



THE
GEOLOGICAL
SOCIETY
OF AMERICA®

Joint Meeting

NORTHEASTERN/NORTH-CENTRAL Sections Meeting

19–21 March 2017

Omni William Penn Hotel
Pittsburgh, Pennsylvania, USA



Joint Meeting Northeastern & North-Central Sections

52nd Meeting for the Northeastern

51st Meeting for the North-Central

19–21 March 2017

Omni William Penn Hotel

Pittsburgh, Pennsylvania

<http://www.geosociety.org/ne-mtg>

Shale Gas Production

Views from the Energy Rollercoaster



Meeting Committee

Co-Chairs	Patrick Burkhart (NE), Timothy Fisher (NC)
Vice Chair	James Harrell (NC)
Technical Program	Wendell Barner (NE), Richard Becker (NC)
Treasurer	Patrick Burkhart
Field Trips	Kyle Fredrick (NE), Joe Hannibal (NC)
Sponsorship	Patrick Burkhart (NE), Mark Camp (NC)
K–12 Weekend	Karen Rose Cercone (NE), Polly Root Sturgeon (NC)
Exhibits	Sarah McGuinness
Work Shops	Timothy Fisher
Special Events	Maraina Miles
Student Volunteers	Daniel Harris (NE), Don Stierman (NC)
Mentoring	Jonathan Warnock (NE), Don Stierman (NC)
Posters	Hannah Smith, Adam Rak

Northeastern Section GSA Officers

Chair	Gary Solar
Vice Chair	Janet R. Stone
Secretary-Treasurer	David P. West
Past Chair	Gale C. Blackmer
Past Secretary	Stephen G. Pollock
Student Representative	Sean P. Regan
Members-at-Large	Hal Bosbyshell, Cynthia Venn
GSA Councilor	Tim Bralower, Stephen G. Pollock



North-Central Section GSA Officers

Chair	Timothy Fisher
Vice Chair	James Harrell
Secretary	Nancy S. Williams
Past Chair	Stephen E. Brown
Past Vice Chair	Yu-Feng Forrest Lin
Student Representative	Elisabeth Schlaudt
Members-at-Large	Ben Datillo, C. Renee Sparks, Tina M. Niemi

Sponsors

(as of mid-January 2017)

We are grateful to those groups and individuals recognized below for their generous support of the many valuable meeting activities! Logos can be seen on page 49. Please, thank them when you meet them.

Sapphire Level

(\$2,500–\$4,999)

Pittsburgh Geological Society
Pennsylvania Council of Professional Geologists

Topaz Level

(\$1,000–\$2,499)

University of Pennsylvania, MSc in Applied Geoscience
DiGioia, Gray & Associates, LLC
Sensors and Software, Inc
Pennsylvania Drilling Inc.
University of Toledo, Environmental Science and Studies

Emerald Level

(\$500–\$999)

Barner Consulting, LLC
Billman Geologic Consultants, Inc.
Dr. John Harper, Pennsylvania Geological Survey, Emeritus
Pittsburgh Association of Petroleum Geologists
Dr. Paul Rizzo, Professor Emeritus of Geography, Slippery Rock University
Dr. Charles Shultz, Professor Emeritus of Geology, SRU
SEPM – Society for Sedimentary Geology - Global

Amethyst Level

(\$100–\$499)

Dr. Patrick Burkhart, Professor of Geology, Slippery Rock University
Department of Geography, Geology & Environment, Slippery Rock University
Field Conference of Pennsylvania Geologists
Dr. Timothy Fisher, Professor of Geology, University of Toledo
Richard Gray, DiGioia and Gray Associates
Ohio Geological Survey
SEPM – Society for Sedimentary Geology – Eastern Section
SEPM – Society for Sedimentary Geology – Great Lakes Section
Brian Greene, PhD, PG
Falcede Energy Consulting
GTech Inc.

NOTICE

By registering for this meeting, you have acknowledged that you have read and will comply with the GSA Code of Conduct for Events (full code of conduct listed on page 12). If you need to report unacceptable behavior, please contact:

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

GSA Past President, Jonathan Price, jprice@unr.edu

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

General Information



The 2017 GSA Northeastern/North-Central Joint Section Meeting promises to be a smashing success. Thank you for your participation! The meeting will convene at the Omni William Penn Hotel on William Penn Place, at the corner of 6th Avenue and Grant Street. All events will convene there, including the departure and return of field trips. (Note: there is a PAESTA activity at the Squaw Run Park on Saturday morning. Please do not confuse this event with a GSA field trip. Meet at the park, 9 a.m.) Your meeting committee is delighted to continue the rich history of hosting the Geological Society of America in the City of Pittsburgh. Please enjoy the action-packed technical program, mentoring programs, short courses, banquet with keynote address, and an extensive roll of additional events!

Directions

The hotel is readily accessible by the Interstate System, air travel, Amtrak, and buses.

From the west, if on I-80, take I-76 toward Pittsburgh, then I-79 south. Follow directions *from the north*. If on I-70, take I-79 north toward Pittsburgh, then follow directions *from the south*.

From the north, take the I-279 exit (left lane) from I-79 southbound, and then exit across the Veterans Bridge to 6th Avenue. Turn right onto 6th Avenue and the William Penn is the tall red brick high-rise on the left side of the street. Follow 6th Avenue to the far side of the hotel, turn left on Wm Penn Place to the Bellman's Station. The Mellon Square parking garage is below ground under the park on your right.

From the south, exit I-79 northbound at I-376, travel five miles across the Carnegie Valley, over Greentree Hill, and through the Fort Pitt Tunnel. Take the Liberty Avenue exit; turn right onto 6th Avenue; turn right onto Wm Penn Place hotel is on the left, underground parking on the right.

From the east, exit the PA Turnpike, I-76, at Monroeville. Take I-376 west to the Grant Street exit. Turn right on Grant Street, left on 6th Avenue; turn left on Wm Penn Place, hotel is on the left, underground parking on the right.

Setting

Pittsburgh is a thriving city with vibrant communities, great restaurants, and many museums. The Three Rivers—the Allegheny and the Monongahela merge to form the Ohio at Point Park—are deeply incised into the Allegheny Plateau, with surrounding neighborhoods draped across flood plains, steep slopes, and the upland plateau remnants. The mysterious Fourth River alludes to a watercourse aquifer of Pleistocene gravels underlying these valleys. The region offers a variety of geologically interesting attributes. To the east lies the Allegheny Front, a lengthy escarpment where the Valley

and Ridge abuts against the Appalachian Plateaus, and which presented a substantial engineering and cultural impediment for the westward expansion of our country. Not far to the north, one finds the terminal Laurentide Ice Sheet moraine. The region is rich with oil, gas, coal, aggregates, and a wealth of additional natural resources, all overprinted with myriad geotechnical hazards. The theme of the meeting: Shale Gas Production—Views from the Energy Roller Coaster is an entirely appropriate descriptor of recent events. The jarring ride is also reflective of the economic and environmental challenges that characterize life in these parts throughout its history of industrialization. Pittsburgh is a model city for renaissance. You will find that the hotel sits in a bustling urban landscape that features great dining at all price points, hoping bistros, a range of shopping options, numerous museums, and some obscure sports teams. If you had time to explore, you would find rich cultural diversity within a city that celebrates the caveats of peoples, cuisine, and architecture delivered by waves of immigrants arriving from distant lands, spanning the globe. Enjoy your stay!

Accommodations

All events occur at the Omni William Penn Hotel, William Penn Place, 6th Avenue and Grant Street, Pittsburgh. Call 1-800-THE-OMNI. ADA accessible rooms are present. Please speak with a hotel representative to confirm availability. We suggest you arrive on Saturday, park your vehicle in a nearby garage, and remain pleasantly lodged for the duration of the meeting.

Parking

The Mellon Square underground garage of the Pittsburgh Parking Authority is located directly in front of the hotel. Valet parking is available. Self-park costs \$19 for Weekdays and \$5 for weekends. Parking from Saturday through Tuesday would cost \$48. Full size vans exceed this garage's height restriction, however, the Oliver Street Garage, a few blocks distant, can accommodate them. Please ask the Bellman at the front door for directions.

Registration

All participants in the GSA meeting events must be official registrants. Pre-registrants may retrieve their badges at the registration booth on the 17th floor. Student and K-12 professionals must show current identification for reduced rates. Badges must be worn to all activities, Sunday through Tuesday. Cancellation for full refund requests must have been received in writing at headquarters by 21 February 2017. No refunds will be made after this date. Fees and hours for on-site registration are listed below.

