2022 PROGRAM

Vol. 54, No. 4

JOINT NORTH-CENTRAL–SOUTHEASTERN SECTION

7–8 April
Cincinnati, Ohio USA

https://www.geosociety.org/nc-mtg

Cincinnati skyline at night
Photo by Jake Blucker on Unsplash.
SPONSORS

We are thankful to sponsors who made substantial contributions that enhanced this meeting. Their names will be prominently displayed throughout the meeting space. Sponsors as of press time include:

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NOTICE

By registering for this meeting, you have acknowledged that you have read and will comply with the GSA Code of Conduct for Events. If you have any concerns about behavior that may violate the Code, please contact:

GSA Executive Director, Vicki McConnell, vmconnell@geosociety.org
GSA Ethics and Compliance Officer, Nan Stout, ethics@geosociety.org

You may also stop by the registration desk or the GSA Bookstore to have the named individuals directly contacted via phone. You may also speak with a GSA RISE liaison, identified by their RISE buttons.
FINAL PROGRAM
FOR
56th Annual Meeting
NORTH-CENTRAL SECTION, GEOLOGICAL SOCIETY OF AMERICA
71st Annual Meeting
SOUTHEASTERN SECTION, GEOLOGICAL SOCIETY OF AMERICA
7–8 April 2022
Duke Energy Convention Center, Cincinnati, Ohio

Our Liveable Future Needs Geoscience

Hosted By:
University of Cincinnati
University of Kentucky
Kentucky Geological Survey
Miami University of Ohio
Appalachian State University
Winthrop University

North-Central Section GSA Officers for 2021–2022
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Vice Chair ...................................... Daniel M. Sturmer
Secretary-Treasurer ........................ Tandis S. Bidgoli
Past Chair ..................................... Douglas R. Gouzie
Past Vice-Chair ............................... Kevin L. Mickus
Student Representative .................... Donald Z. Wormington
Members at Large ......................... Melinda C. Higley, Michael B. Wolf, William S. Elliott, Jr.

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Chair-elect .................................... Katie Luciano
Vice-Chair .................................... Rebecca Freeman
Secretary-Treasurer ........................ Blair R. Tormey
Past Chair .................................... Colin D. Sumrall
Past Vice-Chair .............................. Bill Hames
Student Representative ................... Miguel E. Valencia
GSA Councilors ............................. Madeline Schreiber, Mark Little

Local Organizing Committee for the 2022 Meeting
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Technical Program Co-Chairs ............ Dan Sturmer, Alan Fryar
Associated Society Events Coordinator .......................... Gwen Daley
Exhibits Chair ................................ Cole Edwards
Field Trip Co-Chairs ........................ Claire McLeod, Steve Greb
Posters Chair ................................ Kent Ratajeski
Public Engagement Committee .... Meg Corcoran, Andrea Corpolongo, Zeke King Phillips, Emily Simpson
Short Course Chair ........................ Jason Dortch
Sponsorship Chair .......................... David P. Moecher
Student Volunteers ......................... Maija Sipola
General Information

Covid Statement
To ensure a healthy, safe, and comfortable event, we require that only those vaccinated against COVID-19 attend the in-person meeting. If you are not vaccinated or test positive for COVID-19 before or during the meeting, please opt for the online version. In person attendees must wear masks at all times while attending the meeting. In person attendees will be required to upload proof of vaccination as well as a negative test result before the convention and will answer a brief health screening via an app each morning.

Welcome
The Local Organizing Committee and Section Officers welcome you to the 2022 joint meeting of the North-Central and Southeastern Sections of the Geological Society of America, located in historic downtown Cincinnati, Ohio. We welcome you to Cincinnati and hope you enjoy the attractions of the downtown riverfront area as well as the surrounding city.

Location
Renewed interest in downtown Cincinnati and areas just across the Ohio River in northern Kentucky has created dozens of breweries and brew pubs, new and renovated city parks, restaurants, cafés, and coffee bars, museums, theaters, and shopping venues. Cincinnati’s seven hills lie atop the world-renowned fossiliferous Ordovician Cincinnatian Series, and southwestern Ohio and northern Kentucky mark the terminus of the Laurentide Ice Sheet. The region’s bedrock geology and its glacial history underlie Cincinnati’s nexus of landslide hazards and urban development, as well as the dynamics of large and small watersheds throughout the region.

The Duke Energy Convention Center is located at 525 Elm Street in downtown Cincinnati, blocks away from the attractions of the Ohio Riverfront, including Paul Brown Stadium, home of the Cincinnati Bengals football team, and the Great American Ballpark, home of the Cincinnati Reds baseball team. Between the stadiums is The Banks, an 18-acre mixed-use development with restaurants, bars and brewpubs, and night life. The National Underground Railroad Freedom Center is located in the center of The Banks and adjoins riverfront parks. The pedestrian-friendly Roebling Suspension Bridge (designed by John Roebling and completed in 1867 in advance of the Brooklyn Bridge) connects downtown Cincinnati with Covington, KY (founded in 1815) where bistros and taverns are concentrated in Mainstrasse Village and along Main Street west of the bridge.

Historic Over-the-Rhine is located just north of the Duke Energy Convention Center along Vine St. north of Central Parkway (once a canal…the Rhine…) and is rich in restaurants, breweries, shops, and historic buildings. Over-the-Rhine includes Washington Park which fronts Cincinnati Music Hall (completed in 1878 and a National Historic Landmark) and Memorial Hall. Historic Findley Market, Ohio’s oldest continuously operated public market, is located north of Liberty Street between Race and Elm Streets in Over-the-Rhine. The Cincinnati Bell Connector streetcar connects the riverfront with Over-the-Rhine.

A short ride just west of Interstate 75 is the Cincinnati Museum Center located in spectacular Art Deco Union Terminal. Eden Park, located a short distance east of the downtown core, is home to the Cincinnati Art Museum, Playhouse in the Park, and the Krohn Conservatory, and offers vistas of the Ohio River. Adjoining Eden Park is Mount Adams, a neighborhood with restaurants, taverns, music venues, and shopping. The renowned Cincinnati Zoo and Botanical Garden is located uptown between the Clifton and Avondale neighborhoods. See the meeting website for more details of attractions and restaurant suggestions.

Convention Center Maps
The convention will take place in the 2nd floor North Meeting Rooms and in the 3rd floor Junior Ballroom.

Climate
April weather is Spring in Cincinnati, with average highs of 66° F/43° C, but sometimes ranging much cooler. As is
typical of Spring in the midcontinent, rain is often expected. We recommend dressing in light layers and carrying an umbrella or raincoat as needed.

Transportation and Directions
Cincinnati is easily accessed by car via interstates I-75, I-74, and I-71. The nearest airport is the Cincinnati/Northern Kentucky Regional Airport in Hebron, KY, on the outskirts of the larger metro area. Once downtown, the area around the convention center is walkable and is 3.5 blocks away from the Cincinnati Bell Connector streetcar line. The city also has an abundance of ride-share options.

Accommodations
We strongly encourage meeting participants to reserve rooms at the Hilton Cincinnati Netherland Plaza (35 West 5th Street, one block from the Duke Energy Convention Center, +1-513-421-9100) or the Hyatt Regency Cincinnati (151 West 5th Street, across the street from the Convention Center, +1-513-579-1234). Please be sure to identify yourself with the group and that you are attending the GSA Joint North-Central & Southeastern Section Meeting. Both hotels are ADA compliant.

Parking
The Duke Energy Convention Center’s main entrance is located at the intersection of Fifth Street and Elm Street in downtown Cincinnati. Over 5,000 parking spaces are located immediately surrounding the Center in metered street spaces, private flat lots and privately managed garages. The garages offer direct entry to the convention center via Cincinnati’s Skywalk System.

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 are located in the Junior Ballroom C&D Pre-Function Lobby of the Convention Center, on the following schedule.
Wednesday, 6 April: 3:30–7 p.m.
Thursday, 7 April 7 a.m.–5 p.m.
Friday, 8 April: 7 a.m.–2 p.m.

On-Site Registration Fees
All fees are in US dollars.

A note about the registration fees: GSA is striving to be inclusive, recognizing that not everyone is able to physically attend meetings. Moreover, the COVID-19 pandemic has resulted in additional constraints on attending meetings in person. The registration fees for this meeting include the costs for the technology that allows participants to attend and present in oral sessions virtually.

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<tr>
<th>Rates</th>
<th>Full meeting</th>
<th>One day</th>
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<tbody>
<tr>
<td>Professional Member</td>
<td>$295</td>
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<tr>
<td>Senior Mbr./Fellow (70+)*</td>
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<td>Senior Mbr./Fellow (65+)**</td>
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<td>Guest</td>
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<td>Field trip/Short Course only</td>
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*70 years of age or older, and a member for 30 or more years
**65 years of age or older, and a member for 25 or more years

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, student, or K–12 attendee must accompany guest registrants. Student and K–12 professionals must show a current photo ID at registration to obtain applicable rates.

Cancellations, Changes, and Refunds
Requests for additions, changes, and cancellations must have been made in writing to GSA Headquarters, in writing, by 11 March. No refunds will be made on cancellation notices received after this date. GSA cannot provide refunds for on-site registration or event ticket sales. Refunds will be mailed from GSA after the meeting; refunds for fees paid by credit card will be credited to the card identified on the registration form.

Meeting App and Abstracts
A web-based app is available for this meeting. This app allows you to view and search the meeting program and create your own schedule of events to attend. You can also view the full abstracts text from this app. Please access the app at https://gsa.confex.com/gsa/2022NC/meetingapp.cgi. If you would prefer a paper version of the program book, please print this .pdf version of the program book instead.

Accessibility
GSA is committed to ensuring full participation for all conference 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 Units (CEU)
The North-Central and Southeastern Joint Section Meeting offers an excellent opportunity to earn CEUs toward your continuing education requirements for your employer, K–12
school, or professional registration. Please check the meeting website after the meeting to download your CEU certificate.

**Special Events and Activities**

**Wednesday, 6 April**

- **Welcoming Reception.** 5–7 p.m., Junior Ballroom C&D, 3rd floor, DECC
- **GSA North-Central Section Management Board Meeting.** Room 207, 6:30–8 a.m.
- **GSA Southeastern Section Management Board Meeting.** Room 208, 6:30–8 a.m.
- **Session Chairs Orientation.** Room 203, 7–7:30 a.m. This meeting will include a review of session time management, AV procedures, and other information affecting the conduct of the day’s sessions.
- **GeoCareers Workshop Part 1: Career Planning and Informational Interviewing.** Room 207, 9–10 a.m. This workshop will help you begin the job hunting process and will introduce you to informational interviewing.
- **GeoCareers Workshop Part 2: Geoscience Career Exploration.** 10–11 a.m, Room 207. 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.
- **Southeast Section of the National Association for Geoscience Teachers.** Room 209, noon–1 p.m. Anyone is welcome to attend.
- **Roy J. Shlemon Mentors Program in Applied Geoscience.** Room 207, noon–1:30 p.m., Room 207. GSA student members will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors over a FREE lunch.
- **Darcy Lecture in Groundwater Science.** Sponsored by the Groundwater Foundation. Room 206, 1:30–2:30 p.m. Dr. Chen Zhu, Watershed-Scale Hydrological Models as a Community CyberPlatform for Research, Teaching, and Service to Society.
- **Geology Club Meet-Up.** 2–3 p.m., Room 207. Chat with other representatives about their activities, goals, and accomplishments.
- **Evening Social.** Junior Ballroom C&D, 4:30–6 p.m.
- **GSA North-Central Section Open Meeting.** Room 201/202, 5–5:30 p.m.
- **GSA Southeastern Section Open Meeting.** Room 212, 5–5:30 p.m.
- **Paleontological Society Open House.** 5–7 p.m., Location TBD off-site. If you would like to be informed of more details nearer to the event, please contact either Carrie Schweitzer (cschweit@kent.edu) or Thomas Tobin (ttobin@ua.edu).
- **Sustainability Panel Discussion.** Room 206, 5:30–6:30 p.m. Corporate, government, and university sustainability officers will discuss current approaches, future directions, and potential career opportunities for geoscientists.
- **Informal Alumni Gatherings.** The University of Cincinnati and Northern Kentucky University plan to meet at the Rhinegeist Brewery, located at 1910 Elm St., on Thursday evening at 8 p.m., for a combined, informal alumni gathering. All alumni groups are welcome. For more information, contact Craig Dietsch (UC, dietscc@ucmail.uc.edu) or Sarah Johnson (NKU, johnsonsa@nk.edu).

**Friday, 8 April**

- **Session Chairs Orientation.** Room 203, 7–7:30 a.m. 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.** Room 207, 7–8 a.m. This complimentary breakfast for Campus Reps is held to say Thank You. If you are a campus representative or are interested in becoming one, please plan to attend this celebratory event.
- **Directions in Geoscience Research and Careers: Virtual Outreach Event for Local Students.** Room 209 and online. 10 a.m.–noon. Faculty, graduate students, and geoscience professionals will meet with high school students to discuss geoscience research and careers in a virtual open house event. Please email Andrea Corpolongo at corpolaac@mail.uc.edu or Meg Corcoran at corcormc@mail.uc.edu if you are interested in taking part in this event.
- **GeoCareers Workshop Part 3: Cover Letters, Résumés and CV’s.** 9–10 a.m., Room 207. Whether you are currently on the job market or not, learn how to prepare the best résumé possible. You will review numerous examples to help you learn important résumé do’s and don’ts.
- **John Mann Mentors Program in Applied Hydrogeology.** Noon–1:30 p.m., Room 207. 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.
- **Midwest MinPet.** 4:30–6 p.m., Location TBD. Researchers, students, faculty, and other practitioners of hard rock geology are invited to socialize, network, and share ideas on how to build connections and collaborations across our region. Please contact either Claire McLeod (mlleodcl@miamioh.edu) or Craig Dietsch (dientscc@ucmail.uc.edu) if you plan to be part of this gathering.
- **Historic Buildings and Building Stone of Cincinnati.** 7:30 p.m. All meeting registrants are welcome to join an informal post-meeting walking tour of downtown Cincinnati on Friday evening, with optional stops at various locations. Meet on the south side of the historical Tyler Davidson Fountain (aka the Genius of Water originally dedicated in 1871) on Fountain Square, located at 5th and Vine Streets, at 7:30 p.m. For more information, contact Craig Dietsch (dientscc@ucmail.uc.edu).

**Saturday, 9 April**

- **Geology in the Park: Geology of Cincinnati for Members of the Public.** 10 a.m.–4 p.m. Attendees will meet with local experts to discuss the geology of the Cincinnati metro area. At Eden Park, guests will learn about the region’s topography, landscape evolution, and pressing natural hazards resulting from the terrain. At Trammel Fossil Park, guests will interact with some of the area’s most famous fossils.

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8 | 2022 GSA Joint North-Central–Southeastern Section Meeting
Trammel Fossil Park: Around 450 million year ago, a vast inland sea covered the land that is now home to this beautiful local attraction. As a result, fossils of the animals that lived there now wash out of the hills all around this park. Attendees will have the opportunity to hear about the history of Trammel Fossil Park, and to dig for fossils of their own to take home. Local experts in the paleontology of the area will be on site to answer questions and help identify any fossil finds. Attendees can meet in the Trammel Fossil Park parking lot located at 11989 Tramway Dr., Sharonville, OH 45241.

Eden Park: Home to the Cincinnati Art Museum, Playhouse in the Park, and the Krohn Conservatory, Eden Park has a wide variety of attractions to offer. Above all, the views from the overlooks are among the most beautiful in the city and provide an excellent view of the surrounding landscape. Attendees will have the opportunity to hear from local experts from the Ohio Geological Survey about the development of the region’s famous hills and valleys, as well as the natural hazards that result from the topography. Attendees will meet at Spencer Overlook located at Cliff Dr., Cincinnati, OH 45202.

Please check our online program for final details.

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

Roy J. Shlemon Mentor Program in Applied Geoscience. Thursday, 7 April, noon–1:30 p.m., Room 207. GSA student members will have the opportunity to discuss career prospects and challenges with applied geoscientists from various sectors over a FREE lunch. GSA student members will receive priority; any remaining space will be offered to student nonmembers on first come, first served basis.

John Mann Mentors in Applied Hydrogeology Program. Friday, 8 April, noon–1:30 p.m., Room 207. GSA student members interested in applied hydrogeology or hydrology as a career will have the opportunity to network with professionals in these fields over a FREE lunch. GSA student members will receive priority; any remaining space will be offered to student nonmembers on first come, first served basis.

Geology Club Meet-Up. Thursday, 7 April, 2–3 p.m. Room 207. Chat with other representatives about their activities, goals and accomplishments.

GSA Career Workshops
Geoscience Career Program Workshop Part 1: Career Planning and Informational Interviewing. Thursday, 7 April, 9–10 a.m. Room 207. Your job-hunting process should begin with career planning, not when you apply to jobs. This workshop will help you begin this process and will introduce you to informational interviewing. This section is highly recommended for freshmen, sophomores, and juniors. The earlier you start your career planning the better.

Geoscience Career Program Workshop Part 2: Geoscience Career Exploration. Thursday, 7 April, 10–11 a.m. Room 207. 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.

Geoscience Career Program Workshop Part 3: Cover Letters, Résumés, and CVs. Friday, 8 April, 9–10 a.m. Room 207. How do you prepare a cover letter? Does your résumé need a good edit? Whether you are currently in the market for a job or not, learn how to prepare the best résumé possible. You will review numerous résumés helping you to learn important résumé dos and don’ts.

Student Volunteers
Students accepted as meeting volunteers must check in at the Student Volunteer Desk, located at the registration desk, the third floor Junior Ballroom C&D Pre-function lobby.

Exhibits
Exhibitors are located in the Junior Ballroom C&D on the third floor of the Convention Center.

Information for Presenters
Unless otherwise noted, each speaker will be allotted a time of 15 minutes for oral presentations (12 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. All screens will be in widescreen (16:9) format. Each room will be equipped with Zoom for remote presentations and attendance. Access to remote participation other than presenting via video or viewing presentations in real time remotely is at the discretion of session chairs. Live question and answer participation remotely is not guaranteed. Speakers may not use their own laptops for presentations.

All poster sessions are in the Junior Ballroom. Authors in the morning sessions are asked to have their posters in place by 7:45 a.m. and taken down at noon. Afternoon posters may be put up at 12:45 p.m. and taken down at 5:30 p.m. Authors of posters should be present at their posters for 2 hours during their allotted sessions: 9–11 a.m. for morning sessions, and 2:30–4:30 p.m. for afternoon sessions.

Poster presenters have one 4’ x 8’ (1219 mm x 2438 mm) horizontal “landscape” poster display surface, and numbers on the poster boards correspond to the poster booth numbers listed in the Program. Pushpins will be provided. For student presenters, please discuss the fonts and layout of your poster with your advisor so you can have the highest impact for your visitors.

Speaker Ready Room
The Speaker Ready Room is located in Room 210 on the 2nd floor of the Convention Center, and will be open as follows: Wednesday, 6 April: 3–7 p.m.
Thursday, 7 April: 7 a.m.–7 p.m.
Friday, 8 April: 7 a.m.–2 p.m.

Each oral presenter 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 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 Presentation Upload No Later Than:
Thursday, 7 April, AM 7 p.m., Wednesday, 6 April
Thursday, 7 April, PM noon, Thursday, 7 April
Friday, 8 April, AM 7 p.m., Thursday, 7 April
Friday, 8 April, PM noon, Friday, 8 April

Information for Session Chairs
Session chairs are required to attend a Session Chairs Orientation, being held 7–7:30 a.m., in Room 203 on Thursday, 7 April and Friday, 8 April. Session chairs are requested to adhere to the schedule and to encourage the strict time limits provided to speakers. Session chairs will be responsible for handling Zoom versions of the sessions with the assistance of student volunteers.

Technical Program Sessions
View the technical program starting on page 13.

