AM	BREAK

- 16-10 9:05 AM Nickels, Mark G.F.*; Yale, Vivian; Yelderman, Joe C.: **SURFACE WATER AND GROUNDWATER INTERACTIONS IN THE MIDDLE SEGMENT OF THE BRAZOS RIVER ALLUVIUM AQUIFER**
- 16-11 9:10 AM Sani, Mariam*; Locke, Sharon: **SCIENCE-INTERESTED UNDERGRADUATES' PERCEPTIONS OF THE GEOSCIENCES AS A CAREER**
- 16-12 9:15 AM Yale, Vivian*; Yelderman, Joe; Nickels, Mark G.F.: **INTERACTIONS BETWEEN THE MIDDLE SEGMENT OF THE BRAZOS RIVER ALLUVIUM AQUIFER AND THE UNDERLYING BEDROCK AQUIFERS**
- 16-13 9:20 AM Muir, Elena*; Yelderman, Joe; Hamilton, Wayne: **THE INTERACTIONS OF STILLHOUSE HOLLOW RESERVOIR AND BELTON LAKE WITH THE TRINITY AND EDWARDS AQUIFERS OF CENTRAL TEXAS**
- 16-14 9:25 AM Reed, Olivia*; Andrzejewski, Kate; Möller, Andreas; Joeckel, Robert; Ludvigson, Gregory; Layzell, Anthony L.; Kalbas, Jay L.: **ASSESSING DEPOSITION AGE OF DAKOTA FM. PALEOSOLS IN SE NEBRASKA THROUGH DETRITAL ZIRCON U-PB DATING**
- 16-15 9:30 AM Adams, Katelyn; Brown, Ken*: **CHARACTERIZING POTENTIALLY HARMFUL ENVIRONMENTAL LEGACY ISSUES WITHIN A DECLINING MIDWEST CITY: A STREET SEDIMENT STUDY OF NORTHEASTERN TERRE HAUTE, INDIANA**
- 16-16 9:35 AM Willis, Siloa*; Stern, Robert: **A NEW VIDEO FOR TEACHING UNDERGRADUATES AND THE PUBLIC HOW PLATE TECTONICS INFLUENCES CLIMATE**
- 16-17 9:40 AM Sink, Katharine*; Brikowski, Tom: **COMPARISON AND EVALUATION OF LARGE SAMPLE HYDROMETEOROLOGICAL DATASETS IN THE UNITED STATES**
- 16-18 9:45 AM Munim, Mustuque*; Zhuang, Guangsheng; Hou, Mingqiu: **LATE EOCENE PALEOCLIMATIC AND PALEOENVIRONMENTAL RECORDS OF WESTERN INTERIOR OF THE UNITED STATES: BIOMARKER EVIDENCE FROM THE FROM A PALEOLAKE IN CENTRAL COLORADO**

ORAL TECHNICAL SESSIONS

SESSION NO. 12

T22. Agricultural Impacts on Hydrology and Water Quality in the Midwest (GSA Environmental and Engineering Geology Division)

8:00 AM, Oasis Hotel & CC, Kalahari

Eric Peterson, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 12-1 8:05 AM Colmenero-Chacon, Claudia*; Gutierrez, Melida: **POTENTIAL IMPACT OF FAULT TO THE WATER QUALITY OF A KARSTIC SHALLOW AQUIFER IN LAWRENCE AND GREENE COUNTIES, MISSOURI**
- 12-2 8:25 AM Baraza, Teresa*; Corcoran, Miles; Sloan, John J.; Dijkstra, Marcel L.; Hasenmueller, Elizabeth A.: **ASSESSING THE SPATIAL REPRESENTATIVENESS OF A WATER QUALITY MONITORING STATION IN AN AGRICULTURAL RESERVOIR**
- 12-3 8:45 AM Golab, James*; AlKurdi, Azzah: **ASSESSING THE SUITABILITY OF THE HUECO BOLSON FOR A MANAGED AQUIFER RECHARGE PROJECT USING MUNICIPAL RECLAIMED WATER**
- 9:05 AM **BREAK**
- 12-4 9:20 AM Tomlinson, Zachary*: **ANALYSIS OF LONG-TERM WATER-LEVEL CHANGES IN THE OKLAHOMA PANHANDLE REGION OF THE OGALLALA AQUIFER**

- 12-5 9:40 AM Coombs, Lori*: **HOW NASA'S SWOT APPLICATIONS PROGRAM AND ENABLING DATA APPLICATIONS CAN BE UTILIZED TO SUPPORT ANALYSIS OF WATER-LEVEL CHANGES IN THE OKLAHOMA PANHANDLE**
- 12-6 10:00 AM Abdulsalam, Aminat*; Akrofi, Benedicta; Bosompemaa, Patience; DiVincenzo, Ashley; Sahad, Alhassan; Peterson, Eric: **SATURATED RIPARIAN BUFFERS: A MANAGEMENT PRACTICE TO REDUCE NITRATE CONCENTRATIONS IN SURFACE WATERS**

SESSION NO. 13

T24. Recent Trends in Environmental Geology (GSA Environmental and Engineering Geology Division)

8:00 AM, Oasis Hotel & CC, Coco Ballroom

Melida Gutierrez, Presiding

- 13-1 8:00 AM Gutierrez, Melida*; Alarcón-Herrera, Maria Teresa; Irigoyen-Campuzano, Jose Rafael: **EXPLAINING THE PRESENCE OF FLUORIDE IN GROUNDWATER OF NORTH-CENTRAL MEXICO**
- 13-2 8:20 AM Pinta, Steven*: **FROM BLACK GOLD TO GREEN HORIZON: A PROFESSIONAL'S GUIDE TO SHIFTING FROM OIL AND GAS TO THE ENVIRONMENTAL FRONTIER**
- 13-3 8:40 AM Jones, Elizabeth*; Gutierrez, Melida: **LEITH CREEK: EVALUATING METHODS OF DETERMINING GAINING AND LOSING REACHES WITHIN A KARST CREEK**
- 13-4 9:00 AM Brikowski, Tom*; Karimi, Fatemeh: **USING HEAT AND SALINITY AS SIMULTANEOUS NATURAL TRACERS TO QUANTIFY RECHARGE IN THE TRINITY RIVER ALLUVIAL AQUIFER, TEXAS, USA**
- 13-5 9:20 AM Ita, Valentina*; Ogunkoya, Akinwale; Martin-Hayden, James M.; Doro, Kennedy: **ASSESSING HYDRAULIC CONNECTIVITY IN A CARBONATE BEDROCK AND GLACIO-LACUSTRINE AQUIFER SYSTEM USING MULTI-PUMPING TESTS AND GEOPHYSICAL IMAGING**
- 13-6 9:40 AM Elliott, William*; Bingaman, James; Nolan, Madalyn: **SEDIMENTATION RATES IN HOVEY LAKE, AN OXBOW ON THE OHIO RIVER FLOODPLAIN, POSEY COUNTY, INDIANA: CONTROLLING FACTORS AND IMPLICATIONS FOR LAKE MANAGEMENT**
- 13-7 10:00 AM Hall, Sarah*; Moran, Ludwin; Harkness, Joshua; Orrego, Maria Aragon; Capuano, Benjamin; Disney, Jane E.; Wheeler, Jesse: **INTENSE RAINFALL EVENTS YIELD ENVIRONMENTAL AND HUMAN HEALTH RISKS: A VIEW FROM COASTAL MAINE**

SESSION NO. 14

T29. Recent Advances in Remote Sensing and GIScience and their Applications in Geosciences (GSA Geophysics and Geodynamics Division)

9:15 AM, Oasis Hotel & CC, Mojave

Mohamed Aly, Presiding

- 14-1 9:15 AM King, Zantia*; Elkins, Elizabeth; Mahmud, Kashif: **USING TERRESTRIAL LASER SCANNING AND MODEL OPTIMIZATION FOR CHARACTERIZING URBAN TREE STRUCTURAL PARAMETERS**
- 14-2 9:35 AM Mitchell, Brad*; Davis, Justin: **COMPILING GEOLOGIC DATA IN GIS TO IMPROVE STAKEHOLDER EXPERIENCE**
- 14-3 9:55 AM Shahparan, Md*; Kough, Anna; Mahmud, Kashif: **THE IMPACTS OF WILDFIRE SMOKE AEROSOLS ON SURFACE AIR QUALITY IN CALIFORNIA: A MULTI-YEAR STUDY USING GEOSPATIAL TECHNOLOGIES**
- 14-4 10:15 AM Kopper, Martha*: **THE ROLE OF REMOTE SENSING AND GEOSPATIAL ANALYSIS IN THE DEVELOPMENT OF A LANDSLIDE INVENTORY**

AM

MONDAY

14-5 10:35 AM Winston, Krishna*; Mahmud, Kashif: **GIS-BASED SPATIO-TEMPORAL ANALYSIS OF DEFORESTATION AND ITS ENVIRONMENTAL IMPACTS IN SUMATRA, INDONESIA**

SESSION NO. 15

T7. Ultramafic and Mafic Magmatism (GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division)

10:15 AM, Oasis Hotel & CC, Fiji Ballroom

Alison H. Graetinger and Matthew Brueseke, Presiding

- 15-1 10:15 AM Thomas, Mya*; Graetinger, Alison: **CHARACTERIZING LAVA FLOW BEHAVIOR USING DIGITAL MODELS OF SMALL TUBES FROM 1961 PAHOEHOE FLOWS FROM ASKJA, ICELAND**
- 15-2 10:35 AM Benz, Brooke*; Graetinger, Alison H.: **DO YOU NEED TO VENT? AT ASKJA VOLCANO, ICELAND**
- 15-3 10:55 AM Torres Ewert, Ivana*; Graetinger, Alison; Sonder, Ingo; Sakimoto, Susan; Flores-Martinez, Ramiro: **INFLUENCES OF SEDIMENT PROPERTIES AND WATER AVAILABILITY IN THE PRESERVATION OF MAGMA-SEDIMENT INTERACTIONS**
- 15-4 11:15 AM Hanson, Richard*; Ohrmundt, Sierra C.; DeBone, Kristin: **UNUSUAL BOMB-RICH STROMBOLIAN PYROCLASTIC DEPOSITS IN A MESOPROTEROZOIC ARC SETTING, BARBY FORMATION, NAMIBIA**
- 15-5 11:35 AM Peate, David*; Horkley, L. Kenneth; Dorais, Michael J.; van der Zwan, Froukje M.; McCarthy, Anders; Huang, Xiao Long: **USING CR-SPINEL INCLUSIONS TO TRACK CHANGES IN PLAGIOCLASE CRYSTAL CARGOES IN PLAGIOCLASE ULTRAPHYRIC BASALTS FROM SITES U1500 AND U1502 ON THE SOUTH CHINA SEA RIFTED MARGIN**