DOWNTOWN PITTSBURGH HOTELS

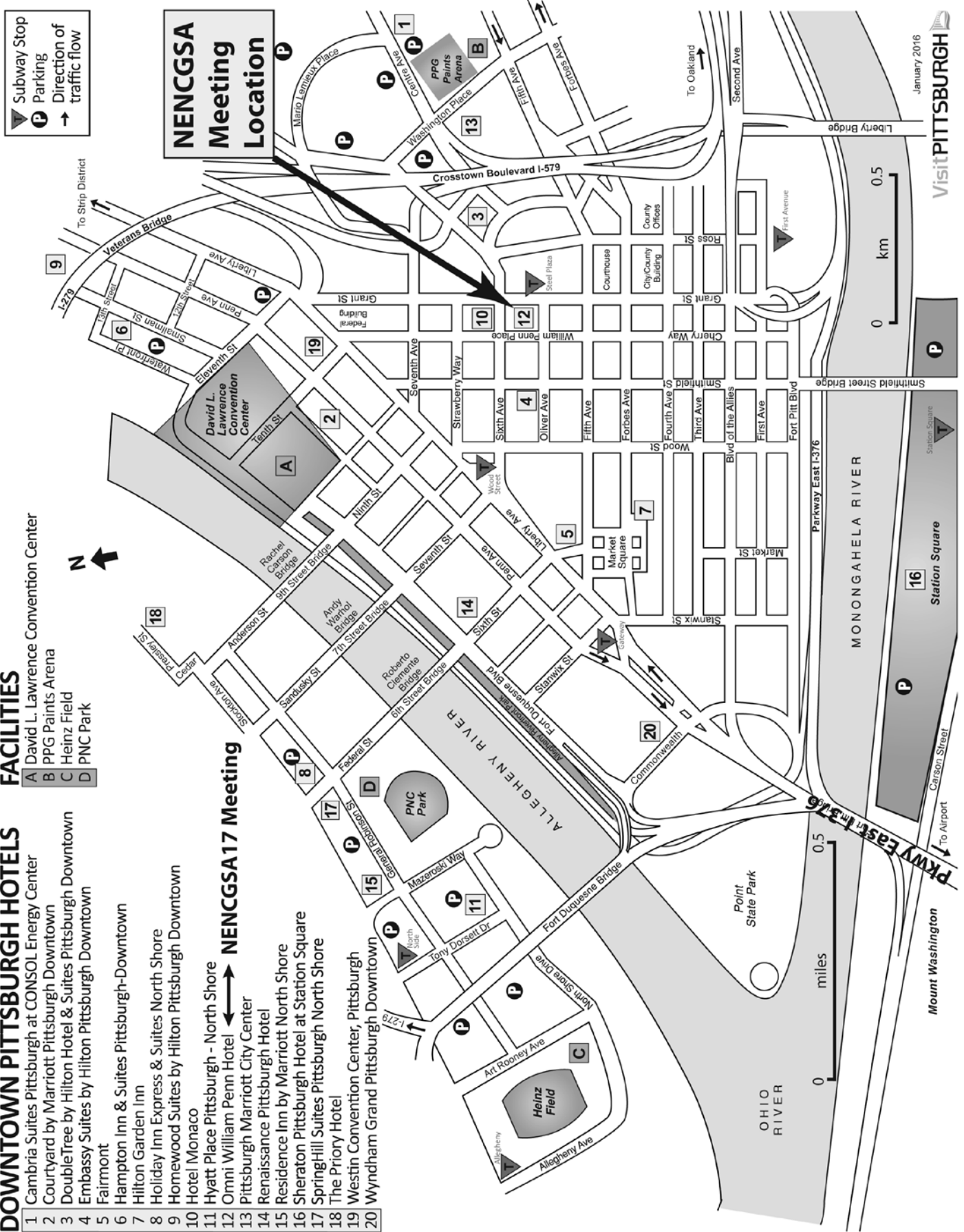
- 1 Cambria Suites Pittsburgh at CONSOL Energy Center
- 2 Courtyard by Marriott Pittsburgh Downtown
- 3 DoubleTree by Hilton Hotel & Suites Pittsburgh Downtown
- 4 Embassy Suites by Hilton Pittsburgh Downtown
- 5 Fairmont
- 6 Hampton Inn & Suites Pittsburgh-Downtown
- 7 Hilton Garden Inn
- 8 Holiday Inn Express & Suites North Shore
- 9 Homewood Suites by Hilton Pittsburgh Downtown
- 10 Hotel Monaco
- 11 Hyatt Place Pittsburgh - North Shore
- 12 Omni William Penn Hotel
- 13 Pittsburgh Marriott City Center
- 14 Renaissance Pittsburgh Hotel
- 15 Residence Inn by Marriott North Shore
- 16 Sheraton Pittsburgh Hotel at Station Square
- 17 SpringHill Suites Pittsburgh North Shore
- 18 The Priory Hotel
- 19 Westin Convention Center, Pittsburgh
- 20 Wyndham Grand Pittsburgh Downtown

FACILITIES

- A David L. Lawrence Convention Center
- B PPG Paints Arena
- C Heinz Field
- D PNC Park

NENCGSA 17 Meeting

**NENCGSA
Meeting
Location**



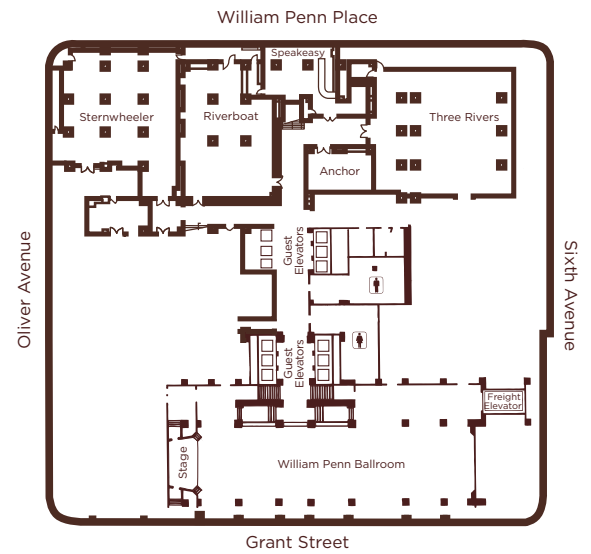
OMNI® HOTELS & RESORTS

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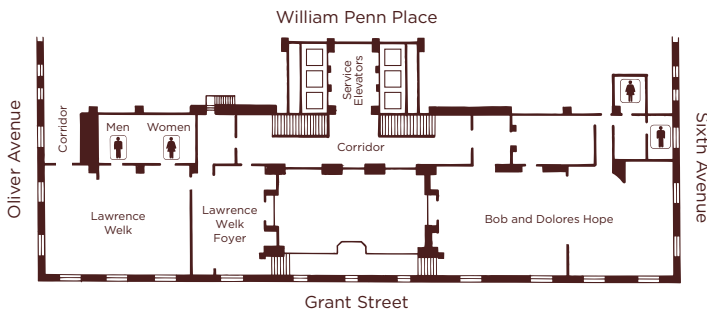
Conference Level



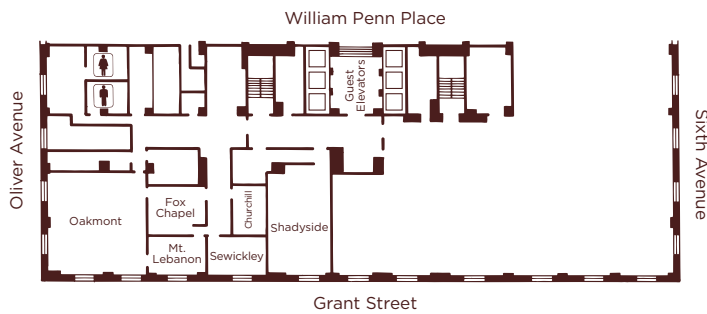
William Penn Level



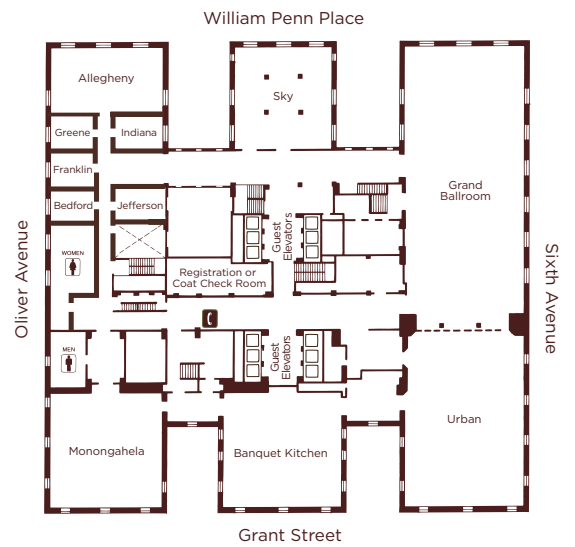
Mezzanine Level



First Level



Seventeenth Level



On-Site Registration Hours

Saturday, 18 March	3–8 p.m.
Sunday, 19 March	7 a.m.–4 p.m.
Monday, 20 March	7 a.m.–4 p.m.
Tuesday, 21 March	7 a.m.–1:30 p.m.

On-Site Registration Fees (US Dollars)

	Full Meeting	One Day
Professional Member.....	\$235.....	\$180
Professional Non-Member.....	\$275.....	\$195
Professional Member 70+	\$130.....	\$100
Early Career Professional Member.....	\$170.....	\$125
Student Member	\$100.....	\$70
Student Non-Member.....	\$120.....	\$80
K–12 Professional.....	\$85.....	\$60
Guest or Spouse	\$60.....	\$50
Field Trip or Workshop Only.....	\$40	

Registrants with Special Needs

We are committed to making this 2017 meeting accessible to all. Every attempt will be made to reach full compliance with the Americans with Disability Act. Please indicate special requirements on your registration form, plus inform a meeting committee co-chair at least one month prior to the meeting. The Omni William Penn hotel has ADA accessible rooms. Speak with the hotel representative to confirm availabilities.

Continuing Education Units (CEU)

The Northeastern/North-Central 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.

Quiet Break Room

Stop by the Oliver Room, at the end of the hall next to the Speaker Ready Room on the Conference Level, from 8 a.m. to 5 p.m., 19–21 March for a quiet place to review the program or relax. The room is furnished for your convenience.

Special Events and Activities

Saturday 18 March

Earth Science Teacher Weekend at the NENCGSA 17 Meeting. Sponsored by PAESTA (Pennsylvania Earth Science Teachers Association). Karen Rose Cercone (kcercone@iup.edu).

- 10 a.m.–1 p.m., **Field Discovery Workshop**, meet at Squaw Run Park. Streams as classrooms: impacts of mine discharge, stormwater runoff and hydraulic fracturing fluids.
- 2:30–4 p.m., **Keynote Address for K–12 Teachers**, Monongahela Room, 17th floor. Climate Research

for the Classroom, Dr. Richard Alley, Penn State University.