Field Trips
GSA’s Commitment to Care prioritizes your safety, therefore we are implementing the following for all field trips:
• Only one person will be allowed per hotel room unless the people are related or are partners.
• If a field trip uses dormitory-style lodging, rooms won’t be shared.
• If a field trip uses tent camping for lodging, each person must have their own tent.
• Transportation in minivans, SUVs, vans, and buses will operate at half capacity to allow for social distancing.

For additional information, please contact the Field Trip Co-Chairs: Steve Greb, greb@uky.edu; Claire McLeod, mcleodcl@miamioh.edu. Prices shown below are based on implementation of GSA COVID-19 social distancing restrictions on transportation and lodging.

Most field trips depart from the Duke Energy Convention Center will meet at the field trip check in area off Central Avenue located in the Exhibit Hall C lobby. Field trips FT5 and FT 10 depart from other locations. Please consult your individual field trip leaders to confirm logistics for your field trip as several field trips meet at other locations.

Pre-Meeting
FT1. Hydrogeology and Water Monitoring Technology in Yellow Springs, Ohio. Endorsed by GSA Hydrogeology Division, NCKRI (National Cave and Karst Research Institute). Wed., 6 April. Cost: US$165. Check in at 7 a.m., depart at 7:30 a.m. Leaders: Sarah A. Burgess, Indiana Geological & Water Survey, Indiana University, burgesss@iu.edu; Douglas Aden, Ohio Geological Survey, Ohio Department of Natural Resources, douglas.aden@dnr.ohio.gov; Brittany Parrick, Ohio Geological Survey, Ohio Department of Natural Resources, brittany.parrick@dnr.ohio.gov; Lee Florea, Indiana Geological & Water Survey, Indiana University, lflowea@iu.edu; Tracy Branam, Indiana Geological & Water Survey, Indiana University, tbranam@iu.edu.

Description: Glaciated regions of Ohio, Indiana, and Illinois contain complex hydrologic systems in a mantled karst topography. Yellow Springs, Ohio, has hydrogeologic features that are exemplary of this complex landscape. Half the day will be spent on short hikes around Yellow Springs. Afterward, we will tour local developers/retailers of environmental instrumentation.

FT2. Upper Ordovician and Lower Silurian Facies, Cycles and Sequences in Southern Ohio: A Field and Core Workshop. Endorsed by Ohio Department of Natural Resources, Division of Geological Survey. Wed., 6 April. Cost: US$95. Check in at 8 a.m., depart at 8:30 a.m. Leaders: Carlton E. Brett, University of Cincinnati, brettce@ucmail.uc.edu; Christopher Waid, Ohio Department of Natural Resources, Division of Geological Survey, christopher.waid@dnr.ohio.gov; Cole Farnam, University of Cincinnati, farname@mail.uc.edu; Patrick McLaughlin, Indiana Geological & Water Survey, pimclaug@iu.edu.

Description: This will be a single-day pre-meeting workshop combining field and subsurface study of newly interpreted uppermost Ordovician to lower Silurian successions. Facies include gray and red shales, fossiliferous limestones and dolostones, patch reefs, and minor ironstones. The focus is on methodology of correlation and sequence/environmental interpretation in mixed siliciclastic-carbonate successions using litho- and biofacies, gamma ray logs, and chemostratigraphy.

Post-Meeting
FT3. Geology of the Central Kentucky Karst and Mammoth Cave. Fri., 8 April. Cost: US$187. Check in at 4:30 p.m., depart at 5 p.m. Leaders: Rachel Bosch, Northern Kentucky University, rachelfbosch@gmail.com; Sarah Arpin, Kentucky Geological Survey, University of Kentucky, sarah.arpin@uky.edu; Patricia Kambesis, Western Kentucky University, pat.kambesis@wkuc.edu; Rickard Toomey III, Mammoth Cave National Park, rick_toomey@nps.gov.

Description: On this field trip, we will explore the Central Kentucky Karst, home to the world’s longest cave system, Mammoth Cave. We will visit both surface and subsurface karst features, from a tour of the Sinkhole Plain to hiking into an enormous karst window to trips inside Mammoth Cave.

FT5. A Bike Tour: Piecing Together the Surficial Geology and History of the Four Mile Creek River Valley, Ohio. Sat., 9 April. Cost: US$25/US$40*. Check in at 8:45 a.m. at the pavilion at the Leonard G. Howell Park, depart at 9 a.m. Leaders: Cristina Tenison, Miami University, tenisonc@miamioh.edu; Jason Rech, Miami University, rechja@miamioh.edu.

**Description:** Participants will bike along Four Mile Creek viewing historic sites and Quaternary fluvial deposits used to determine the geologic history of the river. Participants will also discover long-term water-quality and sediment load studies of upstream Acton Lake reservoir and visit outcrops exemplifying southwestern Ohio’s broader bedrock and glacial stratigraphy.

*Cost is $52 if you don’t provide your own bike and helmet, or $40 if you do provide your own bike and helmet.

FT6. A New Look at the Classic Cincinnatian: Sequences, Cycles, and Events in the Upper Ordovician of the Cincinnati Vicinity. Sat., 9 April. Cost: US$95. Check in at 7:30 a.m., depart at 8 a.m. Leaders: Carlton E. Brett, Department of Geology, University of Cincinnati, brette@ucmail.uc.edu; Ben Dattilo, Purdue University, Fort Wayne, dattilob@pfw.edu; Kyle Hartshorn, Cincinnati Dry Dredgers, khartshorn1.0@gmail.com.

**Description:** This one-day, post-meeting field trip highlights key reference sections of the world-renowned Upper Ordovician Cincinnatian Series (ca. 450-446 Ma) in its type of region. Trip provides an overview of highly fossiliferous shale/limestone successions, focused on the interpretation of depositional processes, cycles, taphonomy, and paleoecology in the context of a recently revised sequence stratigraphic framework.

FT7. Buried-Valley Aquifers and the Theis Environmental Monitoring and Modeling Site. Sat., 9 April. Cost: US$85. Check in at 8:30 a.m., depart at 9 a.m. Leaders: Reza Soltanian, University of Cincinnati, soltanna@uc.edu; Alan Fryar, University of Kentucky, a fryar1@email.uky.edu.

**Description:** Buried-valley aquifers provide drinking water to 45 million people in the USA. This field trip focuses on such aquifers, their interaction with rivers, and their vulnerability to pollution due to anthropogenic activities. The trip includes visits to the Fernald Preserve, and Theis Environmental Monitoring and Modeling Site.

FT8. Defenses of Cincinnati: Geological and Topographical Aspects of Civil War Forts and Batteries, Camp Dennison, and Morgan’s Raid. Sat., 9 April. Cost: US$100. Check in at 7:45 a.m., depart at 8:15 a.m. Leaders: Joe Hannibal, Cleveland Museum of Natural History, j hannibal@uakron.edu; Jeannine Kreinbrink, K & V Cultural Resources Management LLC, kreinbrinkjm@gmail.com; Kevin E. Evans, Missouri State University, kevin evans@missouristate.edu.

**Description:** This trip visits sites related to once formidable Civil War defenses in Ohio and northern Kentucky designed by geologist and topographer Col. Charles Whittlesey, Camp Dennison, designed by William Rosecrans, who also had a geological background, and Morgan’s Raid, which passed north of the Queen City.

FT9. Organic-Rich Rocks and Associated Sediments near the Devonian–Mississippian Boundary in Northeastern Kentucky. Sat., 9 April. Cost: US$215. Check in at 7:30 a.m., depart at 8 a.m. Leaders: Frank R. Ettenshoeh, University of Kentucky, fettens@uky.edu; Charles Mason, retired, Morehead State University, mason.charles1947@gmail.com; R. Tim Lewis, retired, WPXEnergy, rt im.lewis@gmail.com; Geoff Clayton, retired, Trinity University, gclayton@tcdei.

**Description:** This trip examines classic exposures of the organic-rich Devonian and Mississippian Ohio and Sunbury shales and associated deltaic sediments from the Bedford Shale and Borden Formation in northeastern Kentucky. Important stratigraphic intervals, including the Three Lick Bed, Silurian–Devonian boundary, Protosalvinia zone, and Devonian–Mississippian boundary, as well as a Late Devonian dropstone in the upper Ohio Shale, will be examined.

FT10. Pleistocene Geology, Paleontology, and the History of Science at Big Bone Lick, Kentucky. Sat., 9 April. Cost: US$40. Check in at 8:30 a.m. at the Bone Lick State Historic Site Visitor Center, depart at 9 a.m. Leaders: Glenn W. Storrs, Cincinnati Museum Center, g storrs@cincymuseum.org; Cameron Schwabach, Cincinnati Museum Center, cschwabach@cincymuseum.org.

**Description:** Participants will visit Big Bone Lick State Historic Site, the birthplace of American vertebrate paleontology, where mastodon fossils have been collected since 1739. We will tour the visitor center, walk the lick trail, learn its history, and complete the day with a visit to Cincinnati Museum Center’s Ice Age Gallery.

FT11. Revisiting the Wisconsin Depositional History of the Southernmost Extent of the Scioto Sublobe, Ohio. Sat., 9 April. Cost: US$283. Check in at 7:30 a.m., depart at 8 a.m. Leaders: T. Andrew Nash, Ohio Department of Natural Resources, Division of Geological Survey, thomas.nash@dnr.ohio.gov; Tyler Norris, Ohio Department of Natural Resources, Division of Geological Survey, tyler.norris@dnr.ohio.gov; Thomas Valachovics, Ohio Department of Natural Resources, Division of Geological Survey, thomas.valachovics@dnr.ohio.gov.

**Description:** Data collected while mapping in Clinton and Fayette counties led to a better understanding of the Scioto Sublobe glacial history. New radiocarbon dates collected within the counties help constrain the chronology of glacial deposition and moraine construction. Field stops will examine Quaternary stratigraphy via outcrop and core.

**Short Courses**

All in-person short courses are being held on Wednesday, 6 April in the Duke Energy Convention Center North Meeting Rooms. For additional information, please contact the Short
Courses chair, Jason Dortch, jason.m.dortch@uky.edu.

Pre-Meeting
SC1. Designing Instructional Access and Inclusion across Geoscience Learning Environments. Endorsed by International Association for Geoscience Diversity (IAGD); GSA Geoscience Education Division. Room 207. Wed., 6 Apr., 9 a.m.–4 p.m., with lunch break. Cost: US$25 students/US$50 professionals. Max. participants: 25. Instructors: Christopher Atchison, University of Cincinnati, christopher.atchison@uc.edu; Anita Marshall, University of Florida, anita.marshall@ufl.edu; Sean Thatcher, Rutgers University, sean.thatcher1990@gmail.com; Ian Castro, University of Cincinnati, castroio@ucmail.uc.edu; Ivan Carabajal, University of Cincinnati, carabaig@mail.uc.edu.

Description: This workshop will assist participants in designing and implementing accessible strategies to support all students in geoscience classroom and field instruction. Participants will consider how their own course and field scenarios can be enhanced through Universal Design for Learning and the integration of technology to enable active engagement and inclusion.


Description: PyOSP is an open-source Python library that can objectively characterize complex geomorphic boundaries, collect swath data, and perform a range of post-processing calculations. This workshop will introduce participants to PyOSP using the nearby Licking River, followed by a short field trip to assess model utility.

SC3. Methods of Metal Pollution Investigation. Room 209, Wed., 6 Apr., 8:30 a.m.–4 p.m., with lunch break 11:45 a.m.–1:15 p.m. Cost: US$25 students/US$50 professionals. Max. participants: 30. Instructors: Mark P.S. Krekel, Miami University, krekelp@miamioh.edu; Matthew Dietrich, Indiana University–Purdue University Indianapolis, dietrimj17@gmail.com; Kenneth Brown, DePauw University, kennethbrown@depauw.edu.

Description: This short course focuses on understanding metal pollution in urban, industrial, and agricultural environments. Fundamental aspects of metal pollutant chemistry, geogenic background, and complexity will be presented. Several analytical techniques (e.g., electron microscopy, bulk chemistry, X-ray diffraction) will be covered. Participants will receive reference geologic materials for future work.


Description: Professional registration is critical for working in consulting or private industry and can be useful for many working in academia. This short course will explore general requirements for professional geology licensure and tips for exam preparation. The organizer has 20+ years of experience providing guidance in PG exam preparation.
THURSDAY, 7 APRIL 2022

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 1

T1. Actualistic Paleontology: Learning from the Modern to Better Interpret the Past (SEPM (Society for Sedimentary Geology); Paleontological Society; GSA Sedimentary Geology Division; GSA Quaternary Geology and Geomorphology Division)

8:00 AM, Duke Energy Convention Center, North Meeting Room 203/204

Yurena Yanes, Ezekiel King Phillips and Catherine Nield, Presiding

8:00 AM INTRODUCTORY REMARKS

1-1 8:05 AM Meadows, Caitlin*; Kidwell, Susan: ARCTIC BIVALVE SHELL ASSEMBLAGES AS HIGH TEMPORAL- AND SPATIAL-RESOLUTION ARCHIVES OF ECOLOGICAL REGIME CHANGE

1-2 8:25 AM Nield, Catherine*; Yanes, Yurena; Miller, Joshua; Druckenmiller, Patrick; Sniezak, Thomas: OXYGEN ISOTOPE VALUES OF MODERN AND FOSSIL LAND SNAILS FROM FAIRBANKS, ALASKA

1-3 8:40 AM Muruganantham, Kaaviya*; King Phillips, Ezekiel; Yanes, Yurena: ASSESSING THE DIETARY HABITS OF SLUGS FROM A DECIDUOUS FOREST IN SE OHIO USING STABLE ISOTOPE ECOLOGY

1-4 8:55 AM McKeeby, Ryan*; Gottfried, Michael D: USING QUANTITATIVE MORPHOMETRICS AND OUTLINE ANALYSIS TO DELINATE ONTOGENETIC HETEROGENITY IN RECENT AND FOSSIL TAXA OF WHITE SHARKS (FAMILY LAMNIDAE)

1-5 9:10 AM DeVore, Melanie*; Nyandwi, Alphonse; Uhavenimana, Pasteur Migine; Eckardt, Winnie; van der Hoek, Yntze; Bizuru, Elias; Manishimwe, Aloysie; Pigg, Kathleen: MODERN ENVIRONMENTAL ANALOGUES AND MORPHOLOGICAL LEAF FEATURES ARE IMPORTANT IN UNDERSTANDING PALEOGENE MAMMAL HERBIVORY

1-6 9:25 AM Denton, Robert*: ALBEMARLE SOUND NC - A MODERN ANALOG FOR THE ELLISDALE FOSSIL SITE (LATE CRETACEOUS, CAMPANIAN, NJ)

9:40 AM BREAK

1-7 9:55 AM Hembree, Daniel*; Thacker, Hayden A.; Wislocki, Joseph: COMPLEX ICHNOFABRIC PRODUCED BY LARVAL TO ADULT BEETLES: MODERN AND ANCIENT EXAMPLES

1-8 10:10 AM Rogers, Logan R.*; Schuette, Jaren D.; Bilodeau, Remy A.; Finn, Thaddeus J.; Gomez, Ramona R.; Paul, Michael T.; Sommer, Sarah P.; Wallenmeyer, Teddy J.; Evans, Kevin; Schiltbauer, James; Selby, Tara: STOP MOTION MOVIES OF MICRO-CT CORE SCANS AS TOOLS FOR EXAMINING ETHOLOGY IN TRACE FOSSIL ASSEMBLAGES FROM THE LOWER MISSISSIPPIAN NORTHVIEW FORMATION, SOUTHWESTERN MISSOURI, USA

1-9 10:25 AM Martin, Anthony*: Rindsberg, Andrew: NEOICHNOLOGY AS ACTUALISM AND ITS USES IN PALEONTOLOGY

1-10 10:40 AM Meyer, David*; Messing, Charles G; Stevenson, Angela; Veitch, Margaret: SUBSEA PHOTOGRAPHY AND TIME-LAPSE VIDEO OF LIVING CRINOIDS UNLOCK SECRETS OF A DEEP EVOLUTIONARY PAST

1-11 10:55 AM Manning-Berg, Ashley*: Lam, Elizabeth Kathleen: DECOMPOSITION PATHWAYS OF MICROBIAL COMMUNITIES AND MATS

1-12 11:10 AM Neely, Samuel*: Raymond, Anne: UNDERSTANDING ANCIENT WETLAND PALEOECOLOGY FROM THE TAPHONOMY OF MODERN MANGROVE PEATS

1-13 11:25 AM McLeggan, Oliver*: Leonard-Pingel, Jill S.: EMPLOYING DIATOM-BASED ENVIRONMENTAL RECONSTRUCTIONS TO UNDERSTAND CHANGING NUTRIENT LOADS IN OHIO’S INLAND LAKES

Technical Sessions

Meeting policy prohibits the use of cameras or sound-recording equipment at technical sessions and poster sessions. A no-smoking policy has been established by the Program Committee and will be followed in all meeting rooms for technical sessions.

NOTICE

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

NOTE INDEX SYSTEM

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

* denotes speaker
SESSION NO. 2

T5. Development and Application of Geochemical Proxies to Paleoclimate Studies
8:00 AM, Duke Energy Convention Center, North Meeting Room 201/202
Megan Corcoran and Aaron Dieffenbord, Presiding

8:00 AM INTRODUCTORY REMARKS

2-1 8:05 AM Hayes, Sara*; Them, Theodore R.; Yuan, Wei; Liu, Mu; Caruthers, Andrew H.; Kaczmarek, Stephen: A NEW SEDIMENTARY MERCURY RECORD TO EVALUATE THE SILURIAN NIAGARA-SALINA TRANSITION MICHIGAN BASIN, USA

2-2 8:20 AM Avila, Teresa*; Saltzman, Matthew; Griffith, Elizabeth M.; Joachimski, Michael; Olesiak, John: THE ROLE OF SILICATE WEATHERING IN SHIFTING DEVONIAN PALEOCLIMATE

2-3 8:35 AM Schoepfer, Shane*; Sano, Hiroyoshi; Shen, Jun; Algeo, Thomas J.: ENVIRONMENTAL STRESSES PRECEDING THE END-TRIASSIC EXTINCTION IN THE PANTHALASSIC OCEAN

2-4 8:50 AM Hayes, Joseph*; Kelly, Daniel; Beard, Brian L.; Tappa, Michael; Bauer, Annie: RECONSTRUCTING OCEAN CIRCULATION ALONG THE EASTERN MARGIN OF THE WESTERN INTERIOR SEAWAY DURING THE LATE CRETACEOUS COOLDOWN

2-5 9:05 AM Doiron, Kelsey; Stevens, Lora; Brassell, Simon*: BIOGEOCHEMICAL RESPONSES TO CLIMATE TRANSITIONS OVER THE PAST 40 KYR RECORDED IN SEDIMENTS FROM LAKE IA M'HE, A MAAR LAKE IN THE CENTRAL HIGHLANDS OF VIETNAM

2-6 9:20 AM Grimley, David*; Dendy-Metz, Sarah N.; Conroy, Jessica L.; Nield, Catherine: HYDROCLIMATE INFERENCES FOR THE LAST GLACIAL AND PENULTIMATE GLACIAL MAXIMA BASED ON FOSSIL TERRESTRIAL GASTROPOD ASSEMBLAGES AND STABLE ISOTOPES, CENTRAL USA

2-7 9:35 AM Baldasare, Alexander; Rech, Jason*; Tenison, Christina N.; Currie, Brian: RADIOCARBON RESERVOIR EFFECTS AND 14C DATING OF AQUATIC MOLLUSK SHELLS IN THE MIDWESTERN US

9:50 AM BREAK

2-8 10:05 AM Wiles, Greg*; Wiesenberg, Nick; Gaglioti, Ben: PUTTING THE RECENT PLUVIAL INTO CONTEXT: TREE-RING RECORDS OF MIDCONTINENTAL NORTH AMERICAN HYDROCLIMATE