POSTER TECHNICAL SESSIONS

SESSION NO. 16

T19. Undergraduate and Graduate Geoscience Student Showcase (Posters) (Council on Undergraduate Research Geosciences Division; GSA Energy Geology Division)

8:00 AM, Oasis Hotel & CC, Grand Ballroom

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

- | Booth # | |
|---------|---|
| 16-1 | 1 Sowders, Rebekah*; Yelderman, Joe C.: MONITORING THE TRINITY AQUIFER IN MCLENNAN COUNTY, TEXAS: AN ASSESSMENT AND STRATEGY FOR THE SOUTHERN TRINITY GROUNDWATER CONSERVATION DISTRICT |
| 16-2 | 2 Schuette, Jaren*; Pashin, Jack: TEMPORAL ANALYSIS OF CO₂ INJECTION HAZARDS FOR OKLAHOMA ON A COMMERCIAL SCALE |
| 16-3 | 3 Olbertz, Madison*; Gran, Karen; Swenson, John; Daniels, William: USING A WATER BUDGET AND ISOTOPE ANALYSIS TO EXPLORE WATER AVAILABILITY IN LOW FLOW CONDITIONS: HARTLEY POND CASE STUDY |
| 16-4 | 4 Bailey, Hunter*; Zor, Ekrem; Ergin, Mehmet; Tapirdamaz, Mustafa Cengiz; Mach, Phuc; Ding, Chang; Tarancioglu, Adil; Sevim, Fatih; Peng, Zhigang; Islam, Mohimanul; Sandvol, Eric: ESTIMATING EARTHQUAKE SITE AMPLIFICATION USING LOCAL SEISMIC PHASES FROM A DENSE NODAL SEISMIC ARRAY IN SOUTHEASTERN TURKIYE |
| 16-5 | 5 Parthasarathy, Bhooma*; McKay, Matthew: MAPPING THE BARTON 75-MINUTE QUADRANGLE IN COLBERT COUNTY, ALABAMA AND PROVENANCE ANALYSIS OF THE HARTSELLE SANDSTONE USING U-PB GEOCHRONOLOGY |

- 16-6 6 Cote, Lauren A.; Brown, Ken*; Faily, Jessica L.; McCormick, Aidan C.; Schrupp, Madelyn N.; Troutman, Michaela R.; VanHaaren, Elijah T.: **INVESTIGATIONS OF HEAVY METAL POLLUTION IN STREET SEDIMENTS FROM AN URBAN COMMUNITY: A CASE STUDY FROM TERRE HAUTE, INDIANA**
- 16-7 7 Copp, Kyra E.; Brown, Ken*; Bedwell, Nora A.; Brown, Camden M.; Dugan, Victoria R.; Rivera, Moises; Simmons, Quincie R.: **A COMMUNITY-LEVEL INVESTIGATION OF HEAVY METAL POLLUTION IN STREET SEDIMENTS FROM TERRE HAUTE, INDIANA**
- 16-8 8 Bhuiyan, Farhan Ahmed*; Brengman, Latisha; Stewart, Esther K.: **MAPPING MINERAL REACTIONS IN A MID-PROTEROZOIC IRON FORMATION NEAR BARABOO, WI, USA**
- 16-9 9 Wolfe, Claire*; Cope, Tim: **DATING THE STE. GENEVIEVE LIMESTONE IN WEST-CENTRAL INDIANA USING SR-ISOTOPE STRATIGRAPHY**
- 16-10 10 Nickels, Mark G.F.*; Yale, Vivian; Yelderman, Joe C.: **SURFACE WATER AND GROUNDWATER INTERACTIONS IN THE MIDDLE SEGMENT OF THE BRAZOS RIVER ALLUVIUM AQUIFER**
- 16-11 11 Sani, Mariam*; Locke, Sharon: **SCIENCE-INTERESTED UNDERGRADUATES' PERCEPTIONS OF THE GEOSCIENCES AS A CAREER**
- 16-12 12 Yale, Vivian*; Yelderman, Joe; Nickels, Mark G.F.: **INTERACTIONS BETWEEN THE MIDDLE SEGMENT OF THE BRAZOS RIVER ALLUVIUM AQUIFER AND THE UNDERLYING BEDROCK AQUIFERS**
- 16-13 13 Muir, Elena*; Yelderman, Joe; Hamilton, Wayne: **THE INTERACTIONS OF STILLHOUSE HOLLOW RESERVOIR AND BELTON LAKE WITH THE TRINITY AND EDWARDS AQUIFERS OF CENTRAL TEXAS**
- 16-14 14 Reed, Olivia*; Andrzejewski, Kate; Möller, Andreas; Joeckel, Robert; Ludvigson, Gregory; Layzell, Anthony L.; Kalbas, Jay L.: **ASSESSING DEPOSITION AGE OF DAKOTA FM. PALEOSOLS IN SE NEBRASKA THROUGH DETRITAL ZIRCON U-PB DATING**
- 16-15 15 Adams, Katelyn; Brown, Ken*: **CHARACTERIZING POTENTIALLY HARMFUL ENVIRONMENTAL LEGACY ISSUES WITHIN A DECLINING MIDWEST CITY: A STREET SEDIMENT STUDY OF NORTHEASTERN TERRE HAUTE, INDIANA**
- 16-16 16 Willis, Siloa*; Stern, Robert: **A NEW VIDEO FOR TEACHING UNDERGRADUATES AND THE PUBLIC HOW PLATE TECTONICS INFLUENCES CLIMATE**
- 16-17 17 Sink, Katharine*; Brikowski, Tom: **COMPARISON AND EVALUATION OF LARGE SAMPLE HYDROMETEOROLOGICAL DATASETS IN THE UNITED STATES**
- 16-18 18 Munim, Mustuque*; Zhuang, Guangsheng; Hou, Mingqiu: **LATE EOCENE PALEOCLIMATIC AND PALEOENVIRONMENTAL RECORDS OF WESTERN INTERIOR OF THE UNITED STATES: BIOMARKER EVIDENCE FROM THE FROM A PALEOLAKE IN CENTRAL COLORADO**

SESSION NO. 17

D1. Environmental Geology/Hydrology/Geomorphology/Geochemistry (Posters)

8:00 AM, Oasis Hotel & CC, Grand Ballroom

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

- | Booth # | |
|---------|---|
| 17-1 | 19 Diaz Salinas, Ariel*; Hunt, Sophia Rebekah: DISTRIBUTION OF HEAVY METALS IN SOIL AROUND TAR CREEK |
| 17-2 | 20 Nanis, Hafid*: SPATIAL AND TEMPORAL MONITORING OF SURFACE WATER AREA CHANGES IN ABHE LAKE DURING 2017-2022 USING SATELLITE IMAGES AND GIS |
| 17-3 | 21 Vilcaez, Javier*; Chowdhury, Emranul: MODELING AND SIMULATION OF HYDROGEN STORAGE IN DEPLETED OIL RESERVOIRS UNDER BIOTIC CONDITIONS |

- 17-4 22 Merkley, Avery; Claussen, Starr; Cappi, Sage; Heinzl, Chad*: **EDMAP - SURFICIAL GEOLOGY OF THE FULTON 7.5' QUADRANGLE JACKSON COUNTY, IOWA**
- 17-5 23 Biscoglia, Kelly*; Iqbal, Mohammad: **VARIABILITY OF WATER QUALITY IN RELATION TO FARMING ALONG THE RACCOON RIVER IN WEST DES MOINES, IOWA**
- 17-6 24 Vogelgesang, Jason*; Honings, Joseph; Brennan, Greg; Schilling, Keith E.: **CANOE-MOUNTED ELECTROMAGNETIC SURVEY IN AN IOWA RIVER TO DELINEATE STREAMBED CONDUCTIVITY**
- 17-7 25 Andrews, William*; Halihan, Todd; Sewell, Guy W.; Oliveira, Rafael: **ELECTRICAL AND WELL MONITORING OF CHLORIDE TRACER IN A KARST SINKHOLE IN THE ARBUCKLE-SIMPSON AQUIFER**
- 17-8 26 Clements, Jacob*; Hodges, Caitlin A.: **RIPARIAN NITROGEN CYCLING AND POLLUTANT REMOVAL UNDER FUTURE CLIMATE SCENARIOS**
- 17-9 27 Faulkner, Mindy*; Ertons, Melanie: **SOIL CHARACTERISTICS OF RECLAIMED BAUXITE MINE LANDS, SALINE MINING DISTRICT, ARKANSAS**
- 17-10 28 Hawley, Kirsten*; Johnson, Claudia; Rader, Shelby: **ICP-MS AND PETROGRAPHIC IDENTIFICATION OF GEOCHEMICAL DIFFERENCES BETWEEN ARCHAEOLOGICAL CERAMICS FROM TERRESTRIAL AND SUBMERGED ENVIRONMENTS, LA ALTAGRACIA PROVINCE, DOMINICAN REPUBLIC**

ORAL TECHNICAL SESSIONS

SESSION NO. 18

T5. Patterns, Drivers, and Implications of Natural and Induced Continental Intraplate Earthquakes (GSA Geophysics and Geodynamics Division; GSA Structural Geology and Tectonics Division)

1:30 PM, Oasis Hotel & CC, Maui Ballroom

Tandis Bidgoli and Daniel Sturmer, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 18-1 1:35 PM Sturmer, Daniel*; Kessler, Cody: **MAKING THE CASE FOR SEISMIC HAZARD ASSESSMENT ACROSS THE MIDCONTINENT: AN EXAMPLE FROM CINCINNATI, OHIO**
- 18-2 1:55 PM Fernández, Alexa*: **GLACIAL ISOSTATIC ADJUSTMENT: A PRECURSOR TO INTRAPLATE SEISMICITY IN THE MIDWEST**
- 18-3 2:15 PM Gomez, Francisco*; Polun, Sean; Owens, Ryan; Sandvol, Eric: **ACTIVE FAULTING AND INTRAPLATE EARTHQUAKE POTENTIAL IN THE NORTHERN WIND RIVER BASIN, WYOMING**
- 18-4 2:35 PM Polun, Sean*; Bidgoli, Tandis: **ASSESSING SLIP POTENTIAL OF INFERRED FAULTS IN THE PALEOZOIC BEDROCK AND CRYSTALLINE BASEMENT IN KANSAS: AN APPLICATION OF THE OPEN-SOURCE SOFTWARE PYFAULTSLIP**
- 18-5 2:55 PM Gomez, Francisco*; Polun, Sean; Bidgoli, Tandis S.; Spencer, Joel; Vaughn, James; Ray, Dustin; Sandvol, Eric; Cahalan, Liz; Achey, Autumn: **PALEOSEISMIC INVESTIGATION OF THE GRAND RIVER TECTONIC ZONE, NORTH-CENTRAL MISSOURI**
- 18-6 3:15 PM Ausbrooks, Scott*; Horton, Stephen: **CLASSIFYING ANSS CATALOG EARTHQUAKES AS NATURAL, POTENTIALLY INDUCED, OR LIKELY INDUCED IN THE FAYETTEVILLE SHALE DEVELOPMENT AREA OF NORTH-CENTRAL ARKANSAS**