- 4–5 p.m., **Networking Reception for K–12 Teachers.** Sponsored by PAESTA (Pennsylvania Earth Science Teachers Association). Monongahela Room. A networking reception for in-service earth science teachers, pre-service teacher candidates, and university faculty that support K–12 education and all others interested in geoscience education. *This event benefits from the generous support of your meeting sponsors.*

Opening Reception, 6:30–8:30 p.m., Grand Ballroom (Omni William Penn Hotel, 17th floor). Enjoy light snacks and complimentary beverages, while connecting with your colleagues and browsing exhibits. *This event benefits from the generous support of your meeting sponsors.*

Sunday, 19 March,

Ask-a-Geologist Panel Discussion, noon–1p.m., Frick room. Karen Rose Cercone and Laura Guertin. Sponsored by PAESTA (Pennsylvania Earth Science Teachers Association).

SEPM Colloquium—Joint Global, Eastern & Great Lakes Sections of the Society for Sedimentary Geology, Reception and Keynote Address, 5:30–7 p.m., Monongahela Room (Omni William Penn Hotel, 17th floor), Elizabeth Hajek (SEPM Councilor for Research Activities and Assistant Professor, Department of Geosciences, Pennsylvania State University): “Understanding Internal Dynamics in Sedimentary Systems for Interpretation and Prediction.” Everyone is welcome. Refreshments will be served. *This event benefits from the generous support of the SEPM and your meeting sponsors.*

Map & Career Networking Blast, “Connecting Students with Opportunity”, 7:30–9 p.m., Monongahela Room (Omni William Penn Hotel, 17th floor). Two great events in one! Join representatives from the geologic community seeking people to fill all kinds of geologic positions. At this unstructured event, students and potential employers can mingle, display scholarship, and discuss their projects. Be prepared for short impromptu talks by a variety of professionals! Employment opportunities can be explored, and information can be informally exchanged. Poster space is available for everyone wishing to share their work. Free pizza and a cash bar will be available. *This event benefits from the generous support of your meeting sponsors.*

Monday, 20 March

Association of Women Geoscientists (AWG) Networking Breakfast, 6:30–8 a.m., Sky Room. This informal breakfast provides opportunities for students and professionals in academia, government, and industry to meet and to learn more about AWG. Both AWG members and non-members are welcome. Fee: Professionals, US\$25; Students, US\$15. *The reduced cost of student breakfasts is made possible through the generous support of the Association for Women Geoscientists Foundation and your meeting sponsors.*

Tectonics Group Networking Session, 5:30–7:30 p.m., Sky Room. Everyone with interest in plate tectonics is

encouraged to mingle amongst kindred minds. Cash bar and light snacks. *This event benefits from the generous support of your meeting sponsors.*

Conference Banquet. 7–9:30 p.m., Urban Room. Cost \$40 for chicken, pork, fish, or vegetarian entrees. Tickets available through registration. NCGSA Section, brief consideration of business items requiring a vote.

Conference Banquet Keynote Address. 8:15–9:30 p.m., Urban Room. All are invited. Michelle Wyman, executive director of the National Council for Science and the Environment (NCSE). “Science, Policy and the Environment in 2017: Disruptive Leadership”.

In a time of upheaval and unrest, the scientific community faces unprecedented challenges and opportunities across all disciplines. Rather than fortifying business as usual, Michelle will reflect on what’s possible and the imperative for disruptive leadership to maintain progress and increase the use of science by policymakers.

This event benefits from the generous support of your meeting sponsors.

Business Meetings

Sunday, 19 March

North-Central GSA Section Management Board Meeting. 7–8:30 a.m., Franklin Room, 17th Floor.

Monday, 20 March

Northeastern GSA Section Management Board Meeting. noon–1:30 p.m., Franklin Room, 17th Floor.

Great Lakes Section—SEPM Business Meeting, 5:45–6 p.m. SEPM booth, Grand Ballroom, 17th Floor.

North-Central GSA Section All Member Business Meeting. 8–8:15 p.m., Urban Room, 17th Floor.

Tuesday, 21 March

North-Central Section GSA Campus Reps and Technical Advisory Board Meeting. 7–8 a.m., Sky Room, 17th Floor.

Workshops

1. **3D Printing of Terrain Models.** 1–4 p.m., 18 March, Conference C. Chris Harding, Iowa State Univ., charding@iastate.edu.

Description: Hands-on instruction on how to create 3D terrain models suitable for 3D printing from public DEM raster data such as the USGS NED 10 m dataset. We will use a combination of several free software tools: QGIS, Blender, MeshLab, and MakerWare Desktop. Participants should bring a laptop with these tools already installed.

2. **Geologic Overview and Environmental Considerations in Marcellus and Utica-Point Pleasant Exploration & Production.** 10 a.m.–5 p.m., 18 March, Frick Room, Conference Level. *(lunch included)*. Jeffrey Dick, Youngstown State Univ.; Dan Billman, dan@billmangeologic.com.

Description: A short course designed for geologists in learning more about the geology of the Marcellus and Utica-Point Pleasant Shale plays, unconventional well design and

completion, produced water disposal and state regulations as they apply to well construction, drill pad design, and water resources.

3. **Ground Penetrating Radar for the Earth Sciences.** 10 a.m.–5 p.m., 18 March, Conference B. *(lunch included)*. Harry M. Jol, Univ. of Wisconsin, jolhm@uwec.edu.

Description: Our goal in this workshop is to demonstrate how ground penetrating radar (GPR) can aid in better understanding different geologic, geomorphic, and geoarchaeological environments. This hands-on session with in-class exercises will provide an overview of GPR theory, data collection procedures, processing flow, and interpretation based on radar stratigraphic concepts.

4. **An Introduction to QGIS and Geoscience Applications.** 10 a.m.–5 p.m., 18 March, Conference A. *(lunch included)*. John G. Van Hoesen, Green Mountain College, vanhoesenj@greenmtn.edu.

Description: The utility of leveraging a GIS to explore spatial relationships within geologic data is well-documented and has resulted in increased incorporation of geospatial exercises throughout the geoscience education. QGIS is an open-source alternative to the more common proprietary options and offers a powerful suite of tools for exploring and visualizing geologic data. This workshop will first give participants an introduction to the QGIS interface and then primarily focus on relevant tools available from the GDAL, GRASS, and SAGA libraries accessible through the QGIS Processing Toolbox. This will be a hands-on workshop providing participants an opportunity to explore an additional tool for supporting either teaching or research activities

Student and Early Career Professional Opportunities

Geoscience Career Workshops. Jennifer Nocerino, jnocerino@geosociety.org.

Part 1: **Career Planning and Informational Interviewing.** Monday 20 March, 8–9 a.m., Conference B. Your job-hunting process should begin with career planning, not when you apply for jobs. This workshop will help you begin the process and will introduce you to informational interviewing. This section is highly recommended for sophomores and juniors. The earlier you start your career planning the better.

Part 2: **Geoscience Career Exploration.** Monday 20 March, 9–10 a.m., Conference B. What do geologists in various sectors earn? What do they do? What are the pros and cons of working in academia, government, and industry? Workshop presenters, and professionals in the field, will address these issues.

Part 3: **Cover Letters, Résumés, and CVs.** Tuesday 21 March, 9–10 a.m., Conference B. How do you prepare a cover letter? Does your résumé need a good edit? Whether you are currently on the job market or not, learn how to prepare the best résumé possible. You will review numerous résumés to help you learn the important dos and don’ts of the process.

Early Career Professional Focus Group. Tahlia Bear, Diversity and Career Officer, GSA. Monday, 20 March, 10–11 a.m., Conference B. Have you graduated in the last five years and are either a working professional or still looking for a job? GSA would like to support you in pursuing your professional goals. During this 45-minute session, you'll be asked for your input regarding potential programming and activities that GSA could offer to help you reach your professional goals.

Roy J. Shlemon Mentor Program in Applied Geoscience. *Cosponsored by the GSA Foundation.* Monday, 20 March, noon to 1:30 p.m., Sky Room. Jennifer Nocerino, jnocerino@geosociety.org. The Shlemon Mentor Program is designed to extend the mentoring reach of individual professionals from applied geology to students and early career professionals attending GSA section meetings. Over free lunches, attendees discuss real-life issues including professional opportunities and challenges that await students after graduation. Every student and early career professional will receive a free ticket to attend the Shlemon Mentor Luncheon in their registration packet, but space is limited; first come, first served.

John Mann Mentors in Applied Hydrogeology Program. *Cosponsored by the GSA Foundation.* Tuesday, 21 March, noon to 1:30 p.m., Sky Room. Jennifer Nocerino, jnocerino@geosociety.org. The Mann Mentors Program presents mentoring opportunities for undergraduate and graduate students as well as recent graduates with a declared interest in applied hydrogeology as a career to interact and network with practicing hydrogeology professionals. This relaxed event features a free lunch for attendees. Every student and early career professional will receive a free ticket to attend the Mann Mentor Luncheon in their registration packet, but space is limited; first come, first served.

Student Volunteers. Students previously accepted as meeting volunteers must check in at the Bedford Room on the 17th floor. Please contact Dan Harris (NE) harris_d@calu.edu or Don Stierman (NC) donald.stierman@utoledo.edu for more information.

Exhibits

Exhibits are located in the Grand Ballroom on the 17th floor, and will be open:

Saturday, 18 March, 6:30–8:30 p.m. (Welcoming Reception)

Sunday, 19 March 9 a.m.–5 p.m.

Monday, 20 March 9 a.m.–5 p.m.

Tuesday, 21 March 9 a.m.–noon.

Exhibitors

(as of mid-January)

2018 North-Central Section Meeting—Ames, Iowa

2018 Northeastern Section Meeting—Burlington, Vermont

Armfield, Inc.