2-9 10:20 AM Corcoran, Megan*; Dieffenbord, Aaron; Lowell, Thomas; Wiesenberg, Nicholas; Wiles, Gregory; Wilson, Mark A.; Dietrich, Watts; Berina, Justine Paul: SEASONALITY OF HYDROGEN ISOTOPES AND CONCENTRATIONS OF HIGHLY BRANCHED ISOPRENOIDS (HBIS) PRODUCED BY LAKE DIATOMS

2-10 10:35 AM Hughes, Hunter*; Surge, Donna; Thompson, Diane M.; Lees, Jonathan; Foster, Gavin L.; Standish, Christopher D.; Chalk, Thomas B.: SMITE: A NOVEL METHOD FOR ESTIMATING SEA SURFACE TEMPERATURES USING SCLERACTINIAN CORALS

2-11 10:50 AM Lukens, William*; Fox, David L.: A MONTE CARLO APPROACH TO QUANTIFYING UNCERTAINTY IN C, BIOMASS ESTIMATES FROM PALEOSOL ORGANIC MATTER AND CARBONATES

11:05 AM Haashim, Mohammed*; Kaczmarek, Stephen: RHOMBIC CALCITE MICROCRYSTALS AS A PROXY FOR METEORIC DIAGENESIS

11:20 AM CONCLUDING REMARKS

SESSION NO. 3

T10. Crossing Streams: Advances in Stream Science in the Southeast and North-Central United States (GSA Quaternary Geology and Geomorphology Division)
8:00 AM, Duke Energy Convention Center, North Meeting Room 205
Bradley Johnson and Anne Jefferson, Presiding

3-1 8:00 AM Wichterich, Connor*; Gardner, Christopher; Welch, Sue A.; Smith, Devin F.; Lyons, W.: THE INFLUENCE OF AGRICULTURE AND URBANIZATION ON TRACE METAL GEOCHEMISTRY OF THE SCIOTO RIVER, OHIO

3-2 8:15 AM Smith, Devin*; Lyons, W.; Welch, Sue A.; Wichterich, Connor; Gardner, Christopher; Carey, Anne E.: RIVER CHEMISTRY OF THE SCIOTO, MIAMI, AND MUSKINGUM WATERSHEDS IN OHIO, USA

3-3 8:30 AM Tenison, Christina*: Rech, Jason: A GEOcientist’S ROLE IN INFORMING STREAM RESTORATION DESIGN: A CASE STUDY OF THE FOUR MILE CREEK RIVER VALLEY, SOUTHWESTERN OHIO

3-4 8:45 AM Baldus, David*; Erickson, Annika; Gran, Karen; Brady, Valerie; Jicha, Terri; Johnson, Lucinda: THE IMPACT OF STREAM RESTORATION PROJECTS ON ECOSSYSTEM FUNCTION THROUGH CHANGES IN NUTRIENT SPIRALING DYNAMICS

3-5 9:00 AM Blumentruth, Dylan*: Otten, Megan; Zanon, Emily: MAPPING WATER AND SEDIMENT RETENTION STRUCTURES IN AN AGRICULTURAL AND TOPOGRAPHICALLY VARIABLE WATERSHED IN SOUTHEASTERN MINNESOTA

3-6 9:15 AM Peterson, Eric*: STREAM RECOVERY POST CHANNELIZATION: A CASE STUDY OF LOW-GRADIENT, AGRICULTURAL STREAMS IN CENTRAL ILLINOIS

3-7 9:30 AM BREAK

3-8 9:45 AM Higgins, Dana V.*; Carr, Jake A.; Galler, Genn; McKinney, Michael: MICROPLASTICS IN SNAILS FROM AN URBANIZED CREEK

3-9 10:00 AM Greising, Christopher*; Jefferson, Anne; Farooq, Nageen; Muratori, Sophia; Kearns, Makayla; Brown, Emily: DETERMINING DRIVERS OF ANTHROPOGENIC LITTER IN CLEVELAND (OH) AND CHARLOTTE (NC) URBAN STREAMS BASED ON WATERSHED AND STREAM CHARACTERISTICS

3-10 10:15 AM Grote, Todd*: Comstock, Aaron; Bird, Brixton W.; Cook, Robert; Cross, Benjamin: LATE HOLOCENE PALEOENVIRONMENTAL CHANGE, MIGRATION AND THE EMERGENCE OF THE FORT ANCIENT CULTURE IN THE MIDDLE OHIO RIVER VALLEY

3-11 10:30 AM Johnson, Bradley*; Mullinax, Roy; Rieden, Hannah: THE TIMING OF AND CAUSE OF STREAM INCISION IN THE NORTH CAROLINA PIEDMONT

3-12 10:45 AM Hunt, Allen*: QUANTITATIVELY RELATING STREAM NETWORK EVOLUTION TO GROUNDWATER FLOW

11:00 AM Weirich, Nicole*; Callahan, Timothy; Trettin, Carl C.; Amatya, Devendra M.: A STREAM CATENA: COLLABORATIVE RESEARCH AND MONITORING IN A TIDAL SYSTEM FROM FORESTED WETLAND HEADWATERS TO THE CHARLESTON ESTUARY

SESSION NO. 4

T16. Geosciences for a Sustainable Future
8:00 AM, Duke Energy Convention Center, North Meeting Room 206
Amy Townsend-Small and Reza Soltanian, Presiding

4-1 8:00 AM Erhardt, Andrea*; Alvarez, Cristopher; Fichtner, Vanessa; Parris, Thomas M.; Zhu, Junfeng; Fryar, Alan; Webb, Steven E.; Munizzi, Jordon: CAUSES AND EXTENT OF ELEVATED METHANE CONCENTRATIONS IN THE GROUNDWATER OF EASTERN KENTUCKY
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<tr>
<td>4-2</td>
<td>8:15 AM</td>
<td>Van Beynen, Philip*; VALUE OF GROUNDWATER TO PUBLIC SUPPLY IN WEST-CENTRAL FLORIDA</td>
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<td>4-3</td>
<td>8:30 AM</td>
<td>DeVries, Stephanie*; AN IMPROVED NITRATE MODELLING TOOL FOR SOURCE WATER PROTECTION IN SAND AND GRAVEL AQUIFERS</td>
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<td>4-4</td>
<td>8:45 AM</td>
<td>McCarthy, Rowan*; Iqbal, Mohammad; BACKGROUND INVESTIGATIONS INTO MAQUOKETA CAVE WATER SOURCES IN EASTERN IOWA</td>
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<td>4-5</td>
<td>9:00 AM</td>
<td>Dapkus, Ryan*; Fryar, Alan E.; Byrne, Diana M.; Sarker, Shrish; VARIABILITY IN E. COLI AND TRYPTOPHAN-LIKE FLUORESCENCE IN TWO KARST BASINS, INNER BLUEGRASS REGION, KENTUCKY</td>
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<td>4-6</td>
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<td>Break</td>
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<tr>
<td>4-7</td>
<td>9:30 AM</td>
<td>Galeano, Daniela; Meyer, Brian K.; Kabengi, Nadine; Dai, Dajun; He, Xiaochun; Gore, Pamela*; Ashok, Ashwin; SOIL RADON STUDIES IN ATLANTA, GEORGIA</td>
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<tr>
<td>4-8</td>
<td>9:45 AM</td>
<td>Dobbs, Elizabeth*; Mobasher, Katayoun; Hughart, Joseph; PRELIMINARY STUDY OF NATURALLY OCCURRING ASBESTOS EXPOSURE AND ITS ADVERSE HEALTH EFFECTS IN NORTH GEORGIA USING GEOSPATIAL TECHNOLOGY</td>
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<td>4-9</td>
<td>10:00 AM</td>
<td>Watts, Chester*; McClellan, Elizabeth A.; Stephenson, George C.; Young, James R.; IMPLEMENTATION OF UNMANNED AERIAL SYSTEMS FOR DESIGN, RISK ANALYSIS, AND HAZARD MITIGATION OF ROCK SLOPES IN VIRGINIA</td>
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<td>4-10</td>
<td>10:15 AM</td>
<td>Huot, Sebastien*; Spitzer, Liz; Mattheus, C. Robin; Phillips, Andrew; WATER-LEVEL CHANGES AND TERRAIN EVOLUTION ALONG THE ILLINOIS LAKE MICHIGAN COAST: DEVELOPING A GEOCHRONOLOGY FOR THE ZION BEACH-RIDGE PLAIN</td>
</tr>
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<td>4-11</td>
<td>10:30 AM</td>
<td>Becker, Richard*; Palaseaune-Lovejoy, Monica; Yellich, John A.; Kincare, Kevin; WATER LEVEL AND LITHOLOGY IMPACTS ON COASTAL BLUFF EROSION ON THE EAST SHORE OF LAKE MICHIGAN FROM 2012-2021</td>
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<td>4-12</td>
<td>10:45 AM</td>
<td>MacKenzie, Richard*; Bremner, Paul; Fletcher, Sean D.T.; Laycock, Dallin; VISUALIZING INTERANNUAL TO DECADAL COASTAL VARIABILITY UTILIZING VIDEOS PRODUCED FROM REMOTELY SENSED DATA</td>
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**SESSION NO. 5**

**T20. Advances in Geophysics for Shallow Subsurface Investigations (GSA Geophysics and Geodynamics Division; GSA Hydrogeology Division; GSA Environmental and Engineering Geology Division; GSA Soil and Processes Division)**

7:00 AM, Duke Energy Convention Center, North Meeting Room 212

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<td>5-1</td>
<td>8:05 AM</td>
<td>Macias, Kristian*; Counts, Ronald; USING GEOPHYSICS AND LUMINESCENCE GEOCHRONOLOGY TO DETERMINE THE AGE AND EXTENT OF THE ADAMS MILL FAULT AT THE SMITHSONIAN NATIONAL ZOOLOGICAL PARK, WASHINGTON, DC</td>
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<td>5-2</td>
<td>8:20 AM</td>
<td>Okoko, George*; Emmanuel, Elemana D.; Adebayo, Moses B.; Casaus, Maureen; Ogunkoya, Akinwale; Otchere, E.; Ogundei, Seye E.; Doro, Kennedy; Fisher, Timothy; USING GEOPHYSICAL METHODS TO DIFFERENTIATE BETWEEN TILL AND GLACIAL RHYTHMETIC SEDIMENT AT WILDWOOD METROPARK, TOLEDO, OHIO</td>
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<td>5-3</td>
<td>8:35 AM</td>
<td>Worrington, Donald*; Micks, Kevin; Gouzie, Douglas; NEAR SURFACE GEOPHYSICAL INVESTIGATION OF KARST FEATURES IN STONE COUNTY MISSOURI</td>
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<td>5-4</td>
<td>8:50 AM</td>
<td>Emmanuel, Elemana D.*; Doro, Kennedy; ESTIMATING THE DISTRIBUTION OF SOIL MOISTURE AND ORGANIC MATTER CONTENT IN RESTORED WETLANDS USING ELECTROMAGNETIC IMAGING</td>
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**SESSION NO. 6**

**T21. Geologic Mapping Using the HV/S Spectral Ratio Method in the North-Central United States**

7:30 AM, Duke Energy Convention Center, North Meeting Room 212

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<tr>
<td>6-1</td>
<td>9:00 AM</td>
<td>Norris, Tyler*; Antinso, Jose Luis; USING HVSR TO REMAP OHIO’S BEDROCK TOPOGRAPHY AND DRIFT THICKNESS</td>
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<td>6-2</td>
<td>9:15 AM</td>
<td>Clark, Ryan*; Tessier-Surine, Stephanie; Vogelgesang, Jason; Brennan, Greg; Kerr, Phil; Bancroft, Alyssa M.; FILLING IN THE GAPS: USING PASSIVE SEISMIC FOR BEDROCK TOPOGRAPHIC CONTROL IN IOWA, USA</td>
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<td>6-3</td>
<td>9:30 AM</td>
<td>Esch, John*; Kehe, Alan; Sauck, William; Norris, Tyler; Yellich, John A.; Jouperi, Clayton; BEDROCK TOPOGRAPHY MAPPING USING THE HORIZONTAL-TO-VERTICAL SPECTRAL RATIO (HVSR) PASSIVE SEISMIC METHOD – CASS COUNTY MICHIGAN</td>
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<td>6-4</td>
<td>9:45 AM</td>
<td>Currie, Brian*; Williams, Eva; Stubbins, Blake; Pallo, Emma; Thoresen, Hailey; HVSR-ASSISTED MAPPING OF GLACIAL BURIED VALLEYS IN SOUTHWESTERN OHIO</td>
</tr>
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<td>6-5</td>
<td>10:00 AM</td>
<td>Blake, Daniel*; USING THE H/V SPECTRAL RATIO METHOD TO BETTER MAP THE BEDROCK TOPOGRAPHY AND DRIFT THICKNESS OF THE PREGlacIAL TEAYS RIVER WITHIN THE ANNA SEISMIC ZONE, OHIO</td>
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<td>6-6</td>
<td>10:15 AM</td>
<td>Bell, Matthew*; Esch, John; Yellich, John A.; Voice, Peter; DAM FAILURE – HYDROGEOLOGIC CONSEQUENCES AND EFFECTS ON THE TITTABAWASSEE AND TOBACCO RIVERS AND THE GROUNDWATER SYSTEMS IN SOUTHERN GLADWIN COUNTY, MICHIGAN</td>
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<tr>
<td>6-7</td>
<td>10:30 AM</td>
<td>Williams, Eva; Currie, Brian*; DETAILED HVSR ANALYSIS OF HETEROGENOUS GLACIAL BURIED-VALLEY DEPOSITS NEAR OXFORD, OHIO</td>
</tr>
<tr>
<td>6-8</td>
<td>11:00 AM</td>
<td>Johnson, Carol*; White, Eric A; Brown, Craig J.; Lane, John; IMPROVING THE QUALITY OF HVSR REGRESSION EQUATIONS</td>
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**SESSION NO. 7**

**T28. Geoscience in Plain Language**

7:00 AM, Duke Energy Convention Center, Online

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<tr>
<td>7-1</td>
<td>7:30 AM</td>
<td>Isioforo, Solomon*; SHOULD YOU TRUST A SCIENTIST?</td>
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<td>7-2</td>
<td>7:45 AM</td>
<td>Smurter, Daniel*; BUILDING PALEOGEOGRAPHIC MAPS TO UNDERSTAND THE GEOLOGIC HISTORY OF AN AREA: HOW WE MAP AND VISUALIZE DEEP TIME</td>
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<td>7-3</td>
<td>8:00 AM</td>
<td>Czaja, Andrew*; THE ANCIENT EARTH WAS AN ALIEN PLANET</td>
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<td>7-4</td>
<td>8:15 AM</td>
<td>Corpolongo, Andrea*; Czaja, Andrew D.; NASA’S PERSEVERANCE ROVER IS SEARCHING FOR SIGNS OF ANCIENT LIFE ON MARS</td>
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Thursday, 7 April 2022 • Cincinnati, Ohio, USA
Thursday, 7 April 2022

SESSION NO. 8

T42. Carbon Storage Research (GS A Environmental and Engineering Geology Division; GSA Energy Geology Division)
8:00 AM, Duke Energy Convention Center, North Meeting Room 211

Stephen Greb and James McDonald, Presiding
8:00 AM INTRODUCTORY REMARKS

8-1 8:05 AM Conner, Amber*; Kelley, Mark; Ravi Ganesh, Priya; Haagsma, Autumn; Gupta, Neeraj; Greenberg, Sallee; Leetaru, Hannes E.; Greb, Stephen; Carter, Kristin; Harrison, William: ASSESSING MULTI-STATE CO2 STORAGE SYSTEMS IN THE MIDWESTERN TO NORTHEASTERN UNITED STATES

8-2 8:20 AM Greb, Stephen*; Leetaru, Hannes E.; Kelley, Mark; Carter, Kristin; Clark, Ryan; Ditman, Philip; Harrison, William; Waid, Christopher: CARBON STORAGE SYSTEMS OF BASIN AND ARCH REGIONS IN THE MIDWEST AND EASTERN UNITED STATES

8-3 8:35 AM Carpenter, N. Seth*; Schmidt, Jonathan P.; Kelley, Mark; Greb, Stephen; Wang, Zhenming: DEVELOPING A BASELINE SEISMICITY CATALOG IN THE NORTHCENTRAL AND NORTHEASTERN U.S. TO ASSIST WITH CCUS DEPLOYMENT

8-4 8:50 AM Haagsma, Autumn*: DEVELOPING 3D STATIC EARTH MODELS TO REPRESENT CO2 STORAGE SYSTEMS IN THE MIDWESTERN UNITED STATES

8-5 9:05 AM Ershadnia, Reza*; Soltanian, Reza: HYDRO-THERMO-CHEMICAL-MECHANICAL MODELING OF HYDROCARBON DIOXIDE INJECTION IN FLUVIAL HETEROGENEOUS AQUIFERS

8-6 9:20 AM BREAK


8-8 9:50 AM McDonald, James*: Waid, Christopher T. B.; Solis, Michael P.; Hulet, Samuel; Danielsen, Erika: REGIONAL CHARACTERIZATION OF THE UTICA SHALE/POINT PLEASANT FORMATION FOR ENHANCED OIL RECOVERY IN OHIO

8-9 10:05 AM Meyers, Joao S.*; Bursink, Marc L.; Hinov, Linda A.: A REVIEW OF THE CURRENT STATE OF SUBSURFACE HYDROGEN STORAGE IN THE UNITED STATES

8-10 10:20 AM Willette, Donna*; Dessenberger, Richard: STORAGE AND RECOVERY OF HYDROGEN IN NON-SALT BEARING STRATA FOR FLEXIBLE-FUEL POWER GENERATION

8-11 10:35 AM Bowersox, J.*: ASSESSING COMPRESSED AIR ENERGY STORAGE (CAES) POTENTIAL IN KENTUCKY TO AUGMENT ENERGY PRODUCTION FROM RENEWABLE RESOURCES

SESSION NO. 9

T31. Undergraduate Research (Posters) (Council on Undergraduate Research Geosciences Division)
8:00 AM, Duke Energy Convention Center, Junior Ballroom B

Authors will be present from 9 to 11 AM

Booth #

9-1 1 Radloff, Garris*; Hayes, Shannon; Liu, Katherine M; Moore, Andrew L.; Richardson, Amelia J: LEGACY DAM POOL SEDIMENTS LESS RISKY THAN ASSUMED IN A LOW-HEAD DAM IN RICHMOND, IN

9-2 2 Ornes, Stine*: Johnson, Bradley: MORPHOLOGY OF STREAM SEDIMENTS IN UPPER CREEK, BLUE RIDGE MOUNTAINS NC

9-3 3 Hoffmann, Cordelia*: Peck, John A.: ENVIRONMENTAL HISTORY AS RECORDED IN THE SEDIMENTS OF LAKE ISAAC IN MIDDLEBURG HEIGHTS, OHIO

9-4 4 Hensley, Andrew*; Borowski, Walter: HIGH-RESOLUTION LITHOLOGY AND STRATIGRAPHY OF AN OUTCROP WITHIN THE GRUNDY FORMATION, BREATHITT GROUP (PENNSYLVANIAN), SOUTHEAST KENTUCKY

9-5 5 Clanton, Billy L.; Luna, Jeannette Wolak: SPECTRAL GAMMA RAY RESPONSE IN A MIXED CARBONATE-SILICICLASTIC CHANNEL SYSTEM, FORT PAYNE (MIDDLE MISSISSIPPIAN), TENNESSEE

9-6 6 Haller, Kevin*: Lo, Edward; McClue, Michael M.: PRELIMINARY CHEMICAL WEATHERING INTENSITY INFERRED FROM MODERN FINE-GRAINED FLUVIAL SEDIMENTS OF THE PANTANAL BASIN (BRAZIL)

9-7 7 Bartelt, Cheyenne V.*; Arkel, Jeanette C.; Weber, John C.; Erlich, Robert N.: PROVENANCE OF THE NORTHERN RANGE, TRINIDAD, USING DETRITAL ZIRCON U-PB GEochronology: IMPLICATIONS FOR NORTHERN SOUTH AMERICAN RIVER SYSTEM PALEOGEOGRAPHY