SESSION NO. 19

T9. Topics in Volcanology, Geochemistry, and Igneous/Metamorphic Petrology (GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division)

1:30 PM, Oasis Hotel & CC, Fiji Ballroom

Gary Michelfelder and Ethan Wagner, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 19-1 1:35 PM Michelfelder, Gary*; Reinier, Clayton: **CLINOPYROXENE, OLIVINE MELT INCLUSION, AND BULK ROCK Sr, Nd AND Pb ISOTOPE COMPOSITIONS OF PRIBILOF ISLANDS BASALTS: INSIGHT INTO EARLY MAGMA CHAMBER PROCESSES**
- 19-2 1:55 PM Limbaugh, Nathan*; Cartwright, Julia; Hames, Willis: **MAGMAS BETWEEN TWO WORLDS: A COMPARISON OF MARTIAN AND TERRESTRIAL PARENT MELT COMPOSITIONS FROM PRIMARY MELT INCLUSIONS HOSTED IN NAKHLITES AND TERRESTRIAL MAFIC ANALOGS**
- 19-3 2:15 PM Pease, Allison*; Piper, Jack; Liu, Jiachao; Lyu, Mingda; Kono, Yoshio; Dorfman, Susannah: **LIQUID STRUCTURE OF IRON AND IRON-NITROGEN ALLOYS WITHIN THE CORES OF SMALL TERRESTRIAL BODIES**
- 19-4 2:35 PM Gugino, Jack*; McLeod, Claire; Sedaghat, Azadeh; Schweitzer, Alex; Shaulis, Barry J.: **PETROGRAPHY AND CHEMISTRY OF LUNAR IMPACT GLASSES FROM DOMINION (DOM) RANGE LUNAR METEORITES DOM 18543 AND 18666: CONSTRAINING LUNAR GEOLOGY AND LUNAR IMPACT FLUX**
- 19-5 2:55 PM Johnson, Kenneth*; Cain, Jessica; Matsell, Lisa Jane; McKay, Matthew; Schwartz, Joshua: **AGE AND CONDITIONS OF METAMORPHISM OF GARNET HORNBLENDITE ON MINE RIDGE, NORTHEASTERN OREGON: HIGH P/T METAMORPHISM IN A LATE-TRIASSIC SUBDUCTION ZONE**
- 3:15 PM **BREAK**
- 19-6 3:30 PM Guo, Hongcheng*; Remian, Bethany; Tremblay, Marissa: **MID-PLEISTOCENE CHANGES IN GLACIAL EROSION RATES IN THE MID-LATITUDE PATAGONIAN ANDES REVEALED BY DETRITAL THERMOCHRONOLOGY OF OCEAN SEDIMENTS**
- 19-7 3:50 PM Davis, Cassidy*; Rivera, Tiffany; DeGraffenried, Rebecca; Schiffbauer, James; Selly, Tara: **PUMICE CLAST ANALYSIS: UNVEILING CONDUIT DYNAMICS IN UTAH'S QUATERNARY RHYOLITE VOLCANOES**
- 19-8 4:10 PM Michelfelder, Gary*; Whittington, Alan; Ramos, Frank; Ureta Alfaro, Gabriel; Harmon, Amelia; Jilly-Rehak, Christie; Schwartz, Lauren; Waterman, Michell: **PROLONGED MAGMA RESIDENCE BENEATH AT SOCOMPA VOLCANO, SOUTHERN CENTRAL ANDES, CHILE**
- 19-9 4:30 PM Möller, Andreas*; Pell, Dalton: **U-PB GEOCHRONOLOGY OF GARNET, PEROVSKITE, APATITE AND CALCITE FROM THE MAGNET COVE IGNEOUS COMPLEX, AR**
- 19-10 4:50 PM Deering, Chad*; Bachmann, Olivier; Bornhorst, Theodore; Petryk, Brandi; Barth, Elana; Pray, Emilie; Guillong, Marcel: **U-PB, TRACE ELEMENTS, AND O-HF ISOTOPES IN ZIRCON FROM THE SUPERIOR CRATON, UPPER PENINSULA MICHIGAN: IMPLICATIONS FOR ARCHEAN CRUSTAL DEVELOPMENT**
- 5:10 PM **CONCLUDING REMARKS**

MONDAY

PM

SESSION NO. 20

T12. Appalachian & Ouachita-Marathon Orogenesis: Records of Late Paleozoic Supercontinent Assembly Along Southern and Eastern Laurentia (GSA Geophysics and Geodynamics Division; GSA Structural Geology and Tectonics Division)

1:30 PM, Oasis Hotel & CC, Coco Ballroom

Brandon Lutz, Tyson Smith and Mark Hudson, Presiding

- 20-1 1:30 PM Day, James*: **MIDDLE-UPPER DEVONIAN (MID GIVETIAN-EARLY FAMENNIAN) EVENT HISTORY OF THE CRATONIC BASIN INBOARD OF THE OUACHITA CONTINENTAL MARGIN IN SOUTHERN-NEW MEXICO**
- 20-2 1:50 PM McLaughlin, Patrick I.*; Malone, David H.; Paton, Timothy; Zambito, James; Emsbo, Poul: **EARLY TO MIDDLE PALEOZOIC TECTONIC EVOLUTION OF THE EASTERN U.S. MIDCONTINENT**
- 20-3 2:10 PM Evans, Kevin Ray*; Melgren, Megan C.; Robitsch, Todd L.; Schmidt, Owen P.: **WARP AND WEFT OF THE OZARKS: STRUCTURAL ANALYSIS OF TOP OF THE ROCK SINKHOLE, RIDGEDALE, MISSOURI**
- 20-4 2:30 PM Rovey, Charles*: **PHYTODETRITUS AND PLANT REMAINS WITHIN THE EARLY MISSISSIPPIAN NORTHVIEW FORMATION, SOUTHWEST MISSOURI**
- 20-5 2:50 PM Smith, Tyson*; Dechesne, Marieke; Hirtz, Jaime; Sharman, Glenn; Hudson, Mark; Griffis, Neil: **FAR-TRAVELLED PERI-GONDWANAN SEDIMENT IN THE ARKOMA BASIN: MAPPING THE CONNECTION BETWEEN THE NORTHERN APPALACHIANS AND THE SOUTHERN LAURENTIAN MARGIN**
- 20-6 3:10 PM Lutz, Brandon*; Hudson, Mark; Smith, Tyson; Dechesne, Marieke; Amaral, Chelsea; Spangler, Leland; McCafferty, Anne E.; Hirtz, Jaime: **NORTHEAST-TRENDING BASEMENT ZONES SEGMENT FLEXURAL NORMAL FAULTS OF THE ARKOMA BASIN: EVIDENCE FROM BASIN-SCALE 3D MODELING**
- 20-7 3:30 PM Mickus, Kevin*: **MAGNETOTELLURIC MODELS ACROSS THE OUACHITA OROGENIC BELT IN ARKANSAS AND OKLAHOMA**
- 20-8 3:50 PM Brooks, Ryan*; Shepherd, Stephanie: **INSIGHTS ON COARSE SEDIMENT ROUTING IN TRIBUTARIES OF THE BUFFALO NATIONAL RIVER, AR**

SESSION NO. 21

T27. Professional Applied Geology—Case Studies and Practice (GSA Environmental and Engineering Geology Division)

1:30 PM, Oasis Hotel & CC, Kalahari

Gregory Hempen, Presiding

- 21-1 1:30 PM Golab, James*: **MANAGED AQUIFER RECHARGE STUDIES FOR TEXAS**
- 21-2 1:50 PM Howard, John*: **NON-TRADITIONAL CAREER OPTIONS FOR GEOLOGISTS: REFOCUSING GEOLOGIC EDUCATIONAL REQUIREMENTS FOR EMPLOYMENT STABILITY**
- 21-3 2:10 PM Saindon, Rosanna*; Goodwin, Jessie: **ENVIRONMENTAL CHALLENGES IN URBAN RENEWAL SETTINGS**
- 21-4 2:30 PM Hempen, Gregory*; Saindon, Rosanna: **COMMUNICATING HEALTH RISKS: RADIOACTIVE WASTES IN NORTH ST. LOUIS COUNTY, MO**
- 21-5 2:50 PM Messmer, Martin*: **FAIR MARKET VALUATION OF STOCKPILED SYLVINITE AT SILVER PEAK, NEVADA**

- 21-6 3:10 PM Slaughter, Stephen; Hall, Sarah R.*; Riker, Jenny: **INTRODUCING A USGS-SUPPORTED LANDSLIDE HAZARD RISK REDUCTION WORKING GROUP AND GRANTS PROGRAM TO AID STATES, TRIBES, TERRITORIES, AND LOCAL GOVERNMENTS**
- 21-7 3:30 PM Steele, Amber*; Davis, Justin; Faust, Emily: **WHERE CAN A DEGREE IN THE GEOSCIENCES TAKE ME? A STATE GEOLOGICAL SURVEY PERSPECTIVE**
- 21-8 3:50 PM Higginbotham, Jesse*: **OVERVIEW OF A HAZARDOUS WASTE MANAGEMENT FACILITY LOCATED IN SEDGWICK COUNTY, KANSAS**
- 21-9 4:10 PM Sharma, Nycole*: **SOUTH FLORIDA WATER MANAGEMENT DISTRICT LOWRP AQUIFER STORAGE AND RECOVERY WELLS: A LOOK INTO AN EVOLVING PROJECT**
- 21-10 4:30 PM Derrington, Dana*: **UNCONSOLIDATED SEDIMENTS: JUST IN THE WAY?**
- 21-11 4:50 PM Nunn, Curtis*: **BS VS. MS DEGREES AND ADVANCEMENT TOWARD PROFESSIONAL REGISTRATION AS PREDICTORS OF LONGEVITY FOR ENTRY-LEVEL GEOLOGISTS IN ENVIRONMENTAL CONSULTING**
- 5:10 PM **DISCUSSION**