ASBOG

Boston College

Field Conference of Pennsylvania Geologists

Gems and Crystals Unlimited
Geological Society of America Bookstore
Geological Society of America Foundation
LacCore/CSDCO & GSA Limnology Division
Natural Earth Craft
Ohio Geological Survey
PAESTA – PA Earth Science Teachers Association
Penn Drilling, Inc.
Pennsylvania Council of Professional Geologists
Pittsburgh Geological Society
Sensors and Software, Inc.
SEPM – Society of Economic Paleontologists and Mineralogists
Springer Verlag, Inc.
The Olde Geologist
University of Pennsylvania, MSc in Applied Geosciences
University of South Florida Interactive Demonstration

Academic Tables

Iowa State University
Temple University
University of Toledo

Technical Program

Oral Sessions

Oral sessions are located on three floors of the hotel—Mezzanine, Conference Level, and the 17th Floor. The first two are adjacent and easily accessed by stairs, whereas the 17th Floor requires elevator use. Presentations are in the Lawrence Welk room on the Mezzanine level. Just above it on the Conference Level, presentations are in Frick, Conference A rooms. On the 17th Floor, presentations are located in the Allegheny and the Monongahela rooms. Registration, exhibits, posters, and the banquet are also on the 17th Floor. The Speaker Ready Room is located in the Phipps Room, on the Conference Level. Receptions and workshops are scattered amongst the Conference Level and 17th floor. Signage and meeting staff are available to assist you in orienting yourself for quick access to all events.

Oral sessions have 20 minutes per presentation (17 minutes presentation; 3 minutes questions and discussions). Presentations must be prepared using PowerPoint or PDF format. One laptop computer with Windows 7 (no Macs available) with PowerPoint 2010, one LCD projector and one screen is provided for all oral sessions. In addition, each room is equipped with a lectern, PowerPoint advancer, laser pointer, and a speaker timer. Speakers may not use their own laptops for presentation.

The Speaker Ready Room (Phipps Room, Conference Level)

All oral session presenters must visit the Speaker Ready Room before their scheduled presentation to ensure their PowerPoint or PDF file is properly configured and operating and to load it onto the meeting server. Failure to do so may result in presentations being omitted from session sequences. The Speaker Ready Room is open for program checking and speaker assistance as follows:

Saturday, 18 March 4:30–8 p.m.
 Sunday, 19 March 7 a.m.–5:30 p.m.
 Monday, 20 March 7 a.m.–5:30 p.m.
 Tuesday, 21 March 7:30 a.m.–noon.

Each speaker must bring his or her PowerPoint or PDF on a USB compatible flash drive (a.k.a. thumb drive or memory stick) to the Speaker Ready Room for checking and uploading to their session's folder. The deadlines below are suggested to make sure that your presentation gets to the laptop in the meeting room for your session on time.

For presentations on:	Upload no later than:
Sunday, 19 March AM	7 p.m., Saturday, 18 March
Sunday, 19 March PM	10 a.m. Sunday, 19 March
Monday, 20 March AM	5:30 p.m., Sunday, 19 March
Monday, 20 March PM	10 a.m., Monday, 20 March
Tuesday, 19 March AM	5:30 p.m., Monday, 20 March
Tuesday, 19 March PM	10 a.m., Tuesday, 21 March

Session Chair and Oral Session Student Volunteer Orientations, 7:30 a.m., Conference B. Each session chair and student volunteer staffing an oral session is requested to attend a 15 minute "Oral Session Orientation" on the morning of their technical session. This meeting will include a review of session time management, AV procedures, and other information affecting the conduct of the day's sessions.

Session chairs are asked to strictly adhere to the technical program and to limit speakers to their allotted time (20 minutes total including questions). If a speaker does not appear for an assigned time slot, session chairs should call for a break or discussion period and begin the following presentation at its scheduled time. Session chairs should meet with the assigned student volunteer in the meeting room prior to the start of the session. Volunteers are there to help the sessions run smoothly and to contact designated audiovisual and information technology personnel in the event of technical problems.

Poster Sessions

All poster sessions are in the Grand Ballroom and the Urban Room. Please check the program for specific times and topics. Poster presenters have one 4'x8' horizontal (landscape) poster display surface. Numbers on these display surfaces correspond to poster booth numbers listed in the Program. Poster presenters should bring pushpins with which to mount their posters. (Some pushpins will also be available in the poster area). Boards are not designed to accept Velcro mounts. Morning posters can be mounted starting at 7:45 a.m. and removed by 12:30 p.m., while afternoon posters can be displayed at 1 p.m. and removed at 5:30 p.m. Authors are to be present between 9:30 and 11:30 a.m. for morning sessions and between 2:30 and 4:30 p.m. for afternoon sessions.

Field Trips

All field trips will depart from the hotel entrance on William Penn Place. Check-in is the front lobby of the

William Penn Hotel. Field trip chairs are Joe Hannibal (+1 216-231-4600 ext 3233, JHannibal@cmnh.org) and Kyle Fredrick (+1 716-572-3818, fredrick@calu.edu).

Pre-Meeting Field Trips

1. Abandoned Mine Drainage in the Pittsburgh Area: Occurrence and Passive Treatment. 8:30 a.m., Saturday, 18 March. Bob Hedin, Hedin Environmental, bhedin@hedinenv.com.

2. Induced Seismicity and Other Environmental Impacts of Shale Gas Development in Northeast Ohio. 8 a.m., Saturday, 18 March. Raymond Beiersdorfer, Youngstown State Univ., rebeiersdorfer@ysu.edu; John Williams, Buckeye Forest Council; Susan Beiersdorfer, Youngstown State Univ.

3. New Insights and Lessons Learned from the Johnstown (Pennsylvania) Flood of 1889. 8:30 a.m., Saturday, 18 March. Carrie Davis Todd, Baldwin-Wallace Univ., cdavisto@bw.edu; Steve Lindberg.

4. Pleistocene Features of the Laurel Highlands and Upper Youghiogheny Basin. 7:30 a.m., Saturday, 18 March. Rebecca Kavage Adams, Maryland Geological Survey, rebecca.adams@maryland.gov; David K. Brezinski.

5. The Old, the Crude, and the Muddy: Oil History in Western Pennsylvania. 7 a.m., Saturday, 18 March. Kristin M. Carter, Pennsylvania Geological Survey, krcarter@pa.gov; Kathy J. Flaherty.

During Meeting Field Trip

6. From Fort Pitt to Coal Hill: Geological, Archaeological, and Historical Aspects of Downtown Pittsburgh and Mount Washington. 1–5:30 p.m., Monday, 20 March. Joe Hannibal, Cleveland Museum of Natural History, jhannibal@cmnh.org; Albert Kollar, Carnegie Museum of Natural History; Ann Holstein, Case Western Reserve University.

Theme Sessions

T1. New Strategies and Best Practices for Teaching Climate and Energy

T3. Back to the Basics: Focusing on Fieldwork in Today's Geological Studies

T4. Karst Studies from the Appalachians to the Mid-Continent

T6. FOSSIL Collaborations: Enhancing Paleontology through Professional and Amateur Partnerships

T7. Fluvial Geomorphology of Post-Glacial Rivers

T8. The Geomorphology and Hydrogeology of the Appalachian Plateau (Posters)

T9. Remote Sensing Applications in Geology

T11. Improving Undergraduate STEM Education and Advancing Diversity in the Geosciences—How Are We Doing?

T12. Undergraduate Research Session (Posters)

T13. Changing Agricultural Landscapes and Impacts on Groundwater Quality and Quantity

T14. There's an App for That: Using Technology Developments, Innovations, Resources, and Applications to Enhance Undergraduate Geoscience Education

T15. Conodonts Solving Stratigraphic Problems

T16. Research Associated with The Marcellus Shale Energy and Environment Laboratory (MSEEL)

T17. Fundamental Measurements of Shale Properties and Identifying Data Gaps

T19. Geology of Marcellus-Utica Shale and How it Relates to Oil and Gas Production

T20. Environmental and Engineering Problems and Solutions Associated with the Marcellus-Utica Shale Play

T21. Passive Seismic Monitoring of Brittle and Non-Brittle Deformation during the Stimulation of Unconventional Shale Reservoirs

T24. Urban Biogeochemistry and Geochemistry

T25. Biogeochemistry & Geobiology of Anoxic/Euxinic Systems

T26. Biogeochemical Cycling and Biomineralization: Observations at the Microscale

T27. Precambrian Assembly of a Continent from the Northeast to the Mid-Continent to the Southwest: Modern Approaches to Study Ancient Crust

T28. Recent Advances in Volcano Observation and Monitoring (Posters)

T29. Paleolimnological Studies of Climate Variability and Environmental Response

T30. Application of Organic Geochemical Proxies to (Paleo)Environmental Studies

T31. Progress Toward Understanding Present and Past River Responses to Climate in Eastern and Midwestern North America

T33. Shoreline Behavior, Paralic Architecture, and Lake-Level Change in the Great Lakes

T39. Regional Geophysical Studies in the Central and Eastern U.S. (Posters)

T40. Applied Geology, Environmental, Engineering, Hydrogeology, and Applied Geophysics

T41. Geoarchaeology

T42. Surficial Geologic Mapping

T43. Women in Geology: Encouraging the Future

T45. Sources, Transport and Fate of Trace Elements and Organics in the Environment

T46. Ground Penetrating Radar Applications in the Earth Sciences and Archaeology

T47. Omnipresent Ichnology: Traces of Life From Mountain Slopes to the Deep Sea

T48. NETectonics: New Advances in Structural Geology and Tectonics in the Appalachians

T49. NETectonics: New Advances in Petrology, Geochemistry and Geochronology in the Appalachians

Discipline Sessions

Coastal Processes (Posters)

Economic and Energy Geology (Posters)

Geomorphology (Posters)

Geosciences Education (Posters)

History of Geology & Anthropocene

Hydrogeology (Posters)

Paleoclimate & Paleooceanography (Posters)

Paleontology (Posters)

Paleontology and Stratigraphy

Petrology (Posters)

Petrology, Mineralogy and Economic Geology

Planetary Geology (Posters)

Quaternary and Environmental

Stratigraphy (Posters)

Structural Geology (Posters)

The Future of Pre-LGM Chronostratigraphy for the Pleistocene: The Glacial and Interglacial Record

Emergencies

For all emergencies dial 911.