9-8 8 McGehee, James*: Davidson, Cameron; Garver, John L.: U-PB DETRITAL ZIRCON DATING OF THE SITKA GREYWACKE, BARANOY ISLAND, SE ALASKA

9-9 9 Walters, Alexis*: Davidson, Cameron; Jongens, Richard; Turnbull, Rose: U-PB ZIRCON DATING OF MAGMATISM AND METAMORPHISM IN THE CHARLESTON METAMORPHIC GROUP, NEW ZEALAND

9-10 10 McCoy-Bruce, Thomas*: Hunt, Emma; Horváth, Péter; Ranson, William: MULTI-STAGE REACTION CONTROLLED TEXTURES OF META-TROCTOLITES IN THE BUCK CREEK COMPLEX, NC

9-11 11 Zieziul, Jacob*: Sirbescu, Mona-Liza C.; Student, James; Hill, Tina R.: TRACe ELEMENT DISTRIBUTION IN BERYL CRYSTALS FROM LCT AND NYP PEGMATITES: A PRELIMINARY PORTABLE-XRF STUDY

9-12 12 Ames, Joshua*; Birner, Suzanne: OXYGEN FUGACITY OF PERIDOTITES FROM THE VEMA FRACTURE ZONE

9-13 13 Thompson, Madeline*: Deibert, Jack E.; Camilleri, Phyllis: CORRELATION OF DISTAL ~13-10 MA COUGAR POINT TUFF UNITS IN KNOLL BASIN, NORTHEASTERN NEVADA, USING MAJOR MINERAL ASSEMBLAGES

9-14 14 Sommer, Sarah*: Bohannon, Loren; Michelfelder, Gary: U-PB GEOCHRONOLOGY OF TITANITE AND ZIRCON TO DATE METAMORPHIC RESET OF 1.6 Ga METAMORPHIC PLUTONIC ROCKS NEAR BUENA VISTA, COLORADO

9-15 15 Smith, Peter*: Sirbescu, Mona-Liza C.; Hlohowskyj, Stephan R.: PRELIMINARY GEOCHEMICAL ANALYSIS OF SOILS FORMED ON LITHIUM-CESIUM-TANTALUM PEGMATITES IN OXFORD COUNTY, MAINE
| 9-16 | 16 | Hanson, Whitney*; Boddy, Dairian; Satkoaki, Aaron M.; Haroldson, Erik: **MINERALOGY AND RADIOGENIC ISOTOPES OF THE BEL-ORREN PROSPECT: A MISSISSIPPI VALLEY-TYPE SURFACE VEIN IN CENTRAL TENNESSEE** |
| 9-17 | 17 | Ryan, Megan*; Holyoke, Caleb: **RELATIVE VISCOSITIES OF WET OLIVINE AGGREGATES WITH DIFFERENT CRYSTALLOGRAPHIC PREFERRED ORIENTATIONS; IMPLICATIONS FOR SEISMIC ANISOTROPY IN THE MANTLE WEDGE** |
| 9-18 | 18 | Schneider, Audrianna N.*; Wolf, Michael B.: **EXPERIMENTAL INVESTIGATION OF CRYSTALIZATION TEXTURES: INTERPRETING THE JUWA PASS RHYOLITES AND THE SALÍNA MATIJS BASALTIC TRACHYANDESITES, FROM BONAIRO, LEEWARD ANTILLES** |
| 9-19 | 19 | Hinrichs, Anna*; Eleazer, Kiana; Lui, Timothy; Williams, Jason; Nord, Julia; Gregory, Daniel; Morrison, Shauna; Hazen, Robert M.; Ostoerkhova, Alexandarla: **OXIDE SPINEL AND DATA-DRIVEN DISCOVERY: A COMPREHENSIVE MINERALOGICAL AND GEOCHEMICAL DATA RESOURCE, INCORPORATING COMPOSITION, LOCATION, AND PARAGENESIS** |
| 9-20 | 20 | Murchland, Madeline; Certain, Jessica*; Curtis, Juliana; Piszel, Charlotte; Stitle, Landon; Krekeler, Mark: **MINERALOGICAL CHARACTERIZATION OF BLUSH** |
| 9-21 | 21 | Larson, Mary; Kairies-Beatty, Candace; Benson, Sydney; Franx, Jeanne: **EVALUATING SOIL HEALTH IN THE SEED GARDEN AT WINOONA STATE UNIVERSITY** |
| 9-22 | 22 | Wobig, Elissa*; Kairies-Beatty, Candace; Runck, Amy: **EVALUATION OF SOIL HEALTH IN THE INDIGENOUS LEARNING GARDEN AT WINOONA STATE UNIVERSITY** |
| 9-23 | 23 | Benson, Sydney; Kairies-Beatty, Candace; Larson, Mary: **COMPARISON OF METHODS TO EVALUATE SOIL NUTRIENT AVAILABILITY** |
| 9-24 | 24 | Speight, Nicholas*: **SOIL MAGNETISM AS A FUNCTION OF SLOPE, NORWESCOR HOLSTEIN FARMS IN STARK CO., OHIO** |
| 9-25 | 25 | Stanevich, Leah*: **MAGNETIC PARAMETER OF A SOIL AND LOESS SEQUENCE FROM ROSS COUNTY, OHIO, AND IT’S MEANING FOR PALEOCLIMATIC AND ENVIRONMENTAL CHANGE IN OHIO** |
| 9-26 | 26 | Maucieri, Breanne; Kaylor, Steven; King, Amelia; Romero, Stephen; Fleszewski, Grace: **SALINITY OF LAKE MICHIGAN TRIBUTARIES AS AFFECTED BY ROAD SALTING** |
| 9-27 | 27 | Eason, Colin*; Allen, Phillip P: **USING THE PAST TO GUIDE THE FUTURE: RECONSTRUCTING THE ENVIRONMENTAL HISTORY OF FINZEL SWAMP FROM MULTI-PROXY DATA FOR FUTURE MANAGEMENT** |
| 9-28 | 28 | Hernandez, Elisabeth*; Carlson Mazur, Martha: **GREAT LAKES RIVERMOUTH WETLANDS: IMPACTS OF LAKE LEVELS AND RIVER FLOWS ON WETLAND AREA** |
| 9-29 | 29 | Piszel, Charlotte*; Wagner, John X.; Rech, Jason: **IDENTIFYING THE RELATIONSHIP BETWEEN LARGE DISCHARGE EVENTS AND THE TRANSPORT OF WOODY DEBRIS ON THE WHITENATER WIND, INDIANA** |
| 9-30 | 30 | Cah, Ariel V.; Edwards, Jack*; Rech, Jason; Tenison, Christina N.: **EXAMINING THE SPATIAL VARIABILITY OF CHANNEL MORPHOLOGY AND PARTICLE SIZE OF FOUR MILE CREEK, OHIO** |
| 9-31 | 31 | Stanford, Molly; Dull, Sally; Flanagan, Paige; Winn, Clara; Carr, Jake A.; Bonilla, Gregory; McKinney, Michael*: **MICROPLASTICS IN THE TENNESSEE RIVER AND THREE TRIBUTARY URBAN CREEKS** |
| 9-32 | 32 | Gossett, Lauren*; DeVries, Stephanie: **MICROPLASTICS IN A SMALL STREAM: STORM RESPONSE IN A TRIBUTARY TO THE TENNESSEE RIVER** |
| 9-33 | 33 | Carr, Meghan*; Strasser, Jeffrey: **A CARBON FOOTPRINT ANALYSIS OF AUGUSTANA COLLEGE RESIDENCE HALLS** |
| 9-34 | 34 | Neidich, Beau; White, Cole*; Adler, Dylan; DeVries, Stephanie: **TRANSPORT OF COLLOIDAL MICROPLASTICS THROUGH POROUS MEDIA** |
| 9-35 | 35 | Grissom, Tessa*: Mihindukulasooriya, Lorita; Dixit, Nilesh: **MODELING CHLOROPHYLL-A CONCENTRATIONS USING LANDSAT 8 SATELLITE IMAGERY** |
| 9-36 | 36 | Zhao, Wenshuo*; Papay, Richard; Wiesenberg, Nick; Fiala, Lucie; Gaglioti, Ben; Wiles, Greg: **VOICES IN THE TREES: SEEKING COMMON STORIES FROM TREE RINGS IN A REMOTE COLLABORATION** |
| 9-37 | 37 | Abercrombie, Charnari; Hodges, Grace; Wilson, Luke; Yoon, Ellen; Braun, Elizabeth; Leisher, Kai; Chikomo, Mazvita; Banna, Layali; Pollock, Meagen; Wiesenberg, Nick; Wiles, Greg: **THE COMMUNITY WATER PROJECT: STUDENT EXPLORATION OF THE GEOSCIENCES IN THE CONTEXT OF STORMWATER MANAGEMENT IN NORTHEAST OHIO** |
| 9-38 | 38 | Messerly, Owen*: Mihindukulasooriya, Lorita; Nguyen, Ngoc Minh Thao; Kaefl, Tracy: **MONITORING OF MULTIPLE VARIABLES AFFECTING WATER QUALITY IN KARST SPRINGS THROUGHOUT THE NORTHERN KENTUCKY AND LEXINGTON AREAS** |
| 9-39 | 39 | Thomas, Zach; Garcia, Angel*: **CHARACTERIZING SHIELD SPELEOTHEMS USING MOBILE LIDAR AT GRAND CAVERNS, GROTTOES, VA** |
| 9-40 | 40 | Ritchey, Evan*; Manning-Berg, Ashley; Santamaria, Jose; Roney, Ryan: **INVESTIGATING THE RELATIONSHIP OF MINERAL AND ORGANIC PHASES IN THE STROMATOLITIC FABRICS OF THE KNOWN GROUP, NW GA** |
| 9-41 | 41 | Delavedova, Lorelei*: Garcia, Angel: **EXAMINING HUMAN IMPACT INSIDE A SHOW CAVE BY MAPPING THE SPATIOTEMPORAL DISTRIBUTION OF HISTORICAL SIGNATURES AT GRAND CAVERNS, GROTTOES, VA** |
| 9-42 | 42 | Whitman, Lily*; Garcia, Angel; Shank, Austin; Neary, Morgan; Collins, Tracey; See, Cory: **MEASURING THE EFFICACY OF GEO-INTERPRETIVE STOPS AS AN INTERVENTION TO HIGHLIGHT CAVE AND KARST KNOWLEDGE AT GRAND CAVERNS** |
| 9-43 | 43 | Marsch, Emily Ann*; McGary, R Shane; Dakouri-Hild, Anastasia; Pfeifer, Brian: **GEOPHYSICAL INVESTIGATION OF THE ANCIENT APHIDNA REGION FOR THE KOTRONI ARCHAEOLOGICAL SURVEY PROJECT (KASP)** |
| 9-44 | 44 | Shaw, Mason*; Holder, Daniel; Eadie, Christian B.; Marquand, Sydney; Ludwick, Trevor; Elgin, Lauren; Sipe, W. Jay; Dickson, Robin; Lord, Mark: **THE EFFECT OF EUROPEAN SETTLEMENT WITHIN THE CULLOWHEE CREEK FLOODPLAIN, WESTERN NORTH CAROLINA** |
| 9-45 | 45 | Guernier, Nickolas*; Kinner, David; Waters-Tormey, Cheryl: **DEFINING HOLLWS AND COMPARING FACTORS THAT CONTRIBUTE TO MASS WASTING IN THE SOUTHERN APPALACHIANS, WESTERN NORTH CAROLINA** |
| 9-46 | 46 | Palmer, Megan*: Langille, Jackie: **MICOCENE LINEAMENTS AND FRACITURES IN THE SPRUCPE PINE 75-MINUTE QUADRANGLE, WESTERN NORTH CAROLINA, ASSOCIATED WITH TOPOGRAPHIC REJUVENATION OF THE BLUE RIDGE MOUNTAINS** |
| 9-47 | 47 | Green, Chloe*; Langille, Jackie: **KNICKPOINT ELEVATIONS WITHIN THE SPRUCPE PINE 75-MINUTE QUADRANGLE, NC: IMPLICATIONS FOR MICOCENE UPLIFT OF THE BLUE RIDGE PROVINC** |
| 9-48 | 48 | Clark, Abigail F.*; Weber, John; Arkel, Jeannette C.: **STRUCTURAL GEOLOGY AND CENOZOIC DEFORMATION: WESTERN NORTHERN RANGE, TRINIDAD**
SESSION NO. 10

T2. Correlating the Ordovician: Honoring the Career and Contributions of Stig M. Bergström

1:30 PM, Duke Energy Convention Center, North Meeting Room 203/204

Stephen A. Leslie, Daniel Goldman and Matthew Saltzman, Presiding

1:30 PM INTRODUCTORY REMARKS

10-1 1:35 PM Babcock, Loren E.*: THE DEVELOPING CAMBRIAN CHRONOSTRATIGRAPHIC SCALE: IDEAS ROOTED IN THE WORK OF STIG M. BERGSTRÖM

10-2 1:50 PM Huff, Warren*: BENTONITES AND K-BENTONITES: ISSUES IN IDENTIFYING AND INTERPRETING ANCIENT TEPHRAS

10-3 2:05 PM Herrmann, Achim D.*; Haynes, John T.; Robinet, Richard M.: MOVING ORDOVICIAN TEPHRONCROLOGY INTO THE 21ST CENTURY WITH LASER ABLATION AND MACHINE-LEARNING (ML) TECHNIQUES

10-4 2:20 PM Finney, Stanley*: ORDOVICIAN ODYSSEY OF CUYANIA, THE GREATER PRECORDILLERA TERRANE OF WESTERN ARGENTINA


10-6 2:50 PM Oyer, D.*; Repeticz, John E.: CONODONTS IN MIDDLE AND UPPER DEVONIAN BLACK SHALES OF THE APPALACHIAN BASIN IN NEW YORK

10-7 3:05 PM Leslie, Stephen*; Husinec, Antun: UPPER ORDOVICIAN THROUGH LOWER SILURIAN CONODONT

SESSION NO. 11

T18. Urban Geochemistry and Hydrology (International Association of Geochemistry)

2:45 PM, Duke Energy Convention Center, North Meeting Room 206

W. Lyons and David Long, Presiding

11-1 2:45 PM Tu, Jun*: IMPACT OF ROADS AND TRAFFIC ON WATER QUALITY IN ATLANTA METROPOLITAN AREA, USA

11-2 3:00 PM Hernandez, Natalie*: Hasenmueller, Elizabeth: MICROPLASTIC DEBRIS STORAGE AND TRANSPORT IN SMALL URBAN STREAMS

11-3 3:15 PM Wibel, Ashley*: Squiggins, Kayla T.; Fullerton, Heather E.; Vulava, Vijay M.: PRESENCE OF ANTIBIOTIC RESISTANT BACTERIA IN URBAN FLOODWATER OF PENINSULAR CHARLESTON, SC

11-4 3:30 PM Wells, Kate*: Them, Theodore; Beutel, Erin K: TOMPSTOB MAY WEATHERING IN CHARLESTON, SOUTH CAROLINA

11-5 3:45 PM Ford, Robert*: Fritz, Ken M.; Brase, Lauren; Lehmann, Adam; Gamble, Ben: ASSESSING THE INFLUENCE OF URBAN KARST ON THE SUSTAINABILITY OF STREAM FLOW

11-6 4:00 PM Chikomo, Mazvita*: Sawyer, Audrey; Meiner, Kathleen M.: MODELING MEETS MIRROR LAKE: HOW HIGHLY URBANIZED AREAS INFLUENCE SURFACE WATER-GROUNDWATER INTERACTIONS

11-7 4:15 PM Zic, Kathry*: Gardner, Christopher; Welch, Sue A.; Smith, Devin F.; Wichterich, Connor; Lyons, W.: LEAD IN COLUMBUS, OH TAP WATER
SESSION NO. 12

T24. Landscape Evolution in Mid-Continental Settings
1:30 PM, Duke Energy Convention Center, North Meeting Room 201/202
Jason M. Dortch, Dylan Ward and Matthew Jungers, Presiding

12-1 1:30 PM Hammond, Maxwell*; Haneberg, William; Dortch, Jason M.: GEOMORPHIC QUANTIFICATION OF COLLUVIAL DEPOSITS IN THE INTERIOR LOW PLATEAUS USING LIDAR-DERIVED MAPS

12-2 1:45 PM Almaz, Moamen*; Aly, Mohamed H.: GEOSPATIAL ANALYSIS AND MODELING OF LANDSLIDE SUSCEPTIBILITY IN COLORADO SPRINGS, COLORADO

12-3 2:00 PM Thompson, Todd*; Johnson, Matthew R.; Argyilan, Erin P.: SHIFTING MORPHOLOGY AND HAZARD MAPPING OF THE MOUNT BALDY DUNE, INDIANA DUNES NATIONAL PARK

12-4 2:15 PM Herlinger, Jillian*; Higley, Melinda: GPR-BASED MODEL OF A DUNE PALEOSOL: AN EXAMPLE FROM HOLLAND, MICHIGAN, USA

12-5 2:30 PM O'Connor, Abigail*; Comerford, Ella; Rech, Jason: GEOCHEMISTRY AND MINERALOGY OF A SOIL CHRONOSEQUENCE ON FLUVIAL TERRACES, FOUR MILE CREEK, SOUTHWESTERN OHIO

12-6 2:45 PM Bosch, Rachel*; Ward, Dylan: EVOLUTION OF THE SURFACE AND SUBSURFACE DRAINAGE OF THE SINKHOLE PLAIN, CENTRAL KENTUCKY KARST, USA

12-7 3:00 PM Koch, Hudson*; Dortch, Jason M.; Haneberg, William: DEVELOPING GEOMORPHIC LANDFORM MAPS OF CENTRAL KENTUCKY USING LIDAR-BASED TERRAIN INTERPRETATION

12-8 3:15 PM Jungers, Matthew*: DRAINAGE REORGANIZATION DRIVEN BY PROGLacial LAKE SPIPPOLVER ALONG THE WISCONSINAN AND ILLINOIAN ICE MARGINS OF CENTRAL AND SOUTHEASTERN OHIO

12-9 3:30 PM Kerr, Phil*: Heinzl, Chad: EVIDENCE FOR LATE PLIISTOCENE PERIGLACIAL FEATURES IN THE MIDWEST UNITED STATES

12-10 3:45 PM Gwyn, Richard*: LINKING WEATHERING TO THE MINERALOGY AND GRAIN SIZE CHARACTERISTICS OF SUPRALACTIC BOULDERS OF THE ANTARCTICA DRY VALLEYS

12-11 4:00 PM Davias, Michael*: Harris, Thomas H.S.: CATAclySM ON THE CONTINENT: OFFERING A NON-CLASSICAL SOLUTION FOR THE GEOMORPHOLOGY OF ENIGMATIC SURFICIAL SEDIMENTARY FORMATIONS BLANKETING NORTH AMERICA

SESSION NO. 13

T30. Undergraduate Oral Presentations
1:30 PM, Duke Energy Convention Center, North Meeting Room 205
Marian Buzon and Brittani McNamee, Presiding

13-1 1:30 PM Guevara, Rachel*: van Beynen, Philip: SEASONAL CHANGES IN FATE AND TRANSPORT OF PHARMACEUTICALS AND PERSONAL CARE PRODUCTS DUE TO THE EFFICACY OF ONSITE WASTEWATER TREATMENT SYSTEMS IN A SINKHOLE LAKE ENVIRONMENT

13-2 1:45 PM Sarkissian, Leah*: Kay, Malia; Johnson, Bradley: EFFECT OF DEVELOPMENT ON COVE SEDIMENTATION IN LAKE WYLIE, NC

13-3 2:00 PM Mullinax, Roy*: Johnson, Bradley: STREAM INCISION IN THE SOUTHEASTERN PIEDMONT AS A DRIVER OF HABITAT CHANGE

13-4 2:15 PM Heme, Onyinyechi; Higley, Melinda*: SEDIMENT CHARACTERISTICS OF THE UPPER UNITS OF LANDSLIDE-PRONE BLUFFS ALONG THE SOUTHEAST SHORELINE OF LAKE MICHIGAN

13-5 2:30 PM Sparks, Nathaniel*: O’Keefe, Jennifer; Mason, Charles E.: GRAIN-SIZE AND PETROGRAPHIC ANALYSIS OF SUSPECTED LOESS IN ROWAN COUNTY, KY

13-6 2:45 PM Spears, Tyler*; Romero, Ingrid; Nuñez Otaño, Noelia B.; Starnes, James; Alford, Mac; Brink, Alyson; Pound, Matthew J.; O’Keefe, Jennifer: MIDDLE MIocene FUNGI FROM THE BOUIE RIVER FOSSIL FLORA SITE IN THE UPPER HATTIESBURG FORMATION, HATTIESBURG, MISSISSIPPI

13-7 3:00 PM Ford, Holly*: Currier, Ryan: VESICLE BANDS IN A DIKE: INVESTIGATING MAGMA DYNAMICS IN A MOUNT TAYLOR DIKE, NEW MEXICO

Thursday, 7 April 2022

SESSION NO. 14

T37. Appalachian Orogenies: When and How Do They Start and End?