SESSION NO. 22

T31. Echinoderm Paleobiology: Evolution, Ecology, and Earth History (Paleontological Society)

1:30 PM, Oasis Hotel & CC, Mojave

David Wright, Selina Cole, Elizabeth Petsios and Anne Raymond, Presiding

- 22-1 1:30 PM Chrpá, Michelle*; Raymond, Anne: **MODELS PREDICT VOLATILITY, ECHINODERMS SUGGEST STABILITY: PENNSYLVANIAN MG/CA RATIOS IN THE WESTERN MIDCONTINENT SEA**
- 22-2 1:50 PM Raymond, Anne*; Chrpá, Michelle: **TAPHONOMY OF ECHINODERM OSSICLES IN COAL SWAMPS**
- 22-3 2:10 PM Cole, Selina*; Wright, David; Ausich, William; Desrochers, André: **ECOLOGICAL AND SEDIMENTOLOGICAL CHARACTERIZATION OF AN EXTINCT FACIES: THE EARLY SILURIAN REGIONAL ENCRINITE, CHICOTTE FORMATION (ANTICOSTI ISLAND, QUEBEC, CANADA)**
- 22-4 2:30 PM Thomka, James R.*; Brett, Carlton E.; Schrantz, Richard N.; Bissett, Donald L.: **PELMATOZOAN ECHINODERMS AS HOSTS TO PIT-FORMING PARASITES: PALEOECOLOGICALLY SIGNIFICANT EXAMPLES FROM THE MIDDLE PALEOZOIC**
- 2:50 PM **BREAK**
- 22-5 3:05 PM Watts, Jerrad*; Petsios, Elizabeth: **“PSYCHO” ECHINOID SPINES – EVOLUTION THROUGH SPINE MORPHOSPACE IN CROWN GROUP CIDAROID ECHINOIDS**
- 22-6 3:25 PM Petsios, Elizabeth*; Thompson, Jeffrey: **MORPHOSPACE OCCUPATION AND BIOMECHANICAL PERFORMANCE OF THE PERIGNATHIC GIRDLE IN JAWED ECHINOIDS**
- 22-7 3:45 PM Wright, David*: **QUANTIFYING EVIDENCE FOR PUNCTUATED EQUILIBRIA WITH PROBABILISTIC PHYLOGENETICS AND THE ECHINODERM FOSSIL RECORD**

TUESDAY, 23 APRIL 2024

**ORAL
TECHNICAL SESSIONS**

SESSION NO. 23

T21. Urbanization in a Karst Terrane (GSA Karst Division)

8:00 AM, Oasis Hotel & CC, Coco Ballroom

Wendell Barner and Doug Gouzie, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 23-1 8:05 AM Bonin, BJ*; Brick, Greg; Jennings, Carrie E.: **ENGINEERING RECORDS AND CUES FROM THE BUILT ENVIRONMENT AS KARST CIPHERS**
- 23-2 8:25 AM Barner, Wendell*: **STORMWATER MANAGEMENT STRATEGIES FOR KARST AREAS: A CASE STUDY OF SPRINGFIELD, MO**
- 23-3 8:45 AM Mcdaniel, James*; Gouzie, Douglas: **ANALYZING CHEMICAL VARIABILITY AND ITS RELATIONSHIP TO ENGINEERING PROPERTIES IN THE BURLINGTON-KEOKUK FORMATION, SPRINGFIELD, MISSOURI**
- 23-4 9:05 AM Faulkner, Mindy*; Dailey, Heather J.; Winklemann, Annie Paige; Reece, Colby: **LANDSCAPE EVOLUTION IN WESTERN FORT CAVAZOS MILITARY INSTALLATION, CORYELL COUNTY, TEXAS**
- 23-5 9:25 AM Baraza, Teresa*; Hasenmueller, Elizabeth A.: **GEOLOGIC AND LAND USE CONTROLS ON MICROPLASTIC CONTAMINATION IN MISSOURI KARST SPRINGS**

SESSION NO. 24

T17. Critical Mineral Studies in the Midcontinent US (Society of Economic Geologists; GSA Geophysics and Geodynamics Division; GSA Energy Geology Division)

8:00 AM, Oasis Hotel & CC, Maui Ballroom

Cheryl Seeger, Kyle Ganz, Nicholas Umholtz, Martin Appold and Hector Lamadrid, Presiding

- 24-1 8:00 AM Ganz, Kyle*: **RECENT CRITICAL MINERALS PROJECTS IN MISSOURI**
- 24-2 8:20 AM Chandler, Angela*: **AN OVERVIEW OF ARKANSAS' CRITICAL MINERAL PROGRAM**
- 24-3 8:40 AM Ertons, Melanie*: **INVESTIGATION OF RESIDUAL MINERAL CONTENT OF BAUXITE PILES: SALINE MINING DISTRICT, ARKANSAS**
- 24-4 9:00 AM Seeger, Cheryl*: **THE PEA RIDGE IRON-RARE EARTH ELEMENT DEPOSIT, WASHINGTON COUNTY, MISSOURI**
- 24-5 9:20 AM Dietsch, Craig*; Uhl, Thomas; Walton, Zachary; Lukoczki, Georgina: **THE HUTSON NORTH INTRUSION, LIVINGSTON CO., KENTUCKY RECORDS POLYPHASE HYDROTHERMAL ALTERATION IN THE WESTERN KENTUCKY FLUORSPAR DISTRICT: IMPLICATIONS FOR REGIONAL REE DISTRIBUTION**
- 24-6 9:40 AM Beirl, Aaron*; Hummer, Daniel; Henson, Harvey: **PETROLOGICAL AND GEOCHEMICAL ANALYSIS OF THE GRANT'S INTRUSION FEATURE WITHIN HICK'S DOME, HARDIN COUNTY, ILLINOIS**
- 24-7 10:00 AM Paton, Timothy*; McLaughlin, Pat; Thompson, Jay; Emsbo, Poul: **CRITICAL MINERALS IN ILLINOIS BASIN PENNSYLVANIAN BLACK SHALES**
- 24-8 10:20 AM Clark, Ryan*; McLaughlin, Pat; Bancroft, Alyssa M.; Paton, Timothy; Emsbo, Poul: **CHARACTERIZATION OF REE-ENRICHED MINE WASTE AT THE BROWNS BOTTOM QUARRY IN DUBUQUE, IOWA, USA**

- 24-9 10:40 AM May, Rebecca*: **FLUORINE CONCENTRATIONS AND PH OF ORE FLUIDS IN THE LEMHI PASS TH-REE DISTRICT (IDAHO-MONTANA) DETERMINED FROM SEM-EDS ANALYSIS OF EVAPORATE SOLUTE MOUNDS DERIVED FROM DECREPITATED FLUID INCLUSIONS**
- 24-10 11:00 AM Unigwe, Chinanu*; Vilcaez, Javier: **FEASIBILITY OF CRITICAL METALS RECOVERY FROM PETROLEUM PRODUCED WATER BY DOLOMITE**
- 24-11 11:20 AM Harris, John; Bickham, David; Jimenez, Marcos; Rufener, Julia*; Cooper, Brian: **RARE EARTH ELEMENT MOBILITY IN A LATERITIC WEATHERING PROFILE, SALINE COUNTY, ARKANSAS**
- 24-12 11:40 AM Tunnell, Bolorchimeg N.*; Dashtseren, Khashbat; Boldbaatar, Enkhjargal; Locmelis, Marek; Hames, Willis; Nakano, Nobuhiko; Sereenen, Jargalan: **GENESIS AND GEOCHRONOLOGY OF THE BAYANTEEG LI-MINERALIZED PEGMATITE IN THE IDERMEG TERRANE, CENTRAL MONGOLIA**

SESSION NO. 25

T26. Case Histories of Practicing Environmental and Engineering Geologist Investigations (GSA Environmental and Engineering Geology Division; GSA Geophysics and Geodynamics Division)

8:00 AM, Oasis Hotel & CC, Kalahari

Bobbi Koepke, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 25-1 8:05 AM Koepke, Bobbi*: **MITIGATING OTHER'S MESSES: A BROWNFIELDS CASE STUDY**
- 25-2 8:25 AM Hamilton, Wayne*; Yelderman, Joe; Brewer, Will: **A CASE STUDY OF APPLYING HUMAN-AI COLLABORATION TO AQUIFER TEST DESIGN: PLANNING, ANALYSIS, AND INTERPRETATION**
- 25-3 8:45 AM Farrar, Neal*: **HIGH DENSITY SITE CHARACTERIZATION UTILIZING LASER INDUCED FLUORESCENCE (LIF) COUPLED WITH HYDRAULIC PROFILING TOOL (HPT)**
- 25-4 9:05 AM Wormington, Donald*: **FROM BOOKS AND CLASSROOMS TO BOMBS AND CREOSOTE: THE JOURNEY OF AN EARLY CAREER ENVIRONMENTAL GEOLOGIST**
- 25-5 9:25 AM McKay, Matthew*; Lewis, Chris: **AERIAL LIDAR SURVEYING FOR SINGLE-DAY IDENTIFICATION OF SINKHOLES AND CAVE ENTRANCES IN WOODED AREAS**
- 25-6 9:45 AM Rentz, Shannon*: **UTILIZING GEOTHERMAL RESOURCES ON PUBLIC LANDS**
- 25-7 10:05 AM Remie, Rowann*; Mahmud, Kashif; Price, Jonathan D.; Katumwehe, Andrew; Gary, Marcus: **ESTIMATING GROUNDWATER INFILTRATION USING AUTOMATIC DRIP RATE LOGGING SYSTEM AND LIDAR AT NATURAL BRIDGE CAVERNS IN CENTRAL TEXAS**
- 10:25 AM **CONCLUDING REMARKS**

SESSION NO. 26

T30. Emerging Voices in Paleontology (Paleontological Society)