CODE OF CONDUCT AT GSA EVENTS

Approved by GSA Council on 25 September 2016

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

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

Expected Behavior

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

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

Procedures to be followed in an emergency situation:

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

Unacceptable Behavior includes but is not limited to:

- Harassment, intimidation, or discrimination.

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

Examples of unacceptable behavior include but are not limited to:

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

Consequences of Unacceptable Behavior

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

Reporting Unacceptable Behavior

If you are the subject of unacceptable behavior or have witnessed any such behavior, please immediately notify a GSA staff member on-site (see page 3 for contact information) or GSA member with a designated leadership position (i.e. GSA President, GSA Councilor, GSA Section Officer, GSA field trip leader).

Anyone experiencing or witnessing behavior that constitutes an immediate or serious threat to public safety, or a criminal act is expected to contact 911. Those witnessing a potential criminal act should also take actions necessary to maintain their own personal safety.

Schedule of Events

EVENT	TIME	LOCATION
SATURDAY, 18 MARCH		
FT5. The Old, the Crude, and the Muddy: Oil History in Western Pennsylvania (Field Trip)	7 a.m.–5:30 p.m.	Omni William Penn Hotel, Hotel Entrance
FT4. Pleistocene Features of the Laurel Highlands and Upper Youghiogheny Basin (Field Trip)	7:30 a.m.–8 p.m.	Omni William Penn Hotel, Hotel Entrance
FT2. Induced Seismicity and Other Environmental Impacts of Shale Gas Development in Northeast Ohio (Field Trip)	8 a.m.–6 p.m.	Omni William Penn Hotel, Hotel Entrance
FT1. Abandoned Mine Drainage in the Pittsburgh Area: Occurrence and Passive Treatment (Field Trip)	8:30 a.m.–4 p.m.	Omni William Penn Hotel, Hotel Entrance
FT3. New Insights and Lessons Learned from the Johnstown (Pennsylvania) Flood of 1889 (Field Trip)	8:30 a.m.–5:30 p.m.	Omni William Penn Hotel, Hotel Entrance
Earth Science Teacher Weekend: Field Discovery Workshop	10 a.m.–1 p.m.	Squaw Run Park, 325 Fox Chapel Rd
WS2. Geologic Overview and Environmental Considerations in Marcellus and Utica-Point Pleasant Exploration & Production (Workshop)	10 a.m.–5 p.m.	Frick, Conference Level
WS3. Ground Penetrating Radar for the Earth Sciences (Workshop)	10 a.m.–5 p.m.	Conference Center B, Conference Level
WS4. An Introduction to QGIS and Geoscience Applications (Workshop)	10 a.m.–5 p.m.	Conference Center A, Conference Level
WS1. 3D Printing of Terrain Models (Workshop)	1–4 p.m.	Conference Center C, Conference Level
Registration	3–8 p.m.	17th Floor Coat Check/Ballroom Corridor
Earth Science Teacher Weekend: Keynote Address for K–12 Teachers	2:30–4 p.m.	Monongahela, 17th Floor
Earth Science Teacher Weekend: Networking Reception for K–12 Teachers	4–5 p.m.	Monongahela, 17th Floor
Speaker Ready Room	4:30–8 p.m.	Phipps, Conference Level
Exhibits Open	6:30–8:30 p.m.	Grand Ballroom, 17th Floor
Opening Reception	6:30–8:30 p.m.	Grand Ballroom, 17th Floor
SUNDAY, 19 MARCH		
North-Central GSA Section Management Board Meeting	7–8 a.m.	Franklin Room, 17th Floor
Registration	7 a.m.–4 p.m.	17th Floor Coat Check/Ballroom Corridor
Speaker Ready Room	7 a.m.–5:30 p.m.	Phipps, Conference Level
Session Chair and Oral Session Student Volunteer Orientations	7:30–7:45 a.m.	Conference Center B, Conference Level

EVENT	TIME	LOCATION
Morning Oral Technical Sessions		
History of Geology & Anthropocene	8–10 a.m.	Allegheny, 17th Floor
T1. New Strategies and Best Practices for Teaching Climate and Energy	8 a.m.–noon	Frick, Conference Level
T6. FOSSIL Collaborations I: Enhancing Paleontology through Professional and Amateur Partnerships	8 a.m.–noon	Conference Center A, Conference Level
T15. Conodonts Solving Stratigraphic Problems	8 a.m.–noon	Lawrence Welk Room, Mezzanine Level
T20. Environmental and Engineering Problems and Solutions Associated with the Marcellus-Utica Shale Play	8 a.m.–noon	Monongahela, 17th Floor
Quaternary and Environmental	10:15 a.m.–noon	Allegheny, 17th Floor
Morning Poster Sessions		
Petrology (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
T7. Fluvial Geomorphology of Post-Glacial Rivers (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
T8. The Geomorphology and Hydrogeology of the Appalachian Plateau (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
T27. Precambrian Assembly of a Continent from the Northeast to the Mid-Continent to the Southwest: Modern Approaches to Study Ancient Crust (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
Structural Geology (Posters)	8 a.m.–noon	Urban, 17th Floor
T28. Recent Advances in Volcano Observation and Monitoring (Posters)	8 a.m.–noon	Urban, 17th Floor
T48. NETectonics: New Advances in Structural Geology and Tectonics in the Appalachians (Posters)	8 a.m.–noon	Urban, 17th Floor
T49. NETectonics: New Advances in Petrology, Geochemistry and Geochronology in the Appalachians (Posters)	8 a.m.–noon	Urban, 17th Floor
Exhibits Open	9 a.m.–5 p.m.	Grand Ballroom, 17th Floor
Ask-a-Geologist Panel Discussion	noon–1 p.m.	Frick, Conference Level
Afternoon Oral Technical Sessions		
T16. Research Associated with The Marcellus Shale Energy and Environment Laboratory (MSEEL)	1:30–3:30 p.m.	Monongahela, 17th Floor
T31. Progress Toward Understanding Present and Past River Responses to Climate in Eastern and Midwestern North America	1:30–3:30 p.m.	Allegheny, 17th Floor
T6. FOSSIL Collaborations II: Enhancing Paleontology through Professional and Amateur Partnerships	1:30–5:30 p.m.	Conference Center A, Conference Level
T14. There's an App for That: Using Technology Developments, Innovations, Resources, and Applications to Enhance Undergraduate Geoscience Education	1:30–5:30 p.m.	Frick, Conference Level
T27. Precambrian Assembly of a Continent from the Northeast to the Mid-Continent to the Southwest: Modern Approaches to Study Ancient Crust	1:30–5:30 p.m.	Lawrence Welk Room, Mezzanine Level
T19. Geology of Marcellus-Utica Shale and How it Relates to Oil and Gas Production	3:45–5:30 p.m.	Monongahela, 17th Floor
T7. Fluvial Geomorphology of Post-Glacial Rivers	3:45–5:45 p.m.	Allegheny, 17th Floor

EVENT	TIME	LOCATION
Afternoon Poster Sessions		
Geosciences Education (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T3. Back to the Basics: Focusing on Fieldwork in Today's Geological Studies (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T6. FOSSIL Collaborations : Enhancing Paleontology through Professional and Amateur Partnerships (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T40. Applied Geology, Environmental, Engineering, Hydrogeology, and Applied Geophysics (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T12. Undergraduate Research Session I (Posters)	1:30–5:30 p.m.	Urban, 17th Floor
SEPM Colloquium—Joint Global, Eastern & Great Lakes Sections of the Society for Sedimentary Geology, Reception and Keynote Address	5:30–7 p.m.	Monongahela, 17th Floor
Map & Career Networking Blast	7:30–9 p.m.	Monongahela, 17th Floor

MONDAY, 20 MARCH

Association of Women Geoscientists (AWG) Networking Breakfast	6:30–8 a.m.	Sky Room, 17th Floor
Registration	7 a.m.–4 p.m.	17th Floor Coat Check/Ballroom Corridor
Speaker Ready Room	7 a.m.–5:30 p.m.	Phipps, Conference Level
Session Chair and Oral Session Student Volunteer Orientations	7:30–7:45 a.m.	Conference Center B, Conference Level
Geoscience Career Workshop Part 1: Career Planning and Informational Interviewing (Workshop)	8–9 a.m.	Conference Center B, Conference Level

Morning Oral Technical Sessions

T3. Back to the Basics: Focusing on Fieldwork in Today's Geological Studies	8–9:50 a.m.	Allegheny, 17th Floor
T17. Fundamental Measurements of Shale Properties and Identifying Data Gaps	8–10 a.m.	Monongahela, 17th Floor
T40. Applied Geology, Environmental, Engineering, Hydrogeology, and Applied Geophysics	8 a.m.–noon	Frick, Conference Level
T49. NETectonics: New Advances in Petrology, Geochemistry and Geochronology in the Appalachians	8 a.m.–noon	Lawrence Welk Room, Mezzanine Level
The Future of Pre-LGM Chronostratigraphy for the Pleistocene: The Glacial and Interglacial Record	8 a.m.–noon	Conference Center A, Conference Level
T43. Women in Geology: Encouraging the Future	10 a.m.–noon	Allegheny, 17th Floor
T21. Passive Seismic Monitoring of Brittle and Non-Brittle Deformation during the Stimulation of Unconventional Shale Reservoirs	10:15 a.m.–noon	Monongahela, 17th Floor