1:30 PM, Duke Energy Convention Center, North Meeting Room 212
Arthur J. Merschat, Ryan J. McAleer, Ryan Thigpen and Jamie Levine, Presiding

1:30 PM, Duke Energy Convention Center, North Meeting Room 211

14-1 1:35 PM Bailey, Christopher*; Foster-Baril, Zachary: NEOPROTROZOIC TECTONICS, MAGMATISM, & SEDIMENTATION IN THE CENTRAL & SOUTHERN APPALACHIANS: THE LONG ROAD TO IAPETUS

14-2 1:50 PM Liscomb, Juliet*; Bailey, C.M.; Foster-baril, Zachary; Hinshaw, Emily; Stockli, Daniel F.; Rich, M.: AGE AND ORIGIN OF THE ALBEMARLE-NELSON MAFIC-ULTRAMAFIC COMPLEX IN VIRGINIA’S EASTERN BLUE RIDGE: RIFT-RELATED DIFFERENTIATED SILLS?

14-3 2:05 PM El-Shazly, Aley*; Felix, Breana; Willard, Sierra Rose; Summers, Paul: PETROLOGY AND GEOCHEMISTRY OF THE LITTLE PINE GARNET MINE SCHISTS, WESTERN BLUE RIDGE

14-4 2:20 PM Zach, Terri*; Bailey, Christopher M.; Foster-Baril, Zachary; Hinshaw, Emily; Stockli, Daniel F.: STRUCTURAL GEOLOGY AND GEOCHRONOLOGY OF THE SHORES MÉLANGE: POLYPHASE DEFORMATION ACROSS THE TACONIAN SUTURE IN THE PIEDMONT, VIRGINIA

14-5 2:35 PM Becker, Naomi*; George, Freya; Guice, George; Viete, Daniel: EVIDENCE OF SUBDUCTION INITIATION RECORDED IN THE DADEVILLE COMPLEX OF ALABAMA

14-6 3:05 PM Barineau, Clinton*; Tull, James: GEOMETRY, KINEMATIC EVOLUTION, AND TIMING OF CRYSALLINE THRUST SHEETS AND ASSOCIATED STRUCTURES ALONG THE WEST FLANK OF THE SOUTHERN APPALACHIAN OROGEN IN ALABAMA AND GEORGIA, USA

14-7 3:20 PM Merschat, Arthur*; McAleer, Ryan J.: THREE PALEOZOIC APPALACHIAN OROGENIES IN THE SOUTHERN APPALACHIAN CRYSTALLINE CORE: BOXES WITH BROKEN EDGES?

14-8 3:35 PM Stokes, Rebecca*; McAleer, Ryan; Merschat, Arthur J.: UNRavelING LOW-TEMPERATURE COOLING IN THE BLUE RIDGE, VA AND NC, THROUGH “AR”/“AR ANALYSIS AND GRAIN-SCALE CHARACTERIZATION OF K-FELDSPAR

14-9 3:50 PM Deasy, Ryan*: BASEMENT INFRASTRUCTURE OF NORTHWEST FLORIDA REVEALED BY “AR”/“AR AGE SPECTRA OF K-FELDSPAR AND MUSCOVITE

PRODUCT TECHNICAL SESSIONS

SESSION NO. 15


1:30 PM, Duke Energy Convention Center, North Meeting Room 211
John Rakovan, Jared Freiburg and Craig Dietsch, Presiding

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

15-1 1:35 PM Kleinsasser, Jackie*; Simon, Adam C.: Kattemalavadi, Amartya; Goan, Ian; Peterson, Dean; Hudak, George J.: FE-TI OXIDE-BEARING ULTRAMAFIC INTRUSIONS OF THE DULUTH COMPLEX, MN: UNRaveling THE GENESIS OF A DOMESTIC TI RESOURCE

15-2 1:50 PM Kattemalavadi, Amartya*; Kleinsasser, Jackie; Simon, Adam C.; Hudak, George J.; Peterson, Dean: OLVINE GEOCHEMISTRY AND SERPENTINIZATION FROM THE DULUTH COMPLEX, MN

15-3 2:05 PM Freiburg, Jared*; Elrick, Scott; Delpomdor, Franck: THE ILLINOIS BASIN CARBON ORE, RARE EARTH, AND CRITICAL MINERAL INITIATIVE (IB CORE-CM)

15-4 2:20 PM Lukoczki, Georgina*; Hickman, John B.: APPLICATION OF THE MINERAL SYSTEMS APPROACH FOR SUSTAINABLE CRITICAL MINERAL EXPLORATION AND RESEARCH IN KENTUCKY


15-6 3:05 PM Murchland, Madeline*; Rakovan, John; Trela, Jarek; Yu, Mingyue; Freiburg, Jared; Nuelle, Laurence M.: HICKS DOME DRILL CORES: MINERALOGICAL AND GEOCHEMICAL OBSERVATIONS

15-7 3:20 PM Trela, Jarek*: Freiburg, Jared; Yu, Mingyue; Gazel, Esteban; Lundstrom, Craig; Nuelle, Laurence M.; Maria, Anton; Rakovan, John; Murchland, Madeline: PETROLOGIC AND GEOCHEMICAL CONSTRAINTS ON THE ORIGIN OF LAMPROPHYES AND CARBONATITES IN THE MIDWEST PERMIAN ULTRAMAFIC DISTRICT AND THEIR RARE EARTH ELEMENT ECONOMIC POTENTIAL

15-8 3:35 PM Uhl, Thomas*: Dietsch, Craig: PETROLOGY, MINERALOGY & GEOCHEMISTRY OF AN ALNÖITE FROM WESTERN KENTUCKY

15-9 3:50 PM Dietsch, Craig*; Lukoczki, Georgina; Bergbower, Josh; Uhl, Thomas: RARE EARTH ELEMENT CHEMISTRY LINKS CARBONATED DIKES AND FLUORITE MINERALIZATION IN WESTERN KENTUCKY

15-10 4:05 PM Frank, Mark R.*; Coursey, Seth: DEVELOPMENT OF A COBALT EXPLORATION TOOL FOR DOLOMITE-BEARING HYDROTHERMAL ORE DEPOSITS


15-12 4:35 PM Haie, Thomas*: Shane, Allison; Trainer, Jocelyn; Zhou, Yafei: A PRACTICAL ANALYSIS TO CRITICAL MINERAL SUPPLY CHAINS FOR U.S. GOVERNMENT AGENCIES: A CASE STUDY OF COBALT

4:50 PM DISCUSSION

AFTERNOON POSTER TECHNICAL SESSIONS

SESSION NO. 16

D1. Environmental and Engineering Geology and Geoarchaeology (Posters)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B
Authors will be present from 2:30 to 4:30 PM

16-1 1:30 PM Saim, Abdullah Al*: Aly, Mohamed H.: SPATIO-TEMPORAL TRENDS OF AIR POLLUTION DUE TO WILDFIRES IN CALIFORNIA: INFERRER FROM MODIS MAIC and Sentinel-5P

16-2 2:00 PM Cochran, Cole*: Kaste, James M.: HONEY AS A TOOL FOR MONITORING AIR QUALITY AND POLLUTION AT HIGH SPATIAL RESOLUTION
SESSION NO. 17

D2. Geoscience Education (Posters)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

16-3 3 Bonilla, Gregory*; Watson, Eryn; McKinney, Michael; Genhold, Richard; Elonen, Carissa: MICROPLASTICS IN TERRESTRIAL SNAILS

16-4 4 Neely, Samuel*; Svoboda, Isabella; Siddall, Ashley; Raymond, Anne: MICROPLASTICS IN A POST-HURRICANE PEAT DEPOSIT, LONG KEY, FLORIDA

16-5 5 Guetvara, Rachel*; Brown, Teresa: ELEMENTAL COMPOSITION OF SPECIFIC CONDUITANCE ASSOCIATED WITH LAND USE AND GEOLOGY IN CENTRAL APPALACHIA

16-6 6 Hornak, Andrew*; Gorman, Sarah G.; Leonard, Maria; Loertscher, Seth; Loertscher, Cynthia; Krekelier, Mark: REFLECTIVE SPECTROSCOPY STUDY OF SELECTED SOILS FROM THE U.S. – MEXICO BORDER REGION IN TEXAS AND NEW MEXICO: PROVIDING CONTEXT FOR SEARCH AND RESCUE AND CRIMINAL INVESTIGATIONS

16-7 7 Fu, Junpeng*; Zhao, Wenshuo; Wiesenberg, Nick; Wiles, Greg: TREE RING DATING OF THE DAVEY TREE BARN, KENT, OHIO AND THE VALUE OF BUILDING LONG TREE-RING RECORDS IN NE OHIO

16-8 8 Cardona, Nathan*; O’Connor, Abigale; Zhang, Jing; Rech, Jason; Levy, Jonathan: DEVELOPING A REGIONAL RECORD OF HISTORIC TEMPERATURE CHANGES FROM 1893 TO 2021 IN THE TRI-STATE AREA OF OHIO, INDIANA, AND KENTUCKY

18-2 18 Braniecki, Garrett*: Surge, Donna; Hyland, Ethan; Goodwin, David: REFINING A Δ18O PALEOTEMPERATURE CALIBRATION USING MODERN AND FOSSIL MERCENARIA SPP. (BIVALVIA) TO RECONSTRUCT DEEP-TIME SEASONALITY

18-3 19 King Phillips, Ezekiel*: Yanes, Yurena; Pearce, Timothy A.: ASSESSING CARBON AND NITROGEN ISOTOPE FRACTIONATION BETWEEN LAND SNAIL TISSUES AND DIET UNDER LABORATORY CONDITIONS


18-5 21 Visaggi, Christy C.; Bryant, Kedon J.*; Stobaues, Akira E.; Ajavon, Ayi J.; Blore, Michael K.; Hogans, Victoria; Marcones, Vhanessa L.; Clinton, J. Michael; Kelley, Patricia H.; Pastirismo, Guido; Barreira, Miguel A.: LATITUDINAL VARIATION IN DRILLING PREDATION ON MUSSELS FROM EASTERN SOUTH AMERICA

18-6 22 Hardin, Alize*: Casebolt, Sahale; Hyman, Alexander; Barry, Savannah; Cummings, Katherine; Frazer, Thomas; Kowalewski, Michal: HISTORICAL ECOLOGY OF SEAGRASS MEADOWS ALONG THE GULF COAST OF FLORIDA: ENVIRONMENTAL TRENDS IN BODY SIZE AND PREDATION ARCHIVED IN SEAGRASS-ASSOCIATED MOLLUSK DEATH ASSEMBLAGES

18-7 23 Falb, Olivia L.*; Obara, Chloe A.; Volante, Paul; Lockwood, Rowan: GROWTH RATES AND SCLEROCHRONOLOGY OF MODERN CRASSOSTREA VIRGINICA FROM THE LOWER CHESAPEAKE BAY (SOUTHEASTERN VIRGINIA)

18-8 24 Mayo, Amanda*: Clary, Renee; Owen Nagel, Athena: EXPANDING ACCESS TO DUNN-SEILER MUSEUM FOSSIL SPECIMENS THROUGH VIRTUAL COLLECTIONS

SESSION NO. 18

T1. Actualistic Paleontology: Learning from the Modern to Better Interpret the Past (Posters) (SEPM (Society for Sedimentary Geology); Paleontological Society; GSA Sedimentary Geology Division; GSA Quaternary Geology and Geomorphology Division)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

18-1 25 Wingard, G.*; Stackhouse, Bethany L.; Daniels, Andre: DISTRIBUTIONS OF LIVING AND FOSSIL MOLLUSKS AS ASSESSMENT TOOLS FOR RESTORATION OF SOUTH FLORIDA

18-2 26 Bevis, Kenneth A.*; Cox, Adison R; Kumler, Coglin C: GIS APPLICATIONS IN GEOSCIENCE EDUCATION PART I: EXAMPLES FROM AUTO-TOURING ROUTE MAPS DEVELOPED FOR THE WEBSITE, INTHEPLAYGROUNDOFGIANTS.COM

18-3 27 Grimmelbein, Luke*; Barry, Savannah; Casebolt, Sahale; Cummings, Katherine; Hyman, Alexander; Frazer, Thomas; Kowalewski, Michal: HIGH LIVE-DEAD FIDELITY OF SEAGRASS ASSOCIATED MOLLUSK ASSEMBLAGES ALONG THE NORTHERN GULF COAST OF FLORIDA AT BOTH REGIONAL AND LOCAL SCALES

18-4 28 Shell, Ryan*; Gardner, Nicholas; Peterman, David; Ciampaglio, Charles N.; Jacquemin, Stephen; Fuelling, Lauren J.: BOBCAT SUBFOSSILS AND HISTORICAL
Thursday, 7 April 2022

SESSION NO. 19

T5. Development and Application of Geochemical Proxies to Paleoclimate Studies (Posters)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

19-1 30 Haber, Peter*; Saltzman, Matthew; Griffith, Elizabeth M.; Adiama, Josep, 
E: EARLY MISSISSIPPIAN CALCIUM ISOPOE STRATIGRAPHY AND IMPLICATIONS FOR CONDITIONS OF CARBONATE DEPOSITION

19-2 31 Michaels, Russell*; Blackman, Cole; Liutkus-Pierce, Cynthia M., 
A: ANALYSIS OF ENVIRONMENTAL CONDITIONS OF AN EARLY MIocene PERENNIAL RIVER SYSTEM IN EAST AFRICA USING SEDIMENTOLOGY, STRATIGRAPHY, AND GEOCHEMICAL PROXIES

19-3 32 Tagle, Natasha B.; Remirez, Mariano; Cherry, Lucas B.; Kaufman, Alan J.; Burl, Natalie J.; Gilleaudeau, Geoffrey J., 
J: NITROGEN ISOPOE CONSTRAINTS ON REDOX CONDITIONS IN THE NORTH PACIFIC OCEAN DURING THE WARM PLEIOCENE EPOCH

19-4 33 Topness, Rebecca*; Balascio, Nicholas L.; Vachula, Richard S., 
S: NORTHERN NORWAY PALEOFIRE RECORDS REVEAL HUMAN IMPACTS ON REGIONAL FUELS AND FIRE ACTIVITY BEGAN C. 3500 YEARS AGO

19-5 34 Young, Madeley*; Lukens, William; Johnson, Elizabeth; Schubert, Brian A., 
A: A NON-DESTRUCTIVE TECHNIQUE FOR ASSESSING FOSSIL WOOD DECAY USING ATR-FTR SPECTROSCOPY

19-6 35 Martin, Ariel*; Kaczmarek, Stephen; Winkelsten, Ian Z.; Petersen, Sierra, 
S: THE LINK BETWEEN CATION ORDERING AND OXYGEN ISOPOE FRACTIONATION IN EXPERIMENTAL DOLOMITES

19-7 36 Frank-DePue, Lee*; Vachula, Richard S.; Balascio, Nicholas L.; Cahoon, Kayla; Vachula, Richard S., 
J: TRENDS IN SEDIMENTARY CHARCOAL SHAPES AND PAH ASSEMBLAGES CORRESPOND WITH BROAD-SCALE LAND USE CHANGES: INSIGHTS GAINED FROM A 300-YEAR-LAKE SEDIMENT RECORD FROM EASTERN VIRGINIA, USA

19-8 37 Feldberg-Bannatyne, Maya*; Whitney, Nina M.; Hughen, Konrad A., 
A: DETERMINING THE EFFICACY OF OCEAN QUAGH SHELL OXYGEN ISOPOES AS A MID-ATLANTIC BIGHT COLD POOL BOTTOM WATER TEMPERATURE PROXY

SESSION NO. 20

T10. Crossing Streams: Advances in Stream Science in the Southeast and North-Central United States (Posters) 
(GSA Quaternary Geology and Geomorphology Division)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

20-1 38 Ward, Dylan*; Lehmann, Adam; Booth, Michael; Matter, Stephen; Soltanian, Reza; Sturmer, Daniel; Grap, Peter; Watson, Jade; Brown, Jayla; Boylson, Patrick, 
E: ONGOING RESEARCH IN GEOMORPHOLOGY AND HYDROGEOLOGY AT THE COOPER CREEK COLLABORATIVE EXPERIMENTAL WATERSHED, CINCINNATI

20-2 39 Necastro, George*; Lewis, Gregory P.; Muthukrishnan, Suresh, 
A: RELATIONSHIPS BETWEEN STREAM SOLUTE CONCENTRATIONS AND WATERSHED TOPOGRAPHICAL CHARACTERISTICS IN THE BLUE RIDGE AND PIEDMONT PROVINCES OF SOUTH CAROLINA

SESSION NO. 21

T32. Geologic Maps, Geophysical Maps, 3-D Geological Models, Digital Mapping Techniques, Map Derivatives, and Digital Map Preparation (Posters)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

21-1 42 Tamulonis, Kathryn*; DATA MINING AND GEOMODEL VISUALIZATION FOR HETEROGENEOUS, STRUCTURALLY COMPLEX, UNCONVENTIONAL RESERVOIRS

21-2 43 Witt, Anne; Spears, David*; Heller, Matthew J., 
J: NEW DIGITAL GEOLOGIC MAP OF VIRGINIA COMPLETED AS A LEVEL 2 GEMS GEODATABASE

21-3 44 Crider, Ernest; Self-Trail, Jean*; Parker, Mercer; Seefelt, Ellen L.; Staley, Andrew; Beach, Todd; Bruce, T. Scott; Quinn, Heather, 
S: STRUCTURE CONTOUR AND ISOPACH MAPPING OF THE CRETACEOUS-PALEogene BOUNDARY AND DANIAN SEDIMENTS IN MARYLAND AND VIRGINIA

21-4 45 Cullen, Katie*; Liscomb, J.B.; Meyrowitz, Haley E.; Zach, Terri; Bailey, C.M., 
J: GEOLOGY OF THE SCHUYLER 7.5’ QUADRANGLE: UNDERSTANDING IAPETAN RIFTING, SEDIMENTATION, AND MAGMATISM IN THE EASTERN BLUE RIDGE, VIRGINIA

21-5 46 Nelson, Craig*; Valachovics, Thomas; Angle, Michael; Hardin, Krista; Nash, T. Andrew; Spahr, Paul; Raab, Jim; Coke, Curtis, 
S: STATEWIDE, SEAMLESS MAPPING OF GROUNDWATER VULNERABILITY AND HYDROGEOLOGIC SETTING IN OHIO

21-6 47 Norris, Tyler*; Nash, T. Andrew; Erber, Nathan R., 
S: SURFICIAL GEOLOGY OF JACKSON COUNTY, OH, USA