8:00 AM, Oasis Hotel & CC, Fiji Ballroom

Sarah Jacquet, Jim Schiffbauer, John Huntley and Tara Selly, Presiding

- 26-1 8:00 AM Selly, Tara*; Schiffbauer, Jim: **REEVALUATION OF CLOUDINA? FROM THE TAYLOR FORMATION, ANTARCTICA**
- 26-2 8:20 AM Speir, Eury*; Jacquet, Sarah: **DISENTANGLING REDOX ENVIRONMENTS AND SMALL SHELLY FAUNAL OCCURRENCES FROM THE NORMALLY FOSSILIFEROUS MERNMENA FORMATION OF SOUTH AUSTRALIA**
- 26-3 8:40 AM Bennett, Casey*; Mate, Clare; Jacquet, Sarah M.: **REFLECTING ON THE CAMBRIAN: TAXONOMIC REVISION AND LATERAL DISTRIBUTIONS OF SMALL SHELLY**

AM
TUESDAY

- FAUNAS FROM REEF-ADJACENT FACIES OF THE UPPER HARKLESS FORMATION, NEVADA**
- 26-4 9:00 AM Hauf, Emily*; McAdams, Neo: **COMPARATIVE GEOMETRIC MORPHOMETRICS OF THE OSAGEAN (MISSISSIPPIAN) INDEX CONODONT *GNATHODUS PUNCTATUS* FROM THE 'PRE-WELDEN SHALE' AND WELDEN LIMESTONE OF OKLAHOMA AND THE SAN ANDRES MOUNTAINS, NEW MEXICO**
- 26-5 9:20 AM Stancik, Lauren*; Flis, Chris J.: **STATE OF THE CLEITHRUM IN EARLY PERMIAN NORTH AMERICAN TETRAPODS**
- 26-6 9:40 AM Westgaard, John*; Hastings, Alexander; Hanks, H. Douglas: **EVIDENCE OF PREHISTORIC TURTLES ACROSS CRETACEOUS MINNESOTA**
- 26-7 10:00 AM Wright, Nathan*; Petsios, Elizabeth: **EVALUATING THE IMPACT OF A BARNACLE PARASITE (*LOXOTHYLACUS TEXANUS*) ON THE PRESERVATION OF BLUE CRABS (*CALLINECTES SAPIDUS*) WITH EXPERIMENTAL TAPHONOMY**

SESSION NO. 27

T28. Pleistocene-Age Continental Deposits Beyond the Glacial Border

10:00 AM, Oasis Hotel & CC, Coco Ballroom

Charles Rovey, Presiding

- 27-1 10:00 AM Cox, Randy*; Van Arsdale, Roy; Lumsden, David N.; Hasan, Md Rizwanul: **LAST GLACIAL MAXIMUM PALEOWIND DIRECTIONS FROM SAND DUNES IN NORTHEAST ARKANSAS**
- 27-2 10:20 AM Hudson, Mark*; Paces, James B.; Granger, Darryl E.; Rodrigues, Kathleen; Keen-Zebert, Amanda; Biting, Charles; Turner, Kenzie; Sapkota, Kayla N.: **A TWO-MILLION YEAR RECORD OF CLIMATE DRIVEN CAVE-SEDIMENT AGGRADATION AND VALLEY INCISION IN THE SOUTHERN OZARK PLATEAUS: A MULTIPLE GEOCHRONOMETER STUDY OF FITTON CAVE, NORTHERN ARKANSAS**
- 27-3 10:40 AM Rovey, Charles*: **OZARKS RESIDUUM - A POTENTIAL ARCHIVE OF CLIMATE DATA**
- 27-4 11:00 AM McCarville, Katherine*; Mahan, Shannon A.: **DECODING THE PALIMPSEST: GEOMORPHOLOGY, SEDIMENTS, AND SOILS OF THE IOWAN EROSION SURFACE**
- 27-5 11:20 AM Arends, Heather*; Mooers, Howard: **STRATIGRAPHIC, LITHOLOGIC, AND GEOMORPHIC EVIDENCE FOR A TWO-PHASE ADVANCE AND RETREAT OF THE LATE WISCONSIN DES MOINES LOBE**

POSTER TECHNICAL SESSIONS

SESSION NO. 28

D5. Structural Geology/Tectonics/Petrology (Posters)

8:00 AM, Oasis Hotel & CC, Grand Ballroom

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

Booth #

- 28-1 1 Cahalan, Liz; Achey, Autumn; Polun, Sean*; Bidgoli, Tandis S.; Sandvol, Eric; Gomez, Francisco: **LOW-RELIEF MOUND-LIKE FORMS ALONG THE GRAND RIVER (CHARITON COUNTY, MO): A PALEOSEISMIC ORIGIN?**
- 28-2 2 Van Benschoten, Ella*; McFarlane, C.R.M.; Jones, Jamey; Daniel, Christopher G.: **THE SHAGGY PEAK SHEAR ZONE, A CA. 1.43-1.35 GA DUCTILE SHEAR ZONE: PRELIMINARY RESULTS FROM IN-SITU RB/SR LA-QQ-ICP-MS MUSCOVITE**

AND BIOTITE ANALYSES REVEAL CONNECTION TO PICURIS OROGENY

- 28-3 3 Fenceroy, Caliana*; Sethi, Parvinder: **NEW OBSERVATIONS REGARDING WARNING SYSTEMS INVOLVING ANIMAL INSTINCTS: A RESOURCE FOR HELPING PREDICT NATURAL DISASTERS**
- 28-4 4 Johnson, Ashley*; Maher, Dr. Harmon: **LINKED NODE POINT CLOUDS TO EXAMINE FRACTURE PATTERNS WITHIN A MARS CRATER**
- 28-5 5 Maher, Dr. Harmon*; Johnson, Ashley; Higgs, Hazel: **USING RELATIVE POSITION DIRECT-LINK NODE POINT CLOUDS TO ANALYZE FRACTURE PATTERNS IN 2D**
- 28-6 6 Fornash, Katherine*; Whitney, Donna: **A GARNET AND LAWSONITE RECORD OF HYBRID ROCK FORMATION IN THE SIVRIHISAR (TURKEY) SUBDUCTION COMPLEX**
- 28-7 7 Owens, Ryan*; Gomez, Francisco: **DISCERNING POSSIBLE FAULT REACTIVATION OF POST LARAMIDE DEFORMATION AS WELL AS WARPING WITHIN QUATERNARY UNITS OF THE WIND RIVER BASIN, CENTRAL WYOMING**

SESSION NO. 29

D6. Stratigraphy and Sediments (Posters)

8:00 AM, Oasis Hotel & CC, Grand Ballroom

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

Booth #

- 29-1 8 Green, Hunter*: **GRAIN SIZE CONTROL ON ORGANOCLAY COMPLEXATION AND REE FRACTIONATION IN THE PALEOZOIC STRATA OF THE PERMIAN BASIN (WEST TEXAS, U.S.A.)**
- 29-2 9 Sommer, Sarah*; Froning, Kagan; Evans, Kevin: **UPPER CAMBRIAN CYCLICITY AND STABLE-ISOTOPE RECORD OF A DROWNING UNCONFORMITY IN THE CATLIN MEMBER OF THE WINDFALL FORMATION, EASTERN GREAT BASIN, USA**
- 29-3 10 Froning, Kagan D.*; Sommer, Sarah P.; Evans, Kevin R.: **CORRELATING THE SAUK II-III UNCONFORMITY AND ITS OFFSHORE CORRELATIVE CONFORMITY, GREAT BASIN, USA**
- 29-4 11 Langford, Richard*: **NEW CONCEPTS IN EOLIAN STRATIGRAPHY, PRESERVATION OF MEGADUNES**
- 29-5 12 Richey, Anna*: **PROVENANCE OF THE NORTHVIEW FORMATION FROM A PALEO-DELTAIC SYSTEM USING U-PB GEOCHRONOLOGY OF DETRITAL ZIRCON AND APATITE GRAINS, SOUTHWEST MISSOURI, USA**

SESSION NO. 30

T6. Future Directions in Mineralogy and Petrology: A Session for Undergraduate and Graduate Researchers (Posters) (GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division; GSA Energy Geology Division)

8:00 AM, Oasis Hotel & CC, Grand Ballroom

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

Booth #

- 30-1 13 Krupp, Alexis*; Michelfelder, Gary; Wagner, Ethan: **MULTIPLE RESURGENCE EVENTS OF THE BURSUM CALDERA, SW NEW MEXICO, RECORDED IN THE FANNEY RHYOLITE**
- 30-2 14 Juranek, Catherine*; Hummer, Daniel; Battistuzzi, Fabia U.; Hazen, Robert M.; Morrison, Shauna; Downs, Robert T.: **THE CO-EVOLUTION OF COPPER MINERALS AND COPPER PROTEINS THROUGH GEOLOGIC TIME**
- 30-3 15 Bradley, George*; Luczaj, John; Lehrmann, Daniel: **ENVIRONMENTS OF DOLOMITIZATION AND EVOLUTION OF CARBONATE DIAGENESIS IN THE TRIASSIC ZHENFENG MARGIN OF THE YANGTZE PLATFORM IN THE NANPANJIANG BASIN, SOUTH CHINA**

- 30-4 16 Sears, Madison*; Luczaj, John; Carney, Eryn; Lehrmann, Daniel: **NON-STRATIFORM DOLOMITIZATION ON THE MARGINS OF THE GREAT BANK OF GUIZHOU IN THE XILIANG AREA, SOUTH CHINA**
- 30-5 17 Carney, Eryn*; Sears, Madison; Luczaj, John; Lehrmann, Daniel; Li, Xiaowei; Rasbury, E. Troy; Wooton, Kathleen; Kirk, Jason: **STYLES OF DOLOMITIZATION OBSERVED IN THE GREAT BANK OF GUIZHOU, NANPANJIANG BASIN, SOUTH CHINA: EVIDENCE FOR MULTIPLE DOLOMITIZATION PROCESSES**

SESSION NO. 31

T13. New Basement Perspectives on the Precambrian Evolution of North America (Posters) (GSA Geophysics and Geodynamics Division; GSA Structural Geology and Tectonics Division)

8:00 AM, Oasis Hotel & CC, Grand Ballroom

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

Booth #

- 31-1 18 Kilburg, Nathanael*; Peate, David; McClelland, William C.: **AGE AND PETROGENESIS OF THE MATLOCK 'KERATOPHYRE' IN NORTHWEST IOWA**
- 31-2 19 Newman, Jordan*; Stern, Robert; Leybourne, Matthew: **SEQUENCING AND CATEGORIZING MAGMATIC INTRUSIONS IN THE COLD SPRINGS BRECCIA OF THE WICHITA MOUNTAINS, OKLAHOMA**
- 31-3 20 Swearingen, Jordan*; Price, Jonathan D.: **ALTERATION OF THE CARLTON RHYOLITE GROUP BY THE WICHITA GRANITE**