Morning Poster Sessions

Paleoclimate & Paleoceanography (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
Planetary Geology (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
Stratigraphy (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor

EVENT	TIME	LOCATION
T47. Omnipresent Ichnology: Traces of Life From Mountain Slopes to the Deep Sea (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
T12. Undergraduate Research Session II (Posters)	8 a.m.–noon	Urban, 17th Floor
Geoscience Career Workshop Part 2: Geoscience Career Exploration (Workshop)	9–10 a.m.	Conference Center B, Conference Level
Exhibits Open	9 a.m.–5 p.m.	Grand Ballroom, 17th Floor
Early Career Professional Focus Group	10–11 a.m.	Conference Center B, Conference Level
Northeastern GSA Section Management Board Meeting	noon–1:30 p.m.	Franklin Room, 17th Floor
Roy J. Shlemon Mentor Program in Applied Geoscience	noon–1:30 p.m.	Sky Room, 17th Floor
FT6. From Fort Pitt to Coal Hill: Geological, Archaeological, and Historical Aspects of Downtown Pittsburgh and Mount Washington (Field Trip)	12:45–5:30 p.m.	Omni William Penn Hotel, Hotel Entrance
Afternoon Oral Technical Sessions		
T11. Improving Undergraduate STEM Education and Advancing Diversity in the Geosciences—How Are We Doing?	1:30–5:30 p.m.	Allegheny, 17th Floor
T26. Biogeochemical Cycling and Biomineralization: Observations at the Microscale	1:30–3:30 p.m.	Frick, Conference Level
T45. Sources, Transport and Fate of Trace Elements and Organics in the Environment	1:30–5:30 p.m.	Monongahela, 17th Floor
T46. Ground Penetrating Radar Applications in the Earth Sciences and Archaeology	1:30–3:10 p.m.	Conference Center A, Conference Level
T48. NETectonics: New Advances in Structural Geology and Tectonics in the Appalachians	1:30–5:30 p.m.	Lawrence Welk Room, Mezzanine Level
T41. Geoarchaeology	3:25–5:30 p.m.	Conference Center A, Conference Level
T42. Surficial Geologic Mapping	3:45–5:30 p.m.	Frick, Conference Level
Afternoon Poster Sessions		
Paleontology (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T20. Environmental and Engineering Problems and Solutions Associated with the Marcellus-Utica Shale Play (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T24. Urban Biogeochemistry and Geochemistry (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
Tectonics Group Networking Session	5:30–7:30 p.m.	Sky Room, 17th Floor
Great Lakes Section—SEPM Business Meeting	5:45–6 p.m.	SEPM Exhibit Booth, Grand Ballroom, 17th Floor
Conference Banquet	7–9:30 p.m.	Urban, 17th Floor
North-Central GSA Section All Member Business Meeting	8–8:15 p.m.	Urban, 17th Floor
Conference Banquet Keynote Address	8:15–9:30 p.m.	Urban, 17th Floor

EVENT**TIME****LOCATION****TUESDAY, 21 MARCH**

North-Central Section GSA Campus Reps and Technical Advisory Board Meeting	7–8 a.m.	Sky Room, 17th Floor
Registration	7 a.m.–1:30 p.m.	17th Floor Coat Check/Ballroom Corridor
Session Chair and Oral Session Student Volunteer Orientations	7:30–7:45 a.m.	Conference Center B, Conference Level
Speaker Ready Room	7:30 a.m.–noon	Phipps, Conference Level

Morning Oral Technical Sessions

T25. Biogeochemistry & Geobiology of Anoxic/Euxinic Systems	8–9:20 a.m.	Frick, Conference Level
T13. Changing Agricultural Landscapes and Impacts on Groundwater Quality and Quantity	8–10 a.m.	Allegheny, 17th Floor
Paleontology and Stratigraphy I	8 a.m.–noon	Monongahela, 17th Floor
Petrology, Mineralogy and Economic Geology	8 a.m.–noon	Lawrence Welk Room, Mezzanine Level
T29. Paleolimnological Studies of Climate Variability and Environmental Response	8 a.m.–noon	Conference Center A, Conference Level
T30. Application of Organic Geochemical Proxies to (Paleo)Environmental Studies	9:35 a.m.–noon	Frick, Conference Level
T9. Remote Sensing Applications in Geology	10:15 a.m.–noon	Allegheny, 17th Floor

Morning Poster Sessions

Geomorphology (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
Hydrogeology (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
T33. Shoreline Behavior, Paralic Architecture, and Lake- Level Change in the Great Lakes (Posters)	8 a.m.–noon	Grand Ballroom, 17th Floor
T13. Changing Agricultural Landscapes and Impacts on Groundwater Quality and Quantity (Posters)	8 a.m.–noon	Urban, 17th Floor
T39. Regional Geophysical Studies in the Central and Eastern U.S. (Posters)	8 a.m.–noon	Urban, 17th Floor
T42. Surficial Geologic Mapping (Posters)	8 a.m.–noon	Urban, 17th Floor
T45. Sources, Transport and Fate of Trace Elements and Organics in the Environment (Posters)	8 a.m.–noon	Urban, 17th Floor

Geoscience Career Workshop Part 3: Cover Letters, Résumés, and CVs (Workshop)	9–10 a.m.	Conference Center B, Conference Level
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Exhibits Open	9:00 a.m.–noon	Grand Ballroom, 17th Floor
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John Mann Mentors in Applied Hydrogeology Program	noon–1:30 p.m.	Sky Room, 17th Floor
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Afternoon Oral Technical Sessions

Paleontology and Stratigraphy II	1:30–5:30 p.m.	Monongahela, 17th Floor
T4. Karst Studies from the Appalachians to the Mid- Continent	1:30–3:30 p.m.	Allegheny, 17th Floor


EVENT	TIME	LOCATION
T24. Urban Biogeochemistry and Geochemistry	1:30–5:30 p.m.	Frick, Conference Level
T33. Shoreline Behavior, Paralic Architecture, and Lake- Level Change in the Great Lakes	1:30–5:30 p.m.	Conference Center A, Conference Level
T47. Omnipresent Ichnology: Traces of Life From Mountain Slopes to the Deep Sea	1:30–5:30 p.m.	Lawrence Welk Room, Mezzanine Level

Afternoon Poster Sessions

T9. Remote Sensing Applications in Geology (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
T29. Paleolimnological Studies of Climate Variability and Environmental Response (Posters)	1:30–5:30 p.m.	Grand Ballroom, 17th Floor
Coastal Processes (Posters)	1:30–5:30 p.m.	Urban, 17th Floor
Economic and Energy Geology (Posters)	1:30–5:30 p.m.	Urban, 17th Floor
T25. Biogeochemistry & Geobiology of Anoxic/Euxinic Systems (Posters)	1:30–5:30 p.m.	Urban, 17th Floor
T26. Biogeochemical Cycling and Biomineralization: Observations at the Microscale (Posters)	1:30–5:30 p.m.	Urban, 17th Floor
T41. Geoarchaeology (Posters)	1:30–5:30 p.m.	Urban, 17th Floor
T46. Ground Penetrating Radar Applications in the Earth Sciences and Archaeology (Posters)	1:30–5:30 p.m.	Urban, 17th Floor


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Technical Sessions

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



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

NOTICE

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



NOTE INDEX SYSTEM

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

*denotes speaker

SUNDAY, 19 MARCH 2017

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 1

History of Geology & Anthropocene

8:00 AM, Omni William Penn Hotel Allegheny, 17th Floor

Conevery Bolton Valencius, Presiding

- 1-1 8:00 AM Hannibal, Joseph T.*: **THE NEWBERRY-WHITTLESEY CONTROVERSY: A DECADES-LONG BITTER FEUD WITH CHARGES OF ABSENTEEISM, PLAGIARISM, AND NOT BEING A PALEONTOLOGIST, AND A DISPUTE OVER THE AGE AND CORRELATION OF THE CLEVELAND SHALE**
- 1-2 8:20 AM Valencius, Conevery Bolton*: **EARTHQUAKES AND HISTORY: HOW ARGUMENTS OVER HISTORY PLAY OUT IN ARGUMENTS OVER SHALE**
- 1-3 8:40 AM Frehner, Brian*: **FRACKING FILMS**
- 1-4 9:00 AM Edwards, Lucy E.*: **A STRATIGRAPHER'S PERSPECTIVES ON THE ANTHROPOCENE**
- 1-5 9:20 AM Head, Martin J.*; Zalasiewicz, Jan A.; Waters, Colin N.: **THE GEOLOGIC ANTHROPOCENE: ANALYSIS AND CURRENT STATUS**
- 9:40 AM **DISCUSSION**

SESSION NO. 2

T1. New Strategies and Best Practices for Teaching Climate and Energy (GSA Geoscience Education Division)

8:00 AM, Omni William Penn Hotel Frick, Conference Level

Karen Cercone and Ken Coles, Presiding

- 2-1 8:00 AM Duggan-Haas, Don*: **TEACHING CLIMATE CHANGE, ENERGY, AND CRITICAL ZONE SCIENCE: DEVELOPING OPTIMALLY DISTINCT APPROACHES TO SCIENCE EDUCATION REFORM**