21-7 48 Nash, Thomas*; THE SURFICIAL GEOLOGY AND BEDROCK TOPOGRAPHY OF LAWRENCE COUNTY, OHIO

21-8 49 Burgess, Sarah*; Tripp, Don C.; Alfred, Isaac; Rupp, Robin; Florea, Lee; Frushour, Sam, 
J: REFINING THE MT. CARMEL FAULT ZONE WITH NEW BEDROCK MAPPING OF THE BEDFORD QUADRANGLE, INDIANA

21-9 50 Casaus, Maureen*; Fisher, Timothy; Jol, Harry M.; Becker, Richard; Doro, Kennedy, 
S: GEOMORPHIC ASSESSMENT AND SURFICIAL MAPPING OF GLACIAL LAKE AGASSIZ STRANDLINES IN POLK COUNTY, MINNESOTA

SESSION NO. 22

T42. Carbon Storage Research (Posters) (GSA Environmental and Engineering Geology Division; GSA Energy Geology Division)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

22-1 51 Greb, Stephen*; Brezinski, David; Carter, Kristin; Clark, Ryan; Dinterman, Phillip; Harrison, William; Lasemi, Yaghoob; Slater, Brian; Solis, Michael; Ver Straeten, Charles; Waid, Christopher, 
E: REGIONAL STRATIGRAPHIC CARTS KEYED TO CARBON STORAGE POTENTIAL FOR THE MIDWEST AND NORTHERN UNITED STATES

22-2 52 Sparks, Thomas*; Hickman, John B.; Greb, Stephen; Monson, Charles; Harrison, William B.; Anthony, Robin; Schmid, Katherine W.; Clark, Ryan, 
S: REGIONAL...
SESSION NO. 23
T3. Under the (Ancient) Sea: Marine Life from the Coastal to Great Plains

8:00 AM, Duke Energy Convention Center, North Meeting Room 203/204
Sarah Sheffield, Christy Visaggi and Stephen Hill, Presiding

23-1 8:00 AM Hensen, Corey*; Rindsberg, Andrew; Ivany, Linda: EXTRACTING THE ICHNOLOGIC RECORD FROM COASTAL PLAIN STRATA: THE EOCENE LISBON TO MOODY BRANCH SECTION OF MISSISSIPPI AND ALABAMA (USA)

23-2 8:15 AM LoDuca, Steven T.; SILURIAN SEaweEDS AND STRATIGRAPHY: NEW ALGa-LAGERSTÄTTE FROM THE LLANDOVERIAN OF MICHIGAN AND ONTARIO

23-3 8:30 AM Runoiman, Kate*; Wilson, Mark A.; Butler, Caroline J.; Judge, Shelley: MODEL OF A BIOTIC HARD SUBSTRATE COMMUNITY: PALEOECOLOGY OF LARGE TREPOSTOME BRYOZOAONS FROM THE UPPER ORDOVICIAN (KATIAN) OF THE CINCINNATI REGION, USA

23-4 8:45 AM Tobin, Thomas*; Stanford, Samantha; Mccraw, Jessie: ORGANIZED MICRO-TUBULES OF UNKNOWN ORIGIN IN WELL-PRESERVED AMMONITE SHELLS

23-5 9:00 AM Tennakoon, Shamindur*; Portell, Roger W.; Kowalewski, Michal: MORPHOLOGICAL DISPARITY AND VARIATIONAL morphologies of the FOSSIL GASTROPODY HYSTRIVASUM (FAMILY TURBINELLIDAE)

23-6 9:15 AM Thompson, Carmi Milagros*; Felt, Elise; Portell, Roger W.; Kowalewski, Michal: PLEISTOCENE MOLLUSCAN PALEOECOLOGY IN THE FLORIDA SHELL AND FILL QUARRY (FLORIDA, USA)

23-7 9:30 AM Rich, Megan*; Visaggi, Christy C.; Cantrell, Madison P.; Hoffman, Kalysa F.; Gluck, Cooper E.; Swann, Christina C.; Armstrong, Kelly E.; Dunham, Jeremy I.; Martinez, Jessica; Clinton, J. Michael; Ivany, Linda; Kelley, Patricia: PATTERNS OF MOLLUSCAN PREDATION IN THE OLIGOCENE BYRAM FORMATION OF VICKSBURG, MISSISSIPPI

8:45 AM BREAK

23-8 10:00 AM Campbell, Timothy*; Campbell, David; Campbell, Lyle David: THE OTHER 82%: INCREASING THE DIVERSITY OF THE WACCAMAW FORMATION

23-9 10:15 AM Dattilo, Benjamin*; Plotnick, Roy: TRACKING THE WATER DEPTH HABITAT RANGE OF MEGALOGRAPTUS THROUGH THE KATIAN FROM THE APPALACHIAN BASIN TO THE CINCINNATI REGION

23-10 10:30 AM Sheffield, Sarah*; Lam, Adriane; Deline, Bradley; Lamsdell, James; Bauer, Jennifer E.; Harris, Ohav B.: INVESTIGATING EVOLUTIONARY DYNAMICS OF PALEOZOIC ECHINODERMER

23-11 10:45 AM McCarthy, Nathan*; Neale, Bianca L.; Brett, Carlton; Paton, Timothy: INTER- AND INTRASPECIES COMPETITION AMONG EDRIOSTEROIDS (ECHINODERMA) EXHIBITED ON A NEW HARDGROUND FROM THE UPPER ORDOVICIAN (KATIAN) OF THE CINCINNATI REGION

23-12 11:00 AM Westgaard, John*; Hanks, H. Douglas; Korf, Jason J.; Hastings, Alexander: UPDATES TO THE BIOTA OF THE LATE CRETACEOUS COLERAINE FORMATION OF NORTHERN MINNESOTA


23-14 11:30 AM Van Vranken, Nathan*; Stranger, Michael: LOOKING FOR SEA-MONSTERS: THE USE OF GEOGRAPHIC INFORMATION SYSTEMS ON MOSASAUR-BEARING FORMATIONS IN NORTH AMERICA

23-15 11:45 AM Clinton, J. Michael*; Visaggi, Christy C.; Santucci, Vincent L.; Tweet, Justin S.; Irick, Kelly A.: AN INVENTORY OF FOSSIL SHARK TEETH AND OTHER PALEONTOLOGICAL RESOURCES AT GULF ISLANDS NATIONAL SEASHEORE

SESSION NO. 24
T6. Limnogeology and Paleoclimate (GSA Limnogeology Division)

8:00 AM, Duke Energy Convention Center, North Meeting Room 201/202
Edward Lo, Leandro Domingos Luz and John Dilworth, Presiding

24-1 8:05 AM Porinchu, David*: LATE QUATERNARY CLIMATE AND VEGETATION DYNAMICS IN NORTHEASTERN EURASIA

24-2 8:25 AM Smart, Matthew*; Filippelli, Gabriel M.; Gilhooley, William; Marshall, John; Whiteside, Jessica H.; Vander Pas, Brooke E.: IMPLICATING LAND PLANT EXPANSION IN THE KĂČĂK EVENT: INCORPORATING NITROGEN ISOTOPES IN A DEVONIAN LACUSTRINE RECORD

24-3 8:40 AM Vander Pas, Brooke E.; Gilhooley, William; Smart, Matthew; Filippelli, Gabriel M.; Marshall, John; Whiteside, Jessica H.; CARBON/PHOSPHORUS DYNAMICS OF MIDDLE DEVONIAN LACUSTRINE SEQUENCES OF THE OLD RED SANDSTONE CONTINENT

24-4 8:55 AM Lepper, Kenneth*: TESTING FAST CORRATIONS OF LAKE AGASSIZ’S TINTAH SHORELINE IN NORTHEASTERN MINNESOTA WITH NEW GEOCHRONOLOGY

24-5 9:10 AM Wiggins, Tahi*; Muneevar Garcia, Santiago; Lepp, Allison P.; Simkins, Lauren M.: MORPHOMETRY OF GLACIGENIC LAKES IN NORTH AMERICA

24-6 9:25 AM Curry, Ben*; Puleo, Pete J.K.; Pentrak, Martin; Diefendorf, Aaron F.; Lowell, Thomas; Sivapalan, Vinothan: TWO-STAGE CESSION OF LGM LOESS DEPOSITION IN CENTRAL ILLINOIS: THE LACUSTRINE EVIDENCE

9:40 AM BREAK
SESSION NO. 25

T8. Integrated Studies of Paleozoic Black Shale (GSA Sedimentary Geology Division; GSA Energy Geology Division)

8:00 AM, Duke Energy Convention Center, North Meeting Room 205

Mark Krekeler and Matthew Dietrich, Presiding

25-1 8:00 AM Algeo, Thomas*; Wei, Wei; Song, Yi; Liu, Jinhua; Remirez, Mariano; Xie, Shucheng; Gilleaudeau, Geoffrey; Herrmann, Achim: THE IMPORTANCE OF SALINITY ANALYSIS IN PALEOENVIRONMENTAL STUDIES

25-2 8:20 AM Remirez, Mariano*; Gilleaudeau, Geoffrey J.; Elrick, Maya; Algeo, Thomas J.: TEMPORAL AND SPATIAL WATERMASS EVOLUTION DURING DEPOSITION OF MIDDLE TO UPPER DEVONIAN ORGANIC-RICH SHALES OF THE ILLINOIS BASIN, NORTH AMERICA

25-3 8:35 AM Gilleaudeau, Geoffrey J.*; Wei, Wei; Remirez, Mariano; Lyons, Timothy; Bates, Steve; Anbar, Ariel; Algeo, Thomas J.: WATERMASS RECONSTRUCTION IN ANCIENT EPEIRIC SEAS: REDOX AND SALINITY ANALYSIS OF DEVONIAN-MISSISSIPPIAN BLACK SHALE OF THE APPALACHIAN BASIN, NORTH AMERICA


25-5 9:05 AM Lau, Catherine*; Remirez, Mariano; Algeo, Thomas J.; Cherry, Lucas B.; Kaufman, Alan J.; Gilleaudeau, Geoffrey J.: CARBON CYCLE PERTURBATIONS AT THE FRASIAN-FAMENNIAN BOUNDARY IN THE ILLINOIS BASIN, USA

25-6 9:20 AM Zambito, James*; McLaughlin, Patrick I.; Holicky, Madeline G.; Farbarik, Olivia; Clinkscales, Emily N.; Fries, Morgan A.: MID-LATE GIVETIAN CARBON-CYCLE PERTURBATIONS IN BLACK SHALE AND ASSOCIATED DEPOSITS OF THE NORTHERN APPALACHIAN BASIN

25-7 9:35 AM Brett, Carlton*; Zambito, James; Baird, Gordon; Ver Straeten, Charles: CONTRASTING DEPOSITIONAL SETTINGS OF EPICONTINENTAL ORGANIC RICH FACIES: SHALLOW VS. DEEP WATER BLACK SHALES

SESSION NO. 26

T17. Metal Pollution in the Eastern Midcontinent and Beyond

8:00 AM, Duke Energy Convention Center, North Meeting Room 206

Friday, 8 April 2022

24-7 9:55 AM Domingos Luz, Leandro*; McGlue, Michael; Rasbولد, Gilliane; Silva, Aguiнаldo; Kuernten, Sidney: INTEGRATING PALEONTOLOGICAL AND ARCHEOLOGICAL DATASETS IN THE PANTANAL WETLANDS (BRAZIL)

24-8 10:10 AM Lo, Edward*; Matocha, Chris; Kuernten, Sidney; Silva, Aguiнаldo; Louzada, Romullо O.; McGlue, Michael M.: CLAY MINERAL COMPOSITION OF MODERN SEDIMENTS IN THE PANTANAL FLOODPLAIN, BRAZIL

24-9 10:25 AM Johnson, Hillary*; McGlue, Michael M.; Thigpen, Ryan; Woolery, Edward W.; Yeager, Kevin; Brown, Summer J.; Dilworth, John: RECENT PALEONTOLOGICAL HISTORY OF JACSON LAKE: GRAND TETON NATIONAL PARK, WYOMING

24-10 10:40 AM Dilworth, John*; Cortese, Callia J; McGlue, Michael; Thigpen, Ryan; Yeager, Kevin; Woolery, Edward W.; Brown, Summer J.: PRELIMINARY HIGH RESOLUTION SEISMIC STRATIGRAPHIC AND SEDIMENT CORE INVESTIGATION OF JACSON LAKE (WYOMING)

24-11 10:55 AM McGlue, Michael*; Zimmerman, Susan; Hodelka, Bailee N.; Bottoms, Antonia; Benfield, Adam J.; Ivory, Sarah; Palacios-Fest, Manuel R.; Starratt, Scott: PRELIMINARY INSIGHTS ON THE ECOLOGICAL CONSEQUENCES OF LATE QUATERNARY ENVIRONMENTAL CHANGES ON MONO LAKE (CALIFORNIA)

24-12 11:10 AM Lyon, Eva*: McGlue, Michael; Erhardt, Andrea; Streib, Laura C.; Stone, Jeffery; Zimmerman, Susan: A HIGH-RESOLUTION RECORD OF MULTIPLE DROUGHTS DURING THE LATE HOLOCENE DRY PERIOD FROM JUNE LAKE, CALIFORNIA

11:30 AM CONCLUDING REMARKS

EPICONTINENTAL ORGANIC RICH FACIES: SHALLOW VS. DEEP WATER BLACK SHALES

25-8 10:10 AM Emsbo, Poul*: NEW INSIGHTS INTO THE ORIGIN OF CRITICAL MINERAL RESOURCES IN ORGANIC-RICH BLACK SHALES

25-9 10:30 AM McLaughlin, Patrick*; Zambito, James; Vandenbroucke, Thijs R.A.; Emsbo, Poul: ORDOVICIAN AND DEVONIAN BLACK SHALE REE PHOSPHORITES OF THE US MIDCONTINENT: ACTIVE EARTH MRI PHASE 2 TARGETS

25-10 10:45 AM Moore, Jessica P*; Royce, Bethany; Vance, Timothy W.: INSIGHTS FROM THE UNTA/POINT PLEASANT DRY GAS FAIRWAY: PRODUCTION TRENDS, RESERVOIR CHARACTERIZATION, AND CRITICAL MINERAL POTENTIAL


25-12 11:15 AM Blood, David*: DEPOSITIONAL AND DIAGENETIC PROCESSES THAT CONCENTRATE CRITICAL MINERALS IN FINE-GRAINED STRATA: A CASE STUDY IN THE UPPER DEVONIAN HANOVER AND DUNKIRK SHALES OF WESTERN NEW YORK STATE


25-14 11:45 AM Ettenson, Frank*; Li, Jun; Gilliam, William: NEOACADIAN TECTONICS AND THE ORIGIN OF THE SUNBURY BLACK SHALE, EAST-CENTRAL UNITED STATES
8:00 AM, Duke Energy Convention Center, North Meeting Room 211
Meghan Cook, Heather Lehto and Victor Ricchezza, Presiding
27-1 8:00 AM Garcia, Angel*; Whitmeyer, Shelley: ENGAGING UNDERGRADUATE STUDENTS IN A CONVERSATION ABOUT UNDERREPRESENTATION IN THE GEOSCIENCES THROUGH A CONTEMPORARY AND HISTORICAL PERSPECTIVE

T26. Nevertheless She Persisted (or Not): Challenges to Retention of Women in the Geosciences through Pandemic and Non-Pandemic Times (Association for Women Geoscientists)

10:15 AM, Duke Energy Convention Center, North Meeting Room 212
Patricia Kelley, Georgina Lukoczki, G. Lynn Wingard, Amy Block and Lisa Tranel, Presiding
28-1 10:15 AM Yacobucci, Margaret*: FROM INDIVIDUAL ALLIYSHIP TO COLLECTIVE ACTION FOR GENDER EQUITY: TRANSFORMING GEOSCIENCE CULTURE

SESSION NO. 28

27-8 9:45 AM Rutherford, Mackenzie*; McLeod, Claire: GLOBAL EDUCATION OUTREACH FOR DIVERSIFYING THE EARTH SCIENCES (GEODES): ENGAGING HIGH SCHOOL STUDENTS WITH GEOSCIENCE MATERIALS AND INVESTIGATING OHIO HIGH SCHOOL TEACHERS’ FAMILIARITY WITH THE EARTH SCIENCES

T26. Nevertheless She Persisted (or Not): Challenges to Retention of Women in the Geosciences through Pandemic and Non-Pandemic Times (Association for Women Geoscientists)

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28-1 10:15 AM Yacobucci, Margaret*: FROM INDIVIDUAL ALLIYSHIP TO COLLECTIVE ACTION FOR GENDER EQUITY: TRANSFORMING GEOSCIENCE CULTURE
SESSION NO. 30

T35. Midcontinent Precambrian Basement from the Superior Province to the Southern Appalachians
9:30 AM, Duke Energy Convention Center, North Meeting Room 211
Dave Moecher, J. Mitchell Clay and J. Bowersox, Presiding

30-1  9:30 AM  Moecher, David*: DOMINANCE AND PERSISTENCE OF THE GRENVILLE MAGMATIC SIGNATURE IN THE DETRITAL ZIRCON RECORD: INSIGHT INTO EXHUMATION OF THE GRENVILLE OROGEN AND POTENTIAL TECTONIC INTERACTION OF LAURENTIA AND AMAZONIA DURING GRENNVILLIAN COLLISION


30-3  10:00 AM  Hatcher, Robert*: CAN THE GRENVILLE FRONT BE TRACED SOUTHWARD INTO ALABAMA?