GROUP, EASTERN WICHITA MOUNTAINS, SOUTHERN OKLAHOMA

- 31-4 21 Hamilton, Matt*; Elmore, R. Douglas: **PALEOMAGNETISM AND MAGNETIC FABRICS OF THE GLEN MOUNTAINS LAYERED COMPLEX, WICHITA MOUNTAINS, OKLAHOMA**
- 31-5 22 Burberry, Caroline M.*; Joeckel, R. M. (Matt); Waszgis, Michele M.: **MICROSCALE DEFORMATION OF SE NEBRASKA BASEMENT: INSIGHTS INTO THE PRECAMBRIAN EVOLUTION OF THE MIDCONTINENT, USA**
- 31-6 23 Center, Marc*; Möller, Andreas; Goldstein, Robert H.; Walker, Douglas: **FLUID FLOW AND REGIONAL DEFORMATION HISTORY OF FRONT RANGE AND DENVER-JULESBURG BASIN, CO REGION: INSIGHTS FROM PETROGRAPHIC AND GEOCHEMICAL ANALYSES OF FRACTURE-FILLING CALCITE**
- 31-7 24 Laville, Tayeisha T.*; Price, Jonathan D.: **A COMPARISON OF MITCHELL MESA RHYOLITE EXPOSURES ON THE DALQUEST DESERT RESEARCH STATION, PRESIDIO AND BREWSTER COUNTIES, TEXAS**
- 31-8 25 Malone, Shawn J.*; Vandernelzen-Benson, Kristal L.; Bilgreen, Bruce A.: **THE OLDEST ROCK IN WISCONSIN? SINGLE GRAIN ZIRCON U/PB AND LU/HF DATA FROM WISCONSIN RIVER VALLEY GNEISSES HELP CHARACTERIZE THE ANCIENT MARSHFIELD TERRANE, PENOKEAN OROGENY**

AM

TUESDAY

POSTERS

**Widely read and highly cited,
Geology is the place to
submit your paper.**

"Thank you so much for your help getting the article looking so good. This is my 3rd publication with a GSA journal, and I always have such a good experience with the process."

—Rebecca Morris, Ph.D. candidate,
University of Victoria, Canada



THE GEOLOGICAL SOCIETY
OF AMERICA®

www.geosociety.org

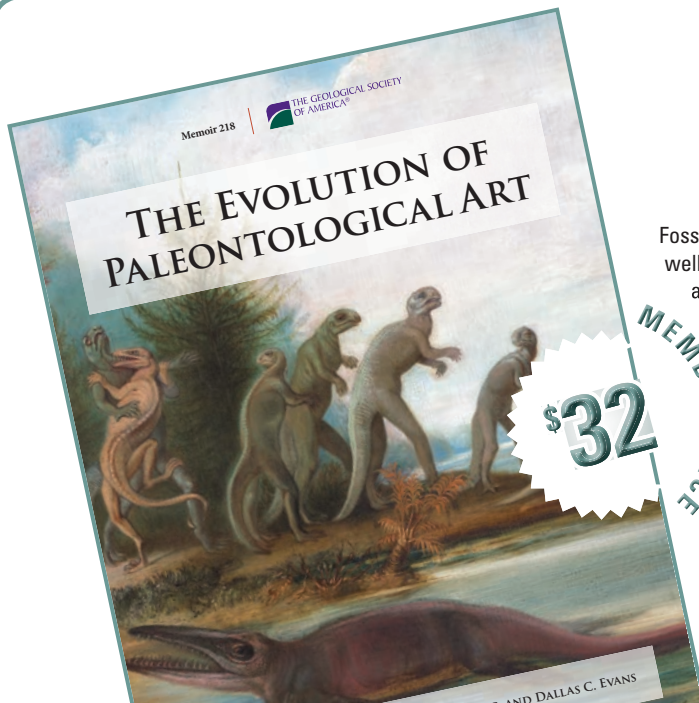
Enjoy personalized, friendly service when you publish with GSA, plus many other benefits including rigorous peer review and recognition in your field.

Learn more ▶ <http://tinyurl.com/GSA-geology-journal>

Submit today ▶ <https://geology.msubmit.net>

The #1 journal in the geosciences category for
the past 16 years ▶ 2022 impact factor: 5.8. 5-year: 5.9.

MEMOIR 218



The Evolution of Paleontological Art

Edited by Renee M. Clary, Gary D. Rosenberg,
and Dallas C. Evans

Fossils have stirred the imagination globally for thousands of years, starting well before they were recognized as the remains of once-living organisms and proxies of former worlds. This volume samples the history of art about fossils and the visual conceptualization of their significance starting with biblical and mythological depictions, extending to renditions of ancient life as it flourished in long-vanished habitats, and on to a modern understanding that fossil art conveys lessons for the betterment of the human condition. The 29 papers and accompanying artwork illustrate how art about fossils has come to be a significant teaching tool, not only about evolution of past life, but also about conservation of our planet for the benefit of future generations.

MWR218, 275 p., ISBN 9780813712185

list price \$45.00 | **member price \$32.00**



THE GEOLOGICAL SOCIETY
OF AMERICA®

BUY ONLINE ▶ store.geosociety.org

toll-free +1.800.472.1988 | +1.303.357.1000, option 3 | gsaservice@geosociety.org

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: Gordon, Richard G. ... 59-4*

Find Session #59 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

A. Atekwana, Eliot 3-7
Abdelrahman, Ahmed 10-3*
Abdelsalam, Mohamed G. 10-3, 10-5, 10-6, 10-7, 10-8
Abdulsalam, Aminat 12-6*
Achey, Autumn 18-5, 28-1
Adams, Katelyn 11-15, 16-15
Adams, Merrick 7-6
Affholter, Dr. Kathleen 7-4
Agbogun, Henry 3-7*
Akrofi, Benedicta 12-6
Al Hadidi, Nutaila 7-11*
Alarcón-Herrera, Maria Teresa 13-1
Alexis, Christopher 1-8*
Ali, Hendratna 3-7
AlKurdi, Azzah 12-3
Amaral, Chelsea 20-6
Anderson, Stephen 3-4*
Andrews, William 17-7*
Andrzejewski, Kate 11-14, 16-14
Appold, Martin 3-2
Arends, Heather 27-5*
Asmerom, Yemane 7-25
Atiti, Prince 1-3*
Ausbrooks, Scott 18-6*
Ausich, William 22-3

B

Bachmann, Olivier 19-10
Bailey, Hunter 11-4*, 16-4*
Balogh-Brunstad, Zsuzsanna 7-2
Bancroft, Alyssa M. 1-7, 24-8
Baraza, Teresa 12-2*, 23-5*
Barker-Edwards, Tiffany 7-15*
Barner, Wendell 23-2*
Barth, Elana 19-10
Battistuzzi, Fabia U. 30-2
Beck, Catherine 7-18
Bedwell, Nora A. 11-7, 16-7
Beirl, Aaron 24-6*
Bell, Jace 7-1*
Bennett, Casey 26-3*
Benz, Brooke 15-2*
Bhuiyan, Farhan Ahmed 11-8*, 16-8*
Bickham, David 24-11
Bidgoli, Tandis S. 18-4, 18-5, 28-1
Bilgreen, Bruce A. 31-8
Bilodeau, Remy 2-5*
Bingaman, James 13-6
Biscoglia, Kelly 17-5*
Bissett, Donald L. 22-4
Bitting, Charles 27-2
Boldbaatar, Enkhjargal 24-12
Bonin, BJ 23-1*
Bornhorst, Theodore 19-10
Bosompemaa, Patience 12-6
Bradley, George 30-3*
Brande, Scott 3-4
Brenngman, Latisha 3-1*, 11-8, 16-8
Brennan, Greg 1-7, 17-6

Brenton, Mikayla 6-4*
Brett, Carlton E. 22-4
Brewer, Will 25-2
Brick, Greg 23-1
Brikowski, Tom 11-17, 13-4*, 16-17
Bristy, Mridula Mamun 3-2*
Brooks, Ryan 20-8*
Brown, Camden M. 11-7, 16-7
Brown, Ken 2-7, 11-6*, 11-7*, 11-15*, 16-6*, 16-7*, 16-15*
Bryant, Jason 5-8*
Burberry, Caroline M. 7-11, 31-5*
Burke, Gabrielle 2-2*
Burkett, Ashley 4-5

C

Cahalan, Liz 18-5, 28-1
Cain, Jessica 19-5
Cappi, Sage 17-4
Capuano, Benjamin 13-7
Carden-Jessen, Melanie 4-8*
Carney, Eryn 30-4, 30-5*
Caro, Kenia 2-4*
Cartwright, Julia 19-2
Casaquite, Eulle Stann 7-5*
Castillo, Anthony 1-1*
Center, Marc 31-6*
Chandler, Angela 24-2*
Chandroth, Anupama 8-2*
Chatwin, Shannon 4-5*
Chowdhury, Emranul 17-3
Chrpa, Michelle 22-1*, 22-2
Clark, Ryan 24-8*
Claussen, Starr 17-4
Clements, Jacob 17-8*
Cole, Gerri 4-4
Cole, Selina 22-3*
Colmenero-Chacon, Claudia 12-1*
Colwell, Jack 7-3
Connolly, Andrew 4-2, 4-3
Coombs, Lori 12-5*
Cooper, Brian 24-11
Cope, Tim 11-9, 16-9
Copp, Kyra E. 11-7, 16-7
Corcoran, Miles 12-2
Cote, Lauren A. 11-6, 16-6
Cox, Randy 27-1*
Crowley, Clinton 2-1*
Curtis, Juliana 2-3*

D

Dailey, Heather J. 23-4
Daniel, Christopher G. 28-2
Daniels, William 11-3, 16-3
Dashtseren, Khashbat 24-12
Davis, Cassidy 19-7*
Davis, Justin 14-2, 21-7
Day, James 20-1*
DeBone, Kristin 15-4
Dechesne, Marieke 20-5, 20-6
Deering, Chad 19-10*

DeGraffenried, Rebecca 19-7
Demissie, Zelalem 10-5, 10-6, 10-7, 10-8
Denniston, Rhawn 7-25
Derrington, Dana 21-10*
Desrochers, André 22-3
Detweiler, Derek 7-4*
Diaz Salinas, Ariel 17-1*
Dietsch, Craig 24-5*
Dijkstra, Marcel L. 12-2
Dimova, Natasha 3-4
Ding, Chang 11-4, 16-4
Disney, Jane E. 13-7
DiVincenzo, Ashley 12-6
Dorais, Michael J. 15-5
Dorfman, Susannah 19-3
Doro, Kennedy 1-2, 1-3, 1-4, 13-5
Downs, Robert T. 30-2
Dugan, Victoria R. 11-7, 16-7