- 2-2 8:20 AM Whittinghill, Kyle*: **INDEPENDENT ENVIRONMENTAL MODELING RESEARCH IN THE UNDERGRADUATE CLASSROOM**
- 2-3 8:40 AM Coles, Kenneth*; Hovan, Steven A.: **FINDING THE SIGNAL IN CLIMATE DATA**
- 2-4 9:00 AM Vice, Daniel H.*; Aurand, Harold W.: **ENERGY CHOICE IN AN ERA OF GLOBAL WARMING: HOW ANTHRACITE COGENERATION PLANTS SERVE AS A VALUABLE ACADEMIC EXERCISE**
- 9:20 AM **BREAK**
- 2-5 9:40 AM Orlosky, Christie*: **THE HARNESSSED ATOM - MIDDLE SCHOOL STEM CURRICULUM**
- 2-6 10:00 AM Schoeffler, Anne Farley*: **BRINGING POLAR RESEARCH INTO THE CLASSROOM**
- 2-7 10:20 AM McCarthy, Kelly*: **CONNECTIONS TO THE FIELD: USING NASA'S OPERATION ICEBRIDGE DATA IN THE CLASSROOM TO INVESTIGATE CLIMATE CHANGE**
- 2-8 10:40 AM Guertin, Laura A.*; Aitala, Eric: **MAKING CLIMATE AND ENERGY EDUCATIONAL RESOURCES ACCESSIBLE THROUGH THE PENNSYLVANIA EARTH SCIENCE TEACHERS ASSOCIATION (PAESTA)**
- 11:00 AM **PANEL DISCUSSION: ASK AN EXPERT**

SESSION NO. 3

T6. FOSSIL Collaborations I: Enhancing Paleontology through Professional and Amateur Partnerships

8:00 AM, Omni William Penn Hotel Conference Center A, Conference Level

Eleanor E. Gardner, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 3-1 8:10 AM Hunda, Brenda R.*: **THE CINCINNATI SCHOOL OF PALEONTOLOGY: HOW AMATEUR PALEONTOLOGISTS CONTINUE THE TRADITION OF THE GENTLEMAN NATURALIST**

SESSION NO. 3

- 3-2** 8:30 AM Kallmeyer, Jack*: **THE IMPORTANCE OF PROFESSIONAL INVOLVEMENT IN AVOCATIONAL ORGANIZATIONS – CASE HISTORY, THE DRY DREDGERS OF CINCINNATI, OHIO**
- 3-3** 8:50 AM Thomka, James R.*: **THE CRITICAL ROLES OF AVOCATIONAL PALEONTOLOGISTS IN ACTIVE QUARRY SETTINGS: AN EXAMPLE FROM THE NAPOLEON QUARRY OF SOUTHEASTERN INDIANA**
- 3-4** 9:10 AM Hartshorn, Kyle R.*: **DIGITAL DRY DREDGING: REASSESSING *EOBALANUS*, RUEDEMANN'S "ANCESTRAL ACORN BARNACLE"**
- 9:30 AM **BREAK**
- 3-5** 9:45 AM Schein, Jason*; Shankle, William J.: **THE DELAWARE VALLEY PALEONTOLOGICAL SOCIETY: A HISTORY OF ADVANCING PALEONTOLOGY FOR EVERYONE**
- 3-6** 10:05 AM Callahan, Wayne R.*; Shankle, William J.; Mehling, Carl: **THE MONMOUTH AMATEUR PALEONTOLOGISTS' SOCIETY: 46 YEARS OF COLLABORATION BETWEEN AVOCATIONAL AND PROFESSIONAL PALEONTOLOGISTS**
- 3-7** 10:25 AM Handley, John C.*: **DATA SCIENCE IN THE SERVICE OF PALEONTOLOGY**
- 3-8** 10:45 AM McCall, Linda J.*: **PRPA REPERCUSSIONS & IMPLICATIONS FOR REAL WORLD STUDY BY CITIZEN SCIENTIST AVOCATIONAL PALEONTOLOGISTS**
- 11:05 AM **DISCUSSION**

SESSION NO. 4

T15. Conodonts Solving Stratigraphic Problems

8:00 AM, Omni William Penn Hotel Lawrence Welk Room, Mezzanine Level

Christopher Waid, D. Jeffrey Over and John E. Repetski, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 4-1** 8:05 AM Repetski, John E.*; Taylor, John F.; Kulenguski, Joseph T.; Strauss, Justin V.: **NEW CONODONT AND TRILOBITE OCCURRENCES FROM THE CAMBRIAN OF EASTERN ALASKA**
- 4-2** 8:25 AM Over, D. Jeffrey*; Wallace, Jenelle: **CONODONTS AND THE FRASNIAN-FAMENNIAN BOUNDARY (UPPER DEVONIAN) IN THE NEW ALBANY SHALE, ILLINOIS BASIN, WESTERN KENTUCKY**
- 4-3** 8:45 AM McGinn, Ezekiel*; Over, D. Jeffrey; Kosloski, Mary Elizabeth; Day, Jed: **HIGH FRASNIAN CONODONTS FROM THE CANASERAGA SANDSTONE, JAVA GROUP, UPPER DEVONIAN, WESTERN NEW YORK**
- 4-4** 9:05 AM Goldman, Daniel*; Sadler, Peter M.; Leslie, Stephen A.; Cooper, Roger A.: **THE GEOLOGIC TIME SCALE 2020: INTEGRATING THE STRATIGRAPHIC RANGE DATA FROM CONODONTS AND OTHER CARBONATE FACIES FOSSILS**
- 9:25 AM **DISCUSSION**
- 9:45 AM **BREAK**
- 4-5** 10:00 AM Zambito, James*; Day, Jed; McLaughlin, Patrick I.: **THE DEVONIAN SUCCESSION IN WISCONSIN: INSIGHTS FROM CONODONT BIOSTRATIGRAPHY AND CARBONATE CARBON ISOTOPE CHEMOSTRATIGRAPHY**
- 4-6** 10:20 AM Haines, Forest*: **CONODONT BIOSTRATIGRAPHY AND MARKER BED CYCLES OF THE BURLINGTON TO KEOKUK CARBONATE STRATOTYPE IN IOWA, ILLINOIS, AND MISSOURI**
- 4-7** 10:40 AM Barrick, James E.*; Saelens, Ashley; Treat, Christopher A.; Moore, Paul A.; Lucas, Spencer G.; Krainer, Karl: **CONODONT BIOSTRATIGRAPHY OF THE MIDDLE PENNSYLVANIAN (ATOKAN-DESMOINESIAN) SUCCESSION IN CENTRAL NEW MEXICO**
- 4-8** 11:00 AM Heckel, Philip H.*; Ames, Philip R.; Nelson, W. John; Barrick, James E.: **UPDATED CONODONT-BASED CORRELATIONS OF TRADEWATER (ATOKAN-DESMOINESIAN, MIDDLE**

PENNSYLVANIAN) MARINE CYCLOTHERMS IN THE ILLINOIS BASIN

11:20 AM **DISCUSSION**

11:40 AM **PANDER SOCIETY BUSINESS MEETING**

SESSION NO. 5

T20. Environmental and Engineering Problems and Solutions Associated with the Marcellus-Utica Shale Play (GSA Environmental and Engineering Geology Division)

8:00 AM, Omni William Penn Hotel Monongahela, 17th Floor

Wendell Barner, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 5-1** 8:05 AM Tieman, Zachary Garrison*; Stewart, Brian W.; Phan, Thai T.; Capo, Rosemary C.; Hakala, J. Alexandra; Lopano, Christina L.: **SOURCES OF BARIUM IN THE MARCELLUS SHALE AND ASSOCIATED PRODUCED WATERS**
- 5-2** 8:25 AM Dick, Jeffrey C.*: **ANALYSIS OF PRODUCED WATER FROM THE UTICA POINT PLEASANT SHALE**
- 5-3** 8:45 AM Baldassare, Fred*; McCaffrey, Mark; Harper, John A.: **A GEOCHEMICAL CONTEXT FOR STRAY GAS INVESTIGATIONS IN THE N. APPALACHIAN BASIN: IMPLICATIONS OF ANALYSES OF NATURAL GASES FROM NEOGENE-THROUGH-DEVONIAN-AGE STRATA**
- 5-4** 9:05 AM Bell, Matthew*; Nash, Rose T.; Khalequzzaman, Md.: **CHARACTERIZING SOURCES OF TURBIDITY IN STREAM SEDIMENTS IN THE MARCELLUS SHALE GAS-WELL DRILLING REGION IN CENTRAL PENNSYLVANIA**
- 9:25 AM **BREAK**
- 5-5** 9:40 AM Rudolchick, Molly Jo*: **QUANTIFYING METHANE EMISSIONS FROM ABANDONED LEGACY GAS WELLS IN INDIANA COUNTY, PENNSYLVANIA**
- 5-6** 10:00 AM Fatehi, Ali*; Quittmeyer, Richard: **IS THE RATE OF SEISMICITY IN EASTERN OHIO AND ENVIRONS AFFECTED BY WASTEWATER INJECTION RELATED TO SHALE GAS PRODUCTION?**
- 5-7** 10:20 AM Skoff, Dale*; Billman, Dan: **EVALUATING RISK OF INDUCED SEISMICITY IN PENNSYLVANIA FROM DISPOSAL WELL OPERATIONS**
- 5-8** 10:40 AM Horowitz, Franklin G.*; Ebinger, Cynthia J.: **EVALUATING THE REGIONAL SCALE POTENTIAL FOR (INDUCED?) SEISMICITY IN THE NORTHERN APPALACHIAN BASIN AND THE NORTHEASTERN US AND SOUTHEASTERN CANADA FROM POTENTIAL FIELDS, SEISMICITY, AND THE WORLD STRESS MAP**
- 5-9** 11:00 AM Washington, Paul A.*: **PREDICTING ORIENTATIONS OF INDUCED PERMEABILITY CREATED BY HYDRAULIC FRACTURING**