30-4  10:15 AM  Hanawalt, Laura*; Cuilik, Michael P.; Hawman, Robert: MOUNTAIN ROOTS, LITHOSPHERIC LAYERING, AND MANTLE FLOW: IMAGING P-WAVE REFLECTIVITY BENEATH THE EASTERN US

30-5  10:30 AM  Hillenbrand, Ian*; Karlstrom, Karl; Williams, Michael L.; Gilmer, Amy K.: CRUSTAL THICKNESS EVOLUTION OF SOUTHERN LAURENTIA’S PROTEROZOIC OROGENS

30-6  10:45 AM  McGrew, Allen*; Rahl, Jeffrey; Metcalf, James: INTEGRATING THERMOCHRONOLOGIC, THERMOMETRIC AND DEFORMATION PATH ANALYSIS TO CONSTRAINT THE PACE, EVOLUTION AND TECTONIC SIGNIFICANCE OF A DEEP-CRUSTAL SHEAR ZONE: A CASE STUDY FROM THE RUBY MOUNTAINS-EAST HUMBOLDT RANGE METAMORPHIC CORE COMPLEX, NEVADA

30-7  11:00 AM  Nowaczewski, Vincent*; Sturmer, Daniel: EUSTATIC IMPLICATIONS FOR BACK ARC AND TRANSFORM MODELS OF THE LATE PALEOZOIC SLIDE MOUNTAIN/HAVALAH OCEAN BASIN

SESSION NO. 31

D4. Mineralogy, Geochemistry, Petrology, and Volcanology (Posters)
8:00 AM, Duke Energy Convention Center, Junior Ballroom B
Authors will be present from 9 to 11 AM

Booth #

31-1  1 Jenkins, Nick*; Gillis, Morgan; Krekeler, Mark; Bowmanick, Mithun; Zhou, Xuan: INITIAL CHARACTERIZATION OF SYNTHETIC GOETHITE POST-SHOCK COMPRESSION USING SCANNING ELECTRON MICROSCOPY INDICATES SHOCK RESISTANCE

31-2  2 Certain, Jessica; Curtis, Juliana*; Murchland, Madeline; Fiszel, Charlotte; Stille, Landon; Krekeler, Mark: REFLECTIVE SPECTROSCOPY INVESTIGATIONS OF A COMMON COSMETIC BLUSH (WET ’N WILD) PROVIDE CONSTRAINTS FOR FORENSIC INVESTIGATIONS IN THE CONTEXT OF VIOLENCE AGAINST WOMEN AND OTHERS

31-3  3 Foust, Livia*: ELECTRON MICROSCOPY INVESTIGATIONS OF AN ARTIFICIAL SOIL AGGREGATE USED IN BOTANICAL AND AGRICULTURAL EXPERIMENTS

31-4  4 Bank, Justin*; Klein, Ethan; Krekeler, Mark: MINERALOGY AND TEXTURES OF TALC ORE FROM THE WILLOW CREEK MINE, MONTANA: AN INITIAL INVESTIGATION USING SCANNING ELECTRON MICROSCOPY

31-5  5 Mounce, Stephanie E*; Empolo, Christopher R.; Raikovan, John: APATITE-HOSTED MELT INCLUSIONS FROM GRENVILLE CARBONATITIC VEIN DIKES AT THE SCHICKLTER OCCURRENCE AND DWYER MINE, ONTARIO, CANADA

31-6  6 Napiewoki, Spencer*; Arkle, Jeanette C.; Wolf, Michael B.; Weber, John C.: PROVENANCE AND GEOCHEMICAL ANALYSIS OF THE NORTHERN RANGE, TRINIDAD

31-7  7 Pereira Pierangeli, Luiza*; Silva, Sérgio Henrique Godinho da; Sirbescu, Mona-Liza C.; Weindorf, David: PRELIMINARY TRACE-ELEMENT DISTRIBUTION USING PXRF GEOCHEMICAL DATA ON AMPHIBOLITE AND PEGMATITE ROCKS FROM SOUTHERN MINAS GERAIS, BRAZIL

31-8  8 Lenhard, Nathaniel*; Michelfelder, Gary; Laviada-Garmon, Drew: GEOCHEMICAL COMPARISON OF THE CHASCA ORKHO SERIES AND MAGMATIC INCLUSIONS AT VOLCÁN OLLAGÜE, CENTRAL VOLCANIC ZONE, NORTHERN CHILE

31-9  9 Williams, Spencer*; Williams, Jeremy C.: EVALUATING PTB REDOX CONDITIONS IN RELATION TO S-CYCLE AND TRACE ELEMENTS

SESSION NO. 32

D5. Paleontology (Posters)
8:00 AM, Duke Energy Convention Center, Junior Ballroom B
Authors will be present from 9 to 11 AM

Booth #

32-1  10 Hartzell, Samantha*; Schweitzer, Carrie; Feldmann, Rodney M.: EXTINCTION AND SURVIVAL OF FROG CRABS (CRUSTacea: BRACHYURA: RAININOIDA) FROM THE EARLY CRETACEOUS TO THE PRESENT

32-2  11 Miller, Jennifer*; Schweitzer, Carrie; Feldmann, Rodney M.: EARLY PALEOGENE CRABS (CRUSTacea: BRACHYURA) AND SEDIMENTOLOGY OF THE KAMBÜHEL FORMATION, SOUTHERN AUSTRIA

32-3  12 Schweitzer, Carrie*; Feldmann, Rodney M.: ORIGINATION AND EXTINCTION IN DECAPODA (CRUSTacea) AT THE END-CRETACEOUS

32-4  13 Tungate, Joshua*; Feldmann, Rodney M.; Schweitzer, Carrie: SYSTEMATIC ANALYSIS OF PHYLLOCARID MANDIBLES FROM THE MISSISSIPPian MARSHALL FORMATION IN SOUTHERN MICHIGAN AND THE LATE DEVONIAN SILICA FORMATION IN NORTHWESTERN OHIO

32-5  14 Crowell, Jennifer*; Hembree, Daniel: CLIMATE-INDUCED CHANGES IN FLUVIAL ICHNOFOSSIL ASSEMBLAGES OF THE PENNSYLVANIAN-PERMIAN APPALACHIAN BASIN

32-6  15 Clark, Sarah*; Samuels, Joshua X.: COMMUNITY STRUCTURE ANALYSIS OF THE MAMMALS FOUND AT THE GRAY FOSSIL SITE, TN

32-7  16 Cline, Daniel*; Shell, Ryan; Ciampaglio, Charles; Fuelling, Lauren J.: FOR MODERN SHARKS TO RISE, THEY MUST FIRST SURVIVE AN ICE AGE

32-8  17 Hostetler, Michael*: BIOMAGNETIC AS A PROXY FOR ANCIENT LIFE

SESSION NO. 33

D6. Sedimentary Geology and Geomorphology (Posters)
8:00 AM, Duke Energy Convention Center, Junior Ballroom B
Authors will be present from 9 to 11 AM

Booth #
Authors will be present from 9 to 11 AM

8:00 AM, Duke Energy Convention Center, Junior Ballroom B

Booth #

34-1 24 Kebede, Hailemichael; Alemu, Abera; Mickus, Kevin*: MAGNETIC ANOMALY PATTERNS AND VOLCANO-TECTONIC FEATURES ASSOCIATED WITH GEOTHERMAL PROSPECT AREAS IN THE ZIWAY-SHALA LAKES BASIN, CENTRAL MAIN ETHIOPIAN RIFT

34-2 25 Nigussie, Wubarniak; Alemu, Abera; Mickus, Kevin*: Muluneh, Ameha: STRUCTURE OF THE UPPER CRUST AT THE AXIS SEGMENTATION STAGE OF RIFT EVOLUTION AS REVEALED BY GRAVITY DATA: CASE STUDY OF THE GEDEMSMA MAGMATIC SEGMENT, MAIN ETHIOPIAN RIFT

34-3 26 Razo, Maria*: Holyoke, Caleb: EFFECTS OF MELT INTERCONNECTIVITY AND COMPOSITION OF THE STRENGTH OF A FINE-GRAINED GNEISS

34-4 27 Hilliard, Geoffrey*: Holyoke, Caleb: EFFECT OF PREEXISTING SHEAR ZONE ORIENTATION ON ROCK STRENGTH

34-5 28 Waller, Jacob*: Holyoke, Caleb: FOLIATION INTENSITY AND ORIENTATION AND THEIR AFFECT ON ROCK STRENGTH

34-6 29 Coffee, Mackenzie*: Barineau, Clinton: RF/PHI ANALYSIS OF FELDSPAR IN DEFORMED ORTHOGNEISS: COMPARING MACRO- AND MICRO-ANALYTICAL TECHNIQUES

SESSION NO. 35

T2. Correlating the Ordovician: Honoring the Career and Contributions of Stig M. Bergström (Posters)

8:00 AM, Duke Energy Convention Center, Junior Ballroom B

Authors will be present from 9 to 11 AM

Booth #

35-1 30 Waid, Christopher*: LOWER MEDINA GROUP (UPPER ORDOVICIAN THROUGH LOWER SILURIAN) CHANNEL SANDS IN NEW YORK STATE, USA
36-3 43 Pugh, Isaac*; Crothers, JP; Heckert, Andrew: 3D MODELING AND PRINTING AS A RESOURCE IN PALEONTOLOGICAL OUTREACH

36-4 44 Leesburg, Jessica*; Clary, Renee; Nagel, Athena Owen: DOCUMENTING UNIQUE GEOLOGIC LOCATIONS AS VIRTUAL ENVIRONMENTS: OSBORN PRAIRIE, MS VERSUS SWEETING’S POND, ELEUTHERA

36-5 45 Oborne, Laura*; Lukoczki, Georgina; Kaczmarek, Stephen; Fichtner, Vanessa; Schurr, Simon; Strauss, Harald: A DETAILED RE-EXAMINATION OF CA-MG-CARBONATE SEDIMENTS IN LAGOA VERMELHA USING RIETVELD REFINEMENT

36-6 46 Piquet, Megan*; Molina, Richard; Morejon, Kathryn A.; Brown, Allison; Brandon, Jerew; Hailey R.; MacDonald, James; Barbosa, Alli; McManus, Gregory J.: CALCITE MINERALOGY FROM THE NASHUA FORMATION, FORT DRUM, AND FORT THOMPSON FORMATION, NORTH FORT MYERS, FLORIDA. AN NSF GEOPATH AND MRI FUNDED STUDY

36-7 47 Dewaelsche, Peyton*; Brown, Ken; Loocke, Matthew; McLeod, Claire: CONSTRAINTING K-FELDSPAR MEGACYST GROWTH THROUGH INVESTIGATIONS OF PLAGIOCLASE INCLUSIONS

36-8 48 Madsen, Lauren*; Maneiro, Kathryn A.; Brown, Allison; Dragovic, Besim; Stevens, Gary: BULK LU-HF GARNET GEOCHRONOLOGY IN THE SOUTHERN MARGINAL ZONE, LIMPOPO BELT, SOUTH AFRICA

36-9 49 Arimes, Alexandra*; Chappuies, Jack; Dapkus, Ryan; Fryar, Alan E.: COMPARING CONTROLS ON WATER QUALITY IN TWO KARST BASINS, INNER BLUEGRASS REGION, KENTUCKY

36-10 50 Rechenberg, Matthew*; Peck, John A.: SURFACE SEDIMENT DISTRIBUTION BY LAKE PROCESSES IN WYOGA LAKE, OH

36-11 51 Head, Elynor*; Stone, Jeffery; Yost, Chad: A PALEOLIMNOLOGICAL STUDY OF HISTORICAL WILD RICE (ZIZANIA PALUSTRIS) IN LAC VIEUX DESERT, MI

36-12 52 Bailey, Mary*; Lepper, Kenneth: A CLOSER LOOK AT THE DEPOSITIONAL AGES FOR THE UPPER AND LOWER CAMPBELL SHORELINE OF GLACIAL LAKE AGASSIZ IN NORTHWESTERN MINNESOTA

36-13 53 Blanton, Brightin*: AN ANALYSIS OF RESERVOIR PROPERTIES AND CONTROLS IN THE COTTON VALLEY GROUP OF JONES COUNTY, MS

36-14 54 Worthan, Matthew*; Mason, Cody; Johnson, Matthew; Hidy, Alan J.: SPATIAL PATTERNS OF 10Be-BASED CATCHMENT WIDE DENUATION IN THE WESTERN PANAMINT MOUNTAINS, CALIFORNIA

36-15 55 Bowman, Cole*; Lazar, Kelly Best; Whitmire, Stefanie; Carraway, Elizabeth; Gleason, Gavvin: SEDIMENT TRAP DEVELOPMENT AND QUANTIFICATION OF MICROPLASTICS DEPOSITION IN THE BLACK AND WACCAMAW RIVER SYSTEMS, SOUTH CAROLINA

SESSION NO. 37

T37. Appalachian Orogenies: When and How Do They Start and End? (Posters)

8:00 AM, Duke Energy Convention Center, Junior Ballroom B

Authors will be present from 9 to 11 AM

37-1 56 Kortan, Matthew*; Bailey, C.M.; Sasina, Amanda M.; Foster-baril, Zachary; Henshaw, Emily; Stoeck; Daniel F.: PETROLOGY, STRUCTURE, AND GEOCHRONOLOGY OF THE OAKVILLE METAVOLCANIC SEQUENCE: IMPLICATIONS FOR THE PROVENANCE OF THE SMITH RIVER ALLOCHTHON, VIRGINIA

37-2 57 Williams, S.J*; Farris, D.W.; Horsman, E.: MAGNETIC CONSTRAINTS ON THE NATURE OF THE BREVARD ZONE ADJACENT TO THE GRANDFATHER MOUNTAIN WINDOW, COLLETSVILLE, NC

37-3 58 Fisher, Sabrina*; Coffee, Mackenzie; Barineau, Clinton: AN ATTEMPT TO RESOLVE THE AGE OF THE SUB-MINERAL BLUFF UNCONFORMITY: EXTRACTING ZIRCON FROM THE MARBLE HILL HORNBLENDE SCHIST

SESSION NO. 38


8:00 AM, Duke Energy Convention Center, Junior Ballroom B

Authors will be present from 9 to 11 AM

38-2 60 Goan, Ian*; Kleinsasser, Jackie; Simon, Adam C.; Hudak, George J.; Peterson, Dean: USING THE GEOCHEMISTRY OF SULFIDES TO UNDERSTAND THE GENESIS OF TI-RICH FE-OXIDE ULTRAMAFIC INTRUSIONS WITHIN THE DULUTH COMPLEX

38-3 61 Whitlock, Jacob*: Macdowell, Matthew T.; Elmi, Chiara; Foust, Richard D.: CHARACTERIZATION OF MANGANESE OXIDES FROM SHENANDOAH VALLEY (VIRGINIA): FORMATION CONDITIONS AND ENVIRONMENT

 AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 39

D7. Sedimentary Geology, Geomorphology, and Karst

1:30 PM, Duke Energy Convention Center, North Meeting Room 212

Andrea Erhardt and Sarah Arpin, Presiding

39-1 1:30 PM Hogan, Hannah*: Schoepfer, Shane: EUXINIA SEEN THROUGH PYRITE FRAMBOIDS IN TRAPPER CREEK, IDAHO, LEADING UP TO THE END-PERMIAN EXTINCTION

39-2 1:45 PM Rice, Trezevant Adair*: Foust, Livia; Homan, Renee; Currie, Brian: SEDIMENTOLOGY OF POSSIBLE SUPER-CRITICAL SEDIMENT GRAVITY FLOW DEPOSITS IN THE UPPERCRETACEOUS MANCOS SHALE, EASTERN UTAH

39-3 2:00 PM Alred, Isaac*; Blum, Michael: THERE AND BACK AGAIN: THE RECYCLING OF APPALACHIAN AND GRENVILLE SIGNATURES IN DZ U-PB RECORDS OF PHANEROZOIC NORTH AMERICA

39-4 2:15 PM Rovey, Charles*: TILL STRATIGRAPHY WITHIN THE FREMONT CHANNEL, WESTERN IOWA

39-5 2:30 PM Mcvoy, Jared*: Evans, Kevin: ORIGINS OF CARBONATE MOUNDS IN SOUTHERN MISSOURI

39-6 2:45 PM Kaczmarek, Stephen*: Scott, Ashley; Manche, Cameron; Ryan, Brooks: REEVALUATING EVAPORATIVE REFLUX DOLomitization in PERI-TIDAL CARBONATES

39-7 3:00 PM Rawls, Guy E.*; Swezey, Christopher; Lambert, Richard A.; Garcia, Angel A.; Haynes, John T.: GEOLOGY AND GEOMORPHOLOGY OF PARSONAGE CAVE AND MUSTOE-ULCER CAVE IN THE SILURIAN-DEVONIAN HELDERBERG GROUP, HIGHLAND COUNTY, VIRGINIA

39-8 3:15 PM Florea, Lee*: Burgess, Sarah; Lukoczki, Georgia; Tobin, Benjamin: TOWARD A MORE COMPREHENSIVE MODEL OF KARST DEVELOPMENT IN THE U.S. MIDCONTINENT
SESSION NO. 40

**D9. Vertebrate Paleontology**

1:30 PM, Duke Energy Convention Center, North Meeting Room 211

Joshua Miller, Presiding

**40-1** 1:30 PM  
Heckert, Andrew*; Carrano, Matthew; Howell, Logan S.; Ore, Zachary; Schneider, Katie E.: **THE PALEOPATHOLOGICAL RECORD OF NON-AVIAN DINOSAURS: IMPLICATIONS FOR THE DISTRIBUTION OF DISEASE AND INCIDENCE OF INJURY THROUGHOUT THE MESOZOIC**

**40-2** 1:45 PM  
Bakker, Robert*: **JURASSIC TAIL FIGHTERS: BRONTOSAURS AND STEGOSAURS SHOW ADAPTATIONS FOR PRECISION BLOWS**

**40-3** 2:00 PM  
Gottfried, Michael D*; Eberle, Jaelyn: **Eocene 'Greenhouse Earth' Fish Records from the Canadian Arctic Provide a Deep-Time Perspective on Arctic Biodiversity and Environmental Change**

**40-4** 2:15 PM  
Ward, Clark*: **The Evolution of Sexual Dimorphism in Teleoceras, a North American Rhinoceros**

**40-5** 2:30 PM  
Miller, Joshua*; Wright, William; Kelly, Abigail; Gaetano, Maddie; Neale, Bianca; DeSantis, Larisa; Zazula, Grant D.; Woolier, Matthew J.: **Carnivores Preferred Horse over Bison in Pleistocene Yukon**

**40-6** 2:45 PM  
Kelly, Abigail*; Miller, Joshua; Wright, William; DeSantis, Larisa; Zazula, Grant D.; Hall, Elizabeth; Hewitson, Susan; Woolier, Matthew J.: **Niche Narrowing in Recovery from Population Crash: A Retreat to the 'Biological Optimum' for Klondike Bison Priscus?**

**40-7** 3:00 PM  
Gaetano, Maddie*; Miller, Joshua; Wald, Eric; Druckenmiller, Patrick: **Specialization in Consumption of Antlers and Postcrania by Arctic Mammals**

**40-8** 3:15 PM  
Gibson, Michael*: Byl, Tom; Cunningham, Champagne: **Preliminary Results of Microcystin (Mt) and Saxitoxin (Sxt) Preservation in Fossil Mollusks of the Late Cretaceous Coon Creek Formation Lagerstätte: Implications for a Kill Mechanism Producing Possible Marine Reptile Deadfalls**

SESSION NO. 41

**T4. Astrobiology: What's the Latest on the Search for Life, Past or Present, Outside of Earth?**

1:30 PM, Duke Energy Convention Center, North Meeting Room 206

Andrew Czaja and Sally Potter-McIntyre, Presiding

**41-1** 1:30 PM  
Luna, Jeanette Wolak*; Beltran, Sydney J.: **Survey and Field Analysis of Fan-Shaped Features in Northern Norway: Arctic Analog for Exploration on Mars**

**41-2** 1:45 PM  
Rindsberg, Andrew*: Vallon, Lothar H.: **New Challenges and Opportunities in Ichnology**

**41-3** 2:00 PM  
Brandt, Danita*: **Astrobiology and the Imposition of Strong Hope: Lessons from Paleontology**

**41-4** 2:15 PM  
Potter-McIntyre, Sally*: **Astrobiological Considerations in Concretion Formation**

**41-5** 2:30 PM  
Goland, Camden*: Czaja, Andrew D.: **Using Raman Spectroscopy of Ancient Kerogen to Understand Thermal Alternation and Biosignature Preservation**

**41-6** 3:00 PM  
Corpolongo, Andrea*: Czaja, Andrew D.: **Deep Ultraviolet Raman Spectroscopy of Neoarchean Microbialites as Analogos to Possible Mars 2020 Samples**

SESSION NO. 42

**T27. The Future of Geoscience Teaching after the “Great Disruption”: Lessons from Lockdown**

1:30 PM, Duke Energy Convention Center, North Meeting Room 203/204

Kent Ratajeski and Suzanne Birner, Presiding

**42-1** 1:30 PM  
Kent Ratajeski: **Introductory Remarks**

**42-2** 1:35 PM  
Mittweide, Steven*: **Sniffing Sulfides or Staying Safe? Learning with and from Structures**

**42-3** 2:05 PM  
Lyons, Karly*; Katkar, Ankita; Jimenez, Angel; Walker, Ryan; Lalk, Sarah; Owen Nagel, Athena; Clary, Renee: **The Development and Assessment of Student-Created Interactive Doodle Notes as an Effective Teaching Strategy in Introductory Geology Courses**

**42-4** 2:20 PM  
Maneiro, Kathryn A.*; **“Surviving” an Introductory Geology and Environmental Science Course during Pandemic Teaching**

**42-5** 2:35 PM  
Ratajeski, Kent*: **Five Years of Mid-Semester Survey Data from Two Introductory Geoscience Courses: What They Reveal about the Academic and Personal Lives of College Students Before and During the COVID-19 Pandemic**

**42-6** 2:50 PM  
Clary, Renee*: **Geosciences Content Delivery: Changing Perceptions for Online and Traditional Teaching**

**42-7** 3:05 PM  
**Break**

**42-8** 3:20 PM  
Hunt, Emma*: **Petrology in a Pandemic: Virtual Optical Mineralogy**

**42-9** 3:35 PM  
Weiss, Jennifer*; Whitmeyer, Steven: **Building Targeted Exercises Along Corridor H, WV for Use in Upper-Level Geology Classes**