E

Elkins, Elizabeth 14-1
Elliott, William Jr. 13-6*
Elmore, R. Douglas 31-4
Emishaw, Luel 10-3, 10-5, 10-6*, 10-7, 10-8
Emmanuel, Efemena 1-4*
Emsbo, Poul 20-2, 24-7, 24-8
Ergin, Mehmet 11-4, 16-4
Ertons, Melanie 17-9, 24-3*
Evans, Kevin R. 9-1, 9-3*, 20-3*, 29-2, 29-3
Eyster, Athena 3-1

F

Faily, Jessica L. 11-6, 16-6
Farrar, Neal 25-3*
Faulkner, Mindy 17-9*, 23-4*
Faust, Emily 21-7
Fenceroy, Calliana 28-3*
Fernández, Alexa 18-2*
Fields, Jon Jr. 1-6*
Fisher, Tim 1-2, 1-3
Flis, Chris J. 26-5
Flores-Martinez, Ramiro 15-3
Forir, Matt 9-2*
Fornash, Katherine 28-6*
Franseen, Evan K. 7-21
Froning, Kagan D. 29-2, 29-3*

G

Gann, Madeline 7-6*
Ganz, Kyle 24-1*
Gardner, Eleanor 4-3
Gary, Marcus 25-7
Giehler, Mikayla 7-14*
Gihooly, William III 4-7
Golab, James 12-3*, 21-1*
Goldstein, Robert H. 7-21, 31-6
Gomez, Francisco 18-3*, 18-5*, 28-1, 28-7
Goodwin, Jessie 21-3
Gouzie, Douglas 23-3

Graettinger, Alison 15-1, 15-3
Graettinger, Alison H. 15-2
Gran, Karen 11-3, 16-3
Granger, Darryl E. 27-2
Green, Hunter 29-1*
Griffis, Neil 20-5
Gugino, Jack 7-14, 19-4*
Guice, George 7-19
Guillong, Marcel 19-10
Guo, Hongcheng 19-6*
Gutierrez, Melida 12-1, 13-1*, 13-3

H

Habeck, Jonah 6-3
Halihan, Todd 17-7
Hall, Sarah R. 13-7*, 21-6*
Hames, Willis 19-2, 24-12
Hamilton, Matt 31-4*
Hamilton, Wayne 11-13, 16-13, 25-2*
Hanks, H. Douglas 26-6
Hannibal, Joseph 9-1*
Hanson, Richard 15-4*
Harkness, Joshua 13-7
Harmon, Amelia 19-8
Harris, James B. 1-9*
Harris, John 24-11
Harris, Makenna 7-21*
Hartzell, Samantha 6-5*
Hasan, Md Rizwanul 27-1
Hasenmueller, Elizabeth A. 12-2, 23-5
Hastings, Alexander 26-6
Hauf, Emily 26-4*
Hawley, Kirsten 17-10*
Hazen, Robert M. 30-2
Heinzel, Chad 17-4*
Hempel, Gregory 21-4*
Henson, Harvey 24-6
Hess, Anya V. 7-21
Higginbotham, Jesse 21-8*
Higgs, Hazel 28-5
Hill, Katarina 7-4
Hillard, Aaron 5-2
Hirtz, Jaime 20-5, 20-6
Hodges, Caitlin A. 17-8
Holmberg, Anthony 7-4
Honings, Joseph 1-7*, 17-6
Horinek, Hannah 4-3*
Horkley, L. Kenneth 15-5
Horton, Stephen 18-6
Hou, Mingqiu 11-18, 16-18
Howard, John 21-2*
Huang, Xiao Long 15-5
Hudson, Mark 20-5, 20-6, 27-2*
Hughes, Jack 7-19*
Hummer, Daniel 2-2, 24-6, 30-2
Hunt, Brian 7-22
Hunt, Sophia Rebekah 17-1

I

Ickert, Ryan 2-6
Iqbal, Mohammad 7-1, 17-5

Irigoyen-Campuzano, Jose Rafael 13-1
Islam, Mohimanul 11-4, 16-4
Ita, Valentina 1-2, 13-5*
Ivey, Toni 4-5

J

Jacquet, Sarah M. 26-2, 26-3
Janowiak, Doc 7-3
Jean, Alicia L. 6-2
Jennings, Carrie E. 23-1
Jilly-Rehak, Christie 19-8
Jimenez, Marcos 24-11
Joeckel, R. M. (Matt) 31-5
Joeckel, Robert 11-14, 16-14
Johnson, Ashley 28-4*, 28-5
Johnson, Claudia 6-5, 8-2, 17-10
Johnson, Isabel 7-13*
Johnson, Kenneth 19-5*
Jones, Elizabeth 13-3*
Jones, Jamey III 28-2
Jones, Megan 7-23*
Judge, Shelley 7-17
Juraneck, Catherine 30-2*

K

Kalbas, Jay L. 11-14, 16-14
Kallenberg, Ian 5-4, 5-7*
Karimi, Fatemeh 13-4
Katumwehe, Andrew 1-1, 1-8, 10-5, 10-6,
10-7*, 10-8, 25-7
Keane, Christopher 4-6*
Keen-Zebert, Amanda 27-2
Kenderes, Elizabeth 2-4
Kenderes, Stuart 2-4, 4-7
Kerr, Phil 1-7
Kessler, Cody 18-1
Kilburg, Nathanael 31-1*
King, Logan 8-1
King, Zantia 14-1*
Kirk, Jason 30-5
Klene, Mary 7-9*
Knapp, James H. 5-1, 5-3, 5-4, 5-5*, 5-6,
5-7, 5-8
Kneeshaw, Tara 3-6*
Koepke, Bobbi 25-1*
Kono, Yoshio 19-3
Kopper, Martha 14-4*
Kough, Anna 14-3
Krauss, Heidi 10-4*
Krekeler, Mark 2-3
Krupp, Alexis 30-1*

L

Lacherez, Lena Jude 6-1
Lamadrid, Hector M. 3-2
Langford, Richard 29-4*
Langford, Travis 7-22*
Laville, Tayeisha T. 31-7*
Layzell, Anthony L. 11-14, 16-14
Lehrmann, Daniel 30-3, 30-4, 30-5
Leseane, Khumo 10-5, 10-6, 10-7, 10-8*
Lewis, Chris 25-5
Lewis, Ronald 6-1
Leybourne, Matthew 31-2
Li, Xiaowei 30-5
Limbaugh, Nathan 19-2*
Liu, Jiachao 19-3
Locke, Sharon 11-11, 16-11
Locmelis, Marek 24-12
López Carranza, Natalia 4-3
Luczaj, John 30-3, 30-4, 30-5
Ludvigson, Gregory 11-14, 16-14
Lukoczki, Georgina 24-5
Lumms, Myron 4-1*
Lumsden, David N. 27-1
Lutz, Brandon 20-6*
Lyu, Mingda 19-3

M

MacGregor, Jacqueline J. 5-1*
Mach, Phuc 11-4, 16-4
Maguigan, Michael 3-5*
Mahan, Shannon A. 27-4
Maher, Dr. Harmon Jr. 28-4, 28-5*
Mahmud, Kashif 1-1, 1-8, 14-1, 14-3, 14-5,
25-7
Malone, David H. 20-2
Malone, Shawn J. 31-8*
Markel, Cass L. 7-2*
Martin, Celine 7-19
Martin, Emily 7-8*

Martin-Hayden, James M. 13-5
Masso, Sophie 7-4
Mate, Clare 26-3
Matsell, Lisa Jane 19-5
May, Rebecca 24-9*
McAdams, Neo 26-4
McCafferty, Anne E. 20-6
McCall, Brittany 7-5
McCarthy, Anders 15-5
McCarville, Katherine 27-4*
McClelland, William C. 31-1
McCloskey, Jacob 8-4*
McCool, Jon-Paul 3-3*, 7-3, 7-6
McCormick, Aidan C. 11-6, 16-6
Mcdaniel, James 23-3*
McFarlane, C.R.M. 28-2
McKay, Matthew 11-5, 16-5, 19-5, 25-5*
McLaughlin, Pat 24-7, 24-8
McLaughlin, Patrick I. 20-2*
McLeod, Claire 19-4
McNamara, Allen K. 10-4
Meigren, Megan C. 20-3
Merkley, Avery 17-4
Messmer, Martin 21-5*
Methe, Anna E. 7-25*
Michelfelder, Gary 2-5, 2-6, 2-7, 19-1*,
19-8*, 30-1
Mickus, Kevin 7-26, 10-1, 10-2, 10-5*, 10-6,
10-7, 10-8, 20-7*
Mitchell, Brad 14-2*
Moghtaderi, Nooshin 1-2*
Möller, Andreas 11-14, 16-14, 19-9*, 31-6
Mooers, Howard 27-5
Morales, Narciso 7-19
Moran, Ludwin 13-7
Morrison, Shaunna 30-2
Moseby, Hudson 5-4*, 5-7
Muir, Elena 11-13*, 16-13*
Munim, Mustuque 11-18*, 16-18*

N

Nakano, Nobuhiko 24-12
Nanis, Hafid 17-2*
Newman, Jordan 31-2*
Nickels, Mark G.F. 11-10*, 11-12, 16-10*,
16-12
Nolan, Madalyn 13-6
Norman, Lauren E.Y. 1-5
Nunn, Curtis 21-11*
Nyarko, Samuel 4-7

O

O'Bryan, Holiday 7-16*
Oboh-Ikuenobe, Francisca 8-1
Ogunkoya, Akinwale 13-5
Ogunsola, Olawale Quadri 1-3
Ohrmundt, Sierra C. 15-4
Olbertz, Madison 11-3*, 16-3*
Oliveira, Rafael 17-7
Opfer, Korbin 7-3*
Orduña Alegría, Malena 4-2
Orrego, Maria Aragon 13-7
Ortega-Ariza, Diana 7-21
Owens, Ryan 18-3, 28-7*

P

Paces, James B. 27-2
Palm, Makayla 7-24*
Parthasarathy, Bhooma 11-5*, 16-5*
Pashin, Jack 11-2, 16-2
Paton, Timothy 20-2, 24-7*, 24-8
Pease, Allison 19-3*
Peate, David 15-5*, 31-1
Pell, Dalton 19-9
Peng, Zhigang 11-4, 16-4
Penprase, Shanti 7-7
Peterson, Eric 12-6
Peterson, Joseph 6-2*, 6-3*
Petryk, Brandi 19-10
Petsios, Elizabeth 22-5, 22-6*, 26-7
Pinta, Steven 13-2*
Piper, Jack 19-3
Plambeck, Kacey 7-10*
Polun, Sean 18-3, 18-4*, 18-5, 28-1*
Polyak, Victor 7-25
Pray, Emilie 19-10
Price, Jonathan D. 1-1, 1-8, 5-2*, 25-7,
31-3, 31-7
Puckette, James 4-5
Puetz, Emma 8-1*

Q

Quan, Tracy 4-5
Quevy, Amber L. 5-2
Quiroz, Connor 7-13

R

Rader, Shelby 17-10
Ramos, Frank 19-8
Rasbury, E. Troy 30-5
Ray, Dustin 18-5
Raymond, Anne 22-1, 22-2*
Reece, Colby 23-4
Reed, Olivia 11-14*, 16-14*
Reinier, Clayton 19-1
Reisner, Michael 7-5
Remian, Bethany 19-6
Remie, Rowann 25-7*
Rentz, Shannon 25-6*
Rentz, Shannon Porter 2-6
Richey, Anna 29-5*
Riker, Jenny 21-6
Rivera, Moises 11-7, 16-7
Rivera, Tiffany 19-7
Robitsch, Todd L. 20-3
Rodrigues, Kathleen 27-2
Rogers, Logan 10-1*
Rovey, Charles 20-4*, 27-3*
Rufener, Julia 24-11*
Ruff, Kelly 4-4

S

Sahad, Alhassan 12-6
Saindon, Rosanna 21-3*, 21-4
Sakimoto, Susan 15-3
Sandvol, Eric 11-4, 16-4, 18-3, 18-5, 28-1
Sani, Mariam 11-11*, 16-11*
Sapkota, Kayla N. 27-2
Schempp, Cavit 7-20*
Schiffbauer, James 19-7
Schiffbauer, Jim 26-1
Schilling, Keith E. 17-6
Schmidt, Megan 5-2
Schmidt, Owen P. 20-3
Schneider, Blair 1-5*, 4-1, 4-2, 4-3
Schrantz, Richard N. 22-4
Schrumpp, Madelyn N. 11-6, 16-6
Schuette, Jaren 11-2*, 16-2*
Schwartz, Joshua 19-5
Schwartz, Lauren 19-8
Schweitzer, Alex 19-4
Sears, Madison 30-4*, 30-5
Secord, Ross 8-4
Sedaghat, Azadeh 19-4
Seeger, Cheryl 24-4*
Selly, Tara 19-7, 26-1*
Sereenen, Jargalan 24-12
Sethi, Parvinder 28-3
Sevim, Fatih 11-4, 16-4
Sewell, Guy W. 17-7
Shahparan, Md 14-3*
Sharma, Nycole 21-9*
Sharman, Glenn 20-5
Shaulis, Barry J. 19-4
Shepherd, Stephanie 20-8
Simmons, Quincie R. 11-7, 16-7
Sink, Katharine 11-17*, 16-17*
Siomades, Sunday 4-2*
Slaughter, Stephen 21-6
Sloan, John J. 12-2
Smith, Bryston P. 5-1, 5-4, 5-6*, 5-7
Smith, Tyson 20-5*, 20-6
Sommer, Sarah 29-2*
Sommer, Sarah P. 29-3
Sonder, Ingo 15-3
Sowders, Rebekah 11-1*, 16-1*
Spangler, Leland 20-6
Speir, Eury 26-2*
Spencer, Brandon M. 5-1, 5-3, 5-4, 5-5,
5-6, 5-7, 5-8
Spencer, Joel 18-5
St.Pierre, Jade G.A. 6-4
Stancik, Lauren 26-5*
Stearns, Leigh A. 4-1
Steele, Amber 21-7*
Stern, Robert 2-1, 11-16, 16-16, 31-2
Stevenson, Alexandria M. 5-2
Stewart, Esther K. 11-8, 16-8
Sturmer, Daniel 18-1*
Swearingen, Jordan 31-3*
Sweet, Dustin 8-3
Swenson, John 11-3, 16-3

T

Tan, Lean Hong 4-7*
Tapirdamaz, Mustafa Cengiz 11-4, 16-4
Tarancioglu, Adil 11-4, 16-4
Tassier-Surine, Stephanie 1-7
Thole, Jeffrey 7-16
Thomas, Christopher 4-4*
Thomas, Mya 15-1*
Thomka, James R. 6-1* 22-4*
Thompson, Jay 24-7
Thompson, Jeffrey 22-6
Tomlinson, Zachary 12-4*
Tompkins, Emily 5-3*
Torres Ewert, Ivana 15-3*
Tran, My Ty 7-4
Treece, James 7-4
Tremblay, Marissa 19-6
Troutman, Michaela R. 11-6, 16-6
Truong, Lam 7-12*
Tunnell, Bolorchimeg N. 24-12*
Turner, Kenzie 27-2
Tyler, Lori 4-4

U

Uhl, Thomas II 24-5
Ummerhofer, Caroline C. 7-25
Ungwie, Chinanu 24-10*
Ureta Alfaro, Gabriel 19-8
Urom, Obinna 1-3

V

Van Arsdale, Roy 27-1
Van Benschoten, Ella 28-2*
van der Zwan, Froukje M. 15-5
Vandeneizen-Benson, Kristal L. 31-8
VanHaaren, Elijah T. 11-6, 16-6
Vaughn, James 18-5
Velazquez Santana, Liannie 2-3
Ventura-Valentin, Wilnelly 2-3
Vilcaez, Javier 17-3*, 24-10
Vogelgesang, Jason 17-6*
Voice, Peter 7-12, 7-13, 7-14, 7-15, 7-16,
7-17, 7-18

W

Wagner, Ethan 2-6*, 30-1
Walker, Douglas 31-6
Walton, Zachary 24-5
Wanamaker, Alan D. Jr. 7-25
Ward, Josiah 7-26*
Waszgis, Michele M. 31-5
Waterman, Michell 10-2*, 19-8
Watts, Jerrad 22-5*
Wegter, Bruce 7-18
Westgaard, John Jr. 26-6*
Wheeler, Jesse 13-7
Whitney, Donna 28-6
Whittington, Alan 19-8
Wickert, Andrew 7-7
Wiesner, Ainsley 7-17*
Williamson, Garrett 8-3*
Willis, Siloa 11-16*, 16-16*
Wilwerding, Abigail 7-7*
Winget, Marcella 7-18*
Winklemann, Annie Paige 23-4
Winston, Krishna 14-5*
Wolf, Michael 7-8
Wolfe, Claire 11-9*, 16-9*
Wooton, Kathleen 30-5
Wormington, Donald 25-4*
Wright, David 22-3, 22-7*
Wright, Nathan 26-7*

Y

Yale, Vivian 11-10, 11-12*, 16-10, 16-12*
Yelderman, Joe 11-12, 11-13, 16-12, 16-13,
25-2
Yelderman, Joe C. Jr. 11-1, 11-10, 16-1, 16-10

Z

Zaffos, Andrew 6-1
Zambito, James IV 7-12, 7-13, 7-14, 7-15,
7-16, 7-17, 7-18, 20-2
Zhang, Hanlin 2-7*
Zhuang, Guangsheng 11-18, 16-18
Zor, Ekrem 11-4, 16-4

The Decade of North American Geology DNAG

E-BOOK DOWNLOADS
ONLY \$9.99 each
AT THE GSA STORE

This monumental collection, describing and illustrating the geology and geophysics of North America, was created to help celebrate GSA's 100th anniversary. You can read this collection of **discipline- and region-specific books** that filled a floor-to-ceiling bookcase on your tablet or computer.

Volumes include:

- Centennial Field Guides
- Continent-Scale Map Series (including the ever-popular *Geologic Map of North America*)
- Continent-Ocean Transects
- Geology of North America Series



Start exploring at store.geosociety.org.

Geologic Time Scale Poster v. 6.0

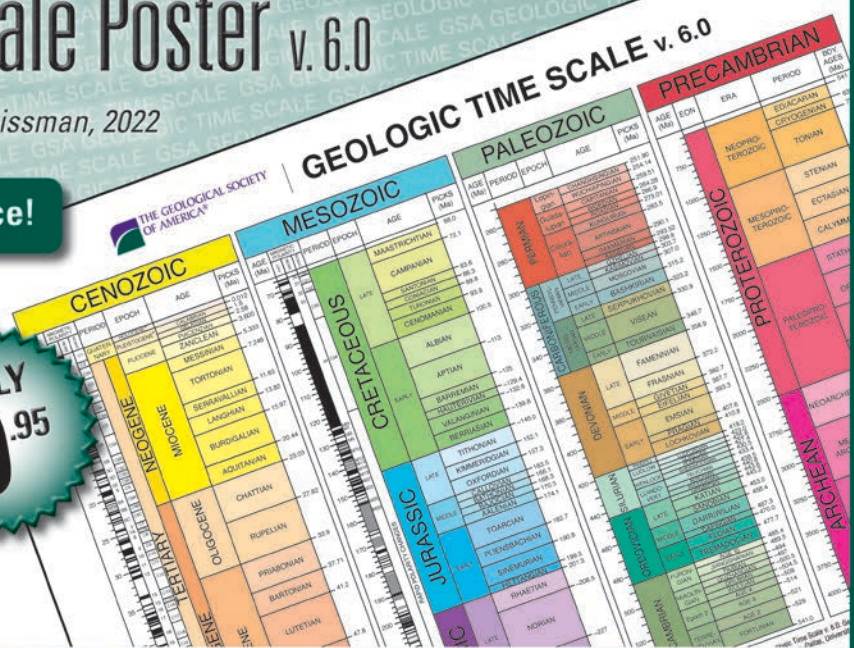
Compiled by J.D. Walker and J.W. Geissman, 2022

New version | Same great price!

Use this colorful, poster-size version of GSA's Geologic Time Scale (v. 6.0) to decorate your office or classroom.

GTSP06F | 20" x 25" — folded

ONLY \$9.95



BUY ONLINE ▶ store.geosociety.org

toll-free +1.800.472.1988 | +1.303.357.1000, option 3 | gsaservice@geosociety.org

Notes and Doodles