**42-10** 4:05 PM  
Jefferson, Anne*: Loheide, Steven; McCoy, Deanna: **Faculty Perspectives on an Online, Collaborative Graduate Course in Hydrology**

**42-11** 4:20 PM  
Sturmer, Daniel*: **Evolution of a Careers in the Geosciences Course Before and During the COVID-19 Pandemic**

**42-12** 4:35 PM  
**Concluding Remarks**
**SESSION NO. 43**

**T39. Intraplate Earthquakes in Central and Eastern USA**

1:30 PM, Duke Energy Convention Center, North Meeting Room 201/202

Lewis Owen and Ronald Counts, Presiding

1:30 PM **INTRODUCTORY REMARKS**

43-1 1:35 PM Pratt, Thomas*: EXPLORING THE EASTERN U.S. FOR EARTHQUAKES OUTSIDE OF THE MAJOR SEISMIC ZONES

43-2 1:55 PM Van Arsdale, Roy*: QUANTERNAL FAULTING IN THE CAMBRIAN REELFOOT RIFT OF THE MISSISSIPPI RIVER VALLEY

43-3 2:15 PM Cox, Randy*: NEW RESULTS ON LATE PLEISTOCENE FAULTING IN THE NEW MADRID SEISMIC ZONE

43-4 2:30 PM Afroz, Mahmud*; Aly, Mohamed H.: ASSESSMENT OF ECONOMIC LOSS AND CASUALTIES DUE TO EARTHQUAKES OF DIFFERENT MAGNITUDES AT THE NEW MADRID FAULT ZONE

2:45 PM **BREAK**

43-5 3:00 PM Brudzinski, Michael*; Fasola, Shannon L.; Currie, Brian: AN OVERVIEW OF RECENT INJECTION INDUCED SEISMICITY IN THE CENTRAL AND EASTERN UNITED STATES

43-6 3:15 PM Carpenter, N. Seth*; Hickman, John B.; Brudzinski, Michael; Schmidt, Jonathan F.; Wang, Zhenming: THE ROME TRough: A SEISMICALLY QUIESCENT INTRAPLATE RIFT BOUNDING ACTIVE SEISMIC ZONES

43-7 3:30 PM Figueiredo, Paula*: UNKNOWN SEISMIC SOURCES IN EASTERN USA - THE 2020 MW 5.1 SPARTA, NORTH CAROLINA EARTHQUAKE AND EVIDENCE OF RECURRENT QUATERNARY DEFORMATION

43-8 3:45 PM Merschat, Arthur*; Carter, Mark W.: SURFACE RUPTURE FROM THE 9 AUGUST 2020, MW 5.1 SPARTA, NORTH CAROLINA EARTHQUAKE AND POSSIBLE PALEOSEISMICITY: EVIDENCE FROM DETAILED BEDROCK AND SURFICIAL GEOLOGIC MAPPING

43-9 4:00 PM Carter, Mark*; Merschat, Arthur J.; Horton, James; Burton, William; Counts, Ronald; Tuttle, Marthita; Green, Russell A.; Pazzaglia, Frank J.; Hill, Jesse, Figueiredo, Paula: A TALE OF TWO QUAKES: COMPARING THE 2011 M5.7 MINERAL VA AND THE 2020 M5.1 SPARTA NC EARTHQUAKES FROM A GEOLOGIC MAPPING VIEWPOINT

43-10 4:20 PM Fakhari, Mohammad*: THE MAJOR MISSISSIPPIAN SEISMIC EVENT IN SOUTHERN OHIO AND ITS PROBABLE ORIGIN

**SESSION NO. 44**

**T44. Success in the Face of Adversity: Telling the Stories of Women in Geology**

1:30 PM, Duke Energy Convention Center, North Meeting Room 205

Katherine Lewandowski, Presiding

1:30 PM **INTRODUCTORY REMARKS**

44-1 1:35 PM Lewandowski, Katherine*: MARIA KLENOVA: PIONEERING POLAR MARINE GEOLOGIST

44-2 1:50 PM Sack, Dorothy*: THE LIFE AND TIMES OF GEOLOGOMORPHOLoGIST MARIE MORISOwA

44-3 2:05 PM Lippis, Jere*: ESTER ENGLISH RICHARDS APPLin, 1895-1972, MICROPaleoItoLoGIst: SUCCESS IN A MAN’S WORLD

44-4 2:20 PM McDonald, James*: VERA AND ELSA LUnd – PIONEERING WOMEN IN THE PETROLEUM INDUSTRY

44-5 2:35 PM Lippis, Jere; Lewandowski, Katherine*: HELEN TAPPAN: SUCCESS IN PALEONTOLOGY THROUGH DEDICATION, ORGANIZATIONAL SKILLS, AND HARD WORK

2:50 PM **CONCLUDING REMARKS**

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**SESSION NO. 45**

**T45. All Things Whittlesey: Civil War, Glacial, Engineering, Structural Geology, and Other Topics Related to Fields Investigated by Geologist Charles Whittlesey (1808–1886) (GSA Environmental and Engineering Geology Division; GSA Quaternary Geology and Geomorphology Division)**

3:10 PM, Duke Energy Convention Center, North Meeting Room 205

Joseph Hannibal and Kevin Evans, Presiding

3:10 PM **INTRODUCING THE FIRST BOOK-LENGTH BIOGRAPHY OF CHARLES WHITTLESEY**

45-1 3:20 PM Totten, Stanley*: CHARLES WHITTLESEY, SAMUEL PRESCOTT HILDRETH, AND THE FIRST OHIO GEOLOGICAL SURVEY THAT BROUGHT THEM TOGETHER

45-2 3:35 PM Kreinbrink, Jeannine*: CHARLES WHITTLESEY AND THE NORTHERN KENTUCKY CIVIL WAR FORTIFICATION SYSTEM

45-3 3:50 PM Hannibal, Joseph*: CHARLES WHITTLESEY: CONNECTIONS BETWEEN GEOLOGY, ARCHAEOLOGY, AND MILITARY TRAINING AND DEFENSES

45-4 4:05 PM Totten, Stanley*: INSTANCES WHEN REPORTS WRITTEN AND MAPS DRAWN BY CHARLES WHITTLESEY WERE EITHER ATtributed TO OTHERS, SEVERELY EDITION, OR OTHERWISE OVERLOOKED OR DISMISSSED AS BEING HERESAY

45-5 4:20 PM Evans, Kevin*: JOHN WESLEY POWELL AND “BIG GEORGE” CROOKHAM IN JACKSON, OHIO: THE MAKING OF A GEOLOGIST

4:35 PM **CONCLUDING REMARKS**

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**SESSION NO. 46**

**D3. Hydrogeology and Karst (Posters)**

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

46-1 1 Maharjan, Madan*; Rouse, Linwood Jesse; Nelson, Daren T.: HURRICANE-INDUCED WATER LEVEL CHANGES IN THE BLACK CREEK AQUIFER, ROBESON COUNTY

46-2 2 Dwyer, Trevor*; Sasowsky, Ira; Bullerjahn, George S.: CHEMICAL AND FLOW CHARACTERISTICS OF MAJOR KARST SPRINGS OF NORTH-CENTRAL OHIO

46-3 3 Cobbinah, Emmanuel*: Liu, Ganning: AN INTEGRATED FIELD AND MODELING STUDY OF THE TRANSPORT OF CYANOTOXIN FROM LAKE ERIE TO COASTAL AQUIFERS

46-4 4 Reo, Melissa*; Peck, John A.: INTERACTIONS BETWEEN URBAN LAKE HYDROLOGY AND SEDIMENTS: AN EXAMPLE FROM SUMMIT LAKE, AKRON, OHIO

46-6 6 Fleszewski, Grace*: IDENTIFYING SEDIMENT SOURCE AREA WITHIN THE BINKLEY CAVE SYSTEM

46-7 7 Brown, Teresa*; Cahoon, A. Bruce; Brown, Teresa L.: MICROBES ON MOONMILK: A SPELEOLOGICAL EXPLORATION

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**AFTERNOON POSTER TECHNICAL SESSIONS**
SESSION NO. 47
T3. Under the (Ancient) Sea: Marine Life from the Coastal to Great Plains (Posters)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

47-1 8 Bilodeau, Remy A.¹; Finn, Thaddeus J.; Gomez, Ramona R.; Paul, Michael T.; Rogers, Logan R.; Schuette, Jaren D.; Sommer, Sarah P.; Wallenmeyer, Teddy J.; Evans, Kevin; Schiffbauer, James; Selly, Tara: CULTURAL GEOLOGY OF THE LOWER MISSISSIPPIAN NORTHRIFF FORMATION “WORM ROCK”; SOUTHWESTERN MISSOURI, USA

47-2 9 Self-Trail, Jean*; Parker, Mercer; Govoni, David L.; Bybell, Laurel M.: RE-EXAMINATION OF UPPER CRETACEOUS AND PALEOGENE FOSSILS AND SEDIMENTS AT THE CABIN BRANCH OUTCROP LOCALITY, MARYLAND: IMPLICATIONS FOR REGIONAL GEOLOGY

47-3 10 Parker, Mercer*; Self-Trail, Jean; Govoni, David L.; Bybell, Laurel M.: LITHOSTRATIGRAPHIC AND PETROGRAPHIC ANALYSIS OF UPPER CRETACEOUS THROUGH LOWER PALEOGENE SEDIMENTS AND HARDROCKS IN THE NORTHERN SALISBURY EMBAYMENT: CABIN BRANCH, MARYLAND – MID-ATLANTIC COASTAL PLAIN

47-4 11 Robinson, Marcii; Dowsett, Harry J.; Foley, Kevin M.; Spivey, Whitney E.: THE EFFECT OF RATE OF TEMPERATURE AND SEA LEVEL CHANGE ON FORAMINIFERAL SPECIES DIVERSITY

47-5 12 Sutton, Seth*; Kelly, Daniel: BENTHIC FORAMINIFERAL COMMUNITY TURNOVER ALONG THE EASTERN MARGIN OF THE WESTERN INTERIOR SEA DURING THE LATE CRETACEOUS COOLDOWN: MANITOBA ESCARPMENT

47-6 13 Ford, Robert*; Van Iten, Heyo; Frederick, Daniel: SCYPHOZOAN COMMUNITIES AND FACIES DEPENDENCY IN THE FORT PAYNE FORMATION (LOWER MISSISSIPPIAN) OF CENTRAL TENNESSEE

47-7 14 Vantorenburen, Haley*; Anderson, Lian C.; Bauer, Jennifer E.; Sheffield, Sarah: PALEOECOLOGICAL TRENDS IN EPIBIONT PLACEMENT ON SILICA SHELL BRACHIOPODS

47-8 15 Hennessey, Sarah*; Stigall, Alycia L.: CONSTRAINING MORPHOLOGICAL CHANGE ACROSS THE GREAT ORDOVICIAN BIODIVERSIFICATION EVENT: A CASE STUDY FROM THE ARBUCKLE MOUNTAINS OF OKLAHOMA

47-9 16 Orchard, Cade*; Cole, Selina R.: DID ECOLOGY DRIVE BODY SIZE EVOLUTION OVER THE LATE ORDOVICIAN MASS EXTINCTION? EVIDENCE FROM BRACHIOPODS AND TRILOBITES

47-10 17 Van Iten, Heyo*; Mann, Emmie; Kuredlmeyer, Robert: TRILOBITE TAPHONOMY OF SHALY SHELF CARBONATES IN THE ELGIN MEMBER OF THE MAUROKETA FORMATION (LATE ORDOVICIAN; NE IOWA AND SE MINNESOTA)

47-11 18 Maduro-Salvarrey, Leonardo A.*; Visaggi, Christy C.; Leatherwood, Aaron; McCluney, Kyle; Groover, Margaret; Merritt, Daisha M.; Welter, Patrick; Clinton, J. Michael; Portel, Roger W.: COMPARING THE PALEOECOLOGY OF MOLLUSCAN ASSEMBLAGES FROM THE Plio-Pleistocene Nashua Formation of Northern Florida

47-12 19 Thompson, Dalton*; Feldmann, Rodney M.; Schweitzer, Carrie: RELATIONSHIP BETWEEN MARINE ENVIRONMENT, PREDATION INTENSITY, AND BIVALVE COMMUNITY DIVERSITY FROM THE TAMIAMI, CHIPOLA, JACKSON BLUFF, AND BERMONT FORMATIONS OF FLORIDA, USA

SESSION NO. 48
T6. Limnogeology and Paleoclimate (Posters) (GSA Limnogeology Division)

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

Booth #

48-1 31 Berina, Justine Paul A.*; Wiles, Greg; Wilson, Mark A.; Lowell, Thomas V.; Diefendorf, Aaron F.; Corcoran, Megan; Dietrich, Watts; Wiesenberg, Nicholas: UNEARTHING THE EFFECTS OF EUROPEAN-AMERICAN SETTLEMENT ON A NORTHEAST OHIO KETTLE HOLE THROUGH DIATOM STRATIGRAPHY

48-2 32 Loper, Congote, Laura*; McClure, Michael; Stone, Jeffery; Westover, Karlyn S.: UNRAVELING PAST HYDROCLIMATE DYNAMICS IN A SIERRA NEVADA LAKE, CALIFORNIA. INSIGHTS FROM DIATOM COMMUNITY ASSEMBLAGES AND FIRE RECONSTRUCTIONS

48-3 33 Ramirez, Giannina*; Gilhooly, William; Correa Metrio, Alexander; Werne, Josef P.; Vander Pas, Brooke E.; Licht, Kathy; Bosco Santos, Alice: RECONSTRUCTING THE HISTORY OF ANOXIA AND CLIMATE CHANGE IN LAGUNA ENCANTADA IN CHETUMAL, MEXICO

48-4 34 Seidler, Addison*; Westover, Karlyn S.; Stone, Jeffery R.; Bird, B rockets W.: THE IMPACT OF HYDROCLIMATE VARIABILITY ON DIATOM ASSEMBLAGES FROM CLEAR LAKE, IOWA OVER THE LAST 2,000 YEARS
SESSION NO. 49

**T8. Integrated Studies of Paleozoic Black Shale (Posters) (GSA Sedimentary Geology Division; GSA Energy Geology Division)**

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

**Booth #**

49-1 36 Rutledge, Randolph*; Gilleaudeau, Geoffrey; Remirez, Mariano; Sahoo, Swapan K.; Algeo, Thomas: **REDOX GRADIENTS RECORDED IN LOWER MISSISSIPPIAN BLACK SHALES OF THE APPALACHIAN AND WILLISTON BASINS, NORTH AMERICA: A TEST CASE FOR URANIUM ISOTOPE BEHAVIOR**

49-2 37 Weldon, Annette*; Zambito, James; McLaughlin, Patrick I.: **TESTING THE IMPACT OF FOREST EVOLUTION ON THE ORGANIC MATTER COMPOSITION OF ILLINOIS BASIN DEVONIAN MARINE BLACK SHALE**

49-3 38 Hughson, Laura*; Zambito, James; Farbarik, Olivia: **COMPARING LOCAL AND BASINAL PATTERNS OF MARINE BLACK SHALE GEOCHEMISTRY IN THE DEVONIAN APPALACHIAN BASIN, KENTUCKY**

49-4 39 Danielsen, Erik*; Waid, Christopher: **HIGH-RESOLUTION MAPPING OF ORGANIC CARBON DISTRIBUTION IN THE LOWER HURON MEMBER OF THE OHIO SHALE, EASTERN OHIO, USA**

49-5 40 Long, Gavin*; Day, James: **LATE DEVONIAN ABERRANT CONODONT MORPHOTYPES FROM LOWER KELLWASSER EXTINCTION AND POST-EXTINCTION INTERVAL OF THE SWEETLAND CREEK SHALE, IOWA BASIN-CENTRAL NORTH AMERICA**

SESSION NO. 50

**T17. Metal Pollution in the Eastern Midcontinent and Beyond (Posters)**

1:30 PM, Duke Energy Convention Center, Junior Ballroom B

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

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50-2 42 Karcher, Randall K*; Cowan, Ellen A.; Brachfeld, Stefanie A.; Wang, Zhen; Vengosh, Avner: **MAGNETIC ANALYSIS AS A NOVEL METHOD FOR COAL ASH DETECTION IN RESERVOIR SEDIMENT**

50-3 43 Wilson, Jessica C*; Cowan, Ellen A.; Seramur, Keith C.; Wang, Zhen; Vengosh, Avner: **VARIABILITY OF COAL ASH MORPHOLOGY IN RESERVOIR SEDIMENT USING LIGHT MICROSCOPY**

50-4 44 Adams, J. Cameron; Hurst, Jennifer D.; Rader, Shelby T.*: **GEOCHEMICAL CONTROLS ON METAL DISTRIBUTION WITHIN BRASSICA JUNCEA: IMPLICATIONS FOR METAL POLLUTION AND SOURCING**

50-5 45 Wood, Madison M.*; Singer, David: **LEAD (PB) IN URBAN SOIL**

50-6 46 Seten, Isabelle*; Strasser, Jeffrey; Reisner, Michael: **GEOCHEMISTRY OF URBAN WATERSHEDS: A HEAVY METAL AND LAND USE ANALYSIS**

SESSION NO. 51

**T34. Melt, Emplace, Mix, Erupt! (MEME) Investigating the Dynamics of Magmatic Systems via Microanalysis (Posters)**

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

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51-2 48 Van Horn, Bennett*; Michelfelder, Gary; Bucheli-Olaya, César; Shaulis, Barry: **OPEN SYSTEM PROCESSES RECORDED BY PLAGIOCLASE DISEQUILIBRIUM, LASCAR VOLCANO, CENTRAL ANDES VOLCANIC ZONE, CHILE**

51-3 49 Rasor, Sarah*; Michelfelder, Gary; Bucheli-Olaya, César: **PLAGIOCLASE TRACE ELEMENT ZONING REVEALS CHANGES IN MAGMA STORAGE AT CERRO UTURUNCU**

51-4 50 Limbaugh, Nathan*; Cartwright, Julia: **CUMULATE EUCLITE, DIOBENITE, AND NAKHLITE MELT INCLUSION ANALYSES: INVESTIGATING PARENT MELT CHARACTERISTICS OF ACHONDRITE FROM 4 VESTA AND MARS**

51-5 51 Maendel, Andrew*; Pistone, Mattia; Petri, Benoît; Hames, Willis; Ulyanov, Alexey; Reubi, Olivier; Putlitz, Benita; Müntener, Othmar: **INVESTIGATING A RECENTLY DISCOVERED OLIVINE-GABBRO FROM THE IVREA VERBANO ZONE: NEW INSIGHTS INTO MAGMATIC DIFFERENTIATION IN THE LOWER CONTINENTAL CRUST**

51-6 52 Bhattacharya, Gourab*; Robinson, Delores: **DTRITAL MUSCOVITE PROVENANCE OF THE INDUS BASIN, WESTERN LADAKH, INDIA: IMPLICATIONS ON THE NATURE AND TIMING OF INDIA-ASIA COLLISION**

SESSION NO. 52

**T35. Midcontinent Precambrian Basement from the Superior Province to the Southern Appalachians (Posters)**

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

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52-2 54 Waggoner, Catherine*; Bjornrud, Marcia: **DETERMINING THE EMPLACEMENT MECHANISM OF AN UNUSUAL RHYOLITE BODY IN THE CA. 1.1 GA MIDCONTINENT RIFT NEAR THE PORCUSINE MOUNTAINS IN THE UPPER PENINSULA OF MICHIGAN**

52-3 55 Malone, Shawn*: **PRELIMINARY PETROGRAPHIC AND GEOCHEMICAL INVESTIGATIONS OF (PRESUMED) ARCHEAN BASEMENT TO THE MARSHFIELD TERRANE EXPOSED IN THE WISCONSIN RIVER VALLEY (WOOD AND PORTAGE COUNTIES), WISCONSIN**
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*Denotes Presenter