SESSION NO. 6

Quaternary and Environmental

10:15 AM, Omni William Penn Hotel Allegheny, 17th Floor,

James M. Martin-Hayden, Presiding

- 6-1** 10:15 AM Lavallee, K.D.*; Kineke, G.C.; Milligan, T.G.: **SEASONAL PATTERNS OF COHESIVE PARTICLE CHARACTERISTICS IN THE CONNECTICUT RIVER ESTUARY**
- 6-2** 10:35 AM White, Timothy S.*; Blackman, Taylor: **PERIGLACIAL LEGACY OF VERNAL POOLS IN THE RIDGE AND VALLEY PROVINCE OF CENTRAL PENNSYLVANIA**
- 6-3** 10:55 AM Lenna, Meagan*; Coch, Nicholas K.: **THE STRATIGRAPHIC RECORD OF THE HOLOCENE TRANSGRESSION IN WESTERN LONG ISLAND, NEW YORK**
- 6-4** 11:15 AM Dineen, Robert J.*; Hanson, Eric: **TWO LATE PLEISTOCENE FLOODS IN THE SCHENECTADY, NY, AREA AND THE DEMOTION OF THE DELMAR READVANCE**

- 6-5 11:35 AM Schaney, Mitzy*; Schaney, Christopher; Thompson, James A.: **EVIDENCE OF PAST CLIMATIC CHANGE AS RECORDED IN ORGANIC SOIL PROFILES IN THE CENTRAL APPALACHIAN MOUNTAINS**

MORNING POSTER TECHNICAL SESSIONS

SESSION NO. 7

Petrology (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- | | Booth # |
|-----|--|
| 7-1 | 1 Browning, Joseph*; Piccoli, Philip; Ash, Richard: ORIGIN OF TOURMALINE IN THE SETTERS FORMATION, MARYLAND: EVIDENCE FROM MAJOR AND TRACE ELEMENT, BORON ISOTOPE, AND RARE EARTH ELEMENT CHARACTERISTICS |
| 7-2 | 2 Cymes, Brittany A.*; Krekeler, Mark P.S.: PRELIMINARY EVALUATION OF THE MINERALOGICAL PROPERTIES OF CAVANSITE FOR INDUSTRIAL APPLICATIONS |
| 7-3 | 3 Clay, John Mitchell*; Gorrington, Matthew; Blacic, Tanya M.: PETROGENETIC ORIGIN OF MAFIC LAVAS AT NEWBERRY VOLCANO |
| 7-4 | 4 Segee-Wright, George*; Bailey, David G.: WHOLE-ROCK GEOCHEMISTRY AND U/PB ZIRCON AGE OF A GRANITIC PLUTON EXPOSED ON TWO SMALL ISLANDS IN PENOBSCOT BAY, MAINE |
| 7-5 | 5 O'Sullivan, Devin*; Bailey, David G.: MAJOR AND TRACE ELEMENT COMPOSITIONS OF GARNETS FROM NEW YORK STATE KIMBERLITES: A WINDOW INTO THE LOWER CRUST AND UPPER MANTLE |
| 7-6 | 6 Carty, Olin*; Robert, Geneviève; Smith, Rebecca: THE EFFECT OF FLUORINE ON MELT VISCOSITY IN JADEITE-LEUCITE MELTS |
| 7-7 | 7 Bruno, Madeline*; Robert, Geneviève; Smith, Rebecca: QUANTIFYING THE EFFECT OF FLUORINE ON THE VISCOSITY OF NEPHELINE-KALSILITE MELTS |
| 7-8 | 8 Empro, Christopher R.*; Tomascak, Paul B.; Andersen, Allen K.: MINERALOGY AND GEOCHEMISTRY OF THE ROSE ROAD WOLLASTONITE DEPOSIT, PITCAIRN, NY |
| 7-9 | 9 Benimoff, Alan I.*: TRACE ELEMENT ANALYSES OF THE STATEN ISLAND SERPENTINITE |

SESSION NO. 8

T7. Fluvial Geomorphology of Post-Glacial Rivers (Posters) (GSA Quaternary Geology and Geomorphology Division)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- | | Booth # |
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| 8-1 | 10 Salerno, Gregory S.*; Hanson, Lindley S.: BEAVER-MODIFIED FLOODPLAINS CONTRIBUTING TO ARABLE FARMLANDS ALONG THE COLD RIVER IN SOUTH ACWORTH, NEW HAMPSHIRE |
| 8-2 | 11 Dow, Samantha*; Snyder, Noah P.: MAPPING CHANNEL CHANGES IN GLACIAL AND LEGACY SEDIMENT REACHES OF THE SOUTH RIVER |
| 8-3 | 12 Massey, Matthew A.*; Hammond, Maxwell; Martin, Steven L.; Andrews, William: QUATERNARY-NEOGENE(?) EVOLUTION OF THE LICKING RIVER IN NORTHERN KENTUCKY |
| 8-4 | 13 Blaich, Garrett A.*; Ruhm, Catherine T.; Sugano, Laura L.; Jefferson, Anne J.: STREAMBED SEDIMENT AND HYDRAULIC GEOMETRY IN THE POST-GLACIAL LANDSCAPE OF NORTHEASTERN OHIO |
| 8-5 | 14 Wood, Daniel L.*; Shaw, Meaghan E.: ANALYSIS OF SURFACE BED SEDIMENT AND DEPTH BED SEDIMENT PROFILE |

IN GLACIAL TILL AND ANTHROPOGENICALLY ALTERED STREAMS IN NORTHEASTERN OHIO

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| 8-6 | 15 Baker, Anna*; Gran, Karen B.; Finlay, Jacques; Belo, Tessa: SEDIMENT AS MODULATOR OF PHOSPHORUS DYNAMICS IN POST-GLACIAL CHANNELS |
| 8-7 | 16 Ames, Elisabeth*; Snyder, Noah P.; Merritts, Dorothy J.; Walter, Robert C.; Cook, Timothy L.; Ahamed, Aakash: A COMPARISON OF LAND-USE AND GLACIAL CONTROLS ON EROSION IN THE NORTHEASTERN UNITED STATES |
| 8-8 | 17 Kelly, Jeffrey Daniel*; Hanson, Lindley S.: MECHANISMS OF EROSION AND AVULSION OF THE COLD RIVER IN RESPONSE TO CLIMATE CHANGE |

SESSION NO. 9

T8. The Geomorphology and Hydrogeology of the Appalachian Plateau (Posters) (GSA Quaternary Geology and Geomorphology Division; GSA Hydrogeology Division)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

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|-----|--|
| 9-1 | 18 Meredith, Tucker*; Ryan, Peter C.; Koenigsberger, Stephan; Kim, Jonathan: SYNSEDIMENTARY PHOSPHORITE IN LATE CAMBRIAN DOLOSTONE OF THE NORTHERN APPALACHIANS AS THE SOURCE OF ELEVATED RADIONUCLIDES IN A FRACTURED ROCK AQUIFER |
| 9-2 | 19 Malzone, Jonathan M.*; Bell, Addison; Sweet, Ethan; Minzenberger, Lee: PERCHED GROUNDWATER-WETLAND SYSTEMS ON RIDGE TOPS OF THE APPALACHIAN PLATEAU, DANIEL BOONE NATIONAL FOREST, KENTUCKY |
| 9-3 | 20 Sweet, Ethan*; Minzenberger, Lee; Malzone, Jonathan M.: QUANTIFYING SHALLOW GROUNDWATER RECHARGE FROM EPHEMERAL RIDGETOP WETLANDS, DANIEL BOONE NATIONAL FOREST, KENTUCKY |
| 9-4 | 21 Minzenberger, Lee*; Sweet, Ethan; Bell, Addison; Malzone, Jonathan M.: COMPARING MORPHOLOGIES OF CONSTRUCTED AND NATURAL WETLANDS ON APPALACHIAN RIDGETOPS IN THE DANIEL BOONE NATIONAL FOREST |
| 9-5 | 22 Bell, Addison*: DETERMINING THE HYDROLOGIC PROCESSES AND PHYSICAL PARAMETERS OF RIDGE-TOP WETLANDS IN THE DANIEL BOONE NATIONAL FOREST |
| 9-6 | 23 Konieczny, Catherine*; Konieczny, Catherine: THE EFFECTS OF CHANGES IN POPULATION DENSITY ON RIVER BASEFLOW FOR THE MIDWESTERN UNITED STATES |
| 9-7 | 24 Copeland, Marja A.*; Bain, Daniel J.: BARRIERS TO FLOW: THE GEOMORPHIC EFFECTS OF ROAD NETWORKS IN URBAN WATERSHEDS |
| 9-8 | 25 Bausher, Emily A.*; Vesper, Dorothy J.: HYDROGEOCHEMICAL ANALYSIS OF APPALACHIAN SPRINGS ALONG PETER'S MOUNTAIN IN MONROE COUNTY, WV |

SESSION NO. 10

T27. Precambrian Assembly of a Continent from the Northeast to the Mid-Continent to the Southwest: Modern Approaches to Study Ancient Crust (Posters) (GSA Geophysics Division)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- | | Booth # |
|------|--|
| 10-1 | 26 Webber, Jeffrey R.*; Williams, Michael L.; Brown, Laurie L.; Ternova, Anna; Shamus, Tim; Jercinovic, Michael J.: FROM THIN SECTION TO AEROMAGNETIC ANOMALY, LINKING PETROLOGIC DATA AND GEOPHYSICAL SURVEYS TO HELP CONSTRAIN THE RETROGRADE HISTORY OF THE WESTERN CHURCHILL PROVINCE, CANADA |
| 10-2 | 27 Wiemer, Ali M.*; Hallett, Benjamin W.: A PRELIMINARY RECORD OF HIGH GRADE METAMORPHISM FROM CHEMICAL ZONING PRESERVED IN GARNET FROM PELITIC SCHISTS OF THE NORTHERN TAOS RANGE, NEW MEXICO |

SESSION NO. 10

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| 10-3 | 28 | Peck, William H.*; Taylor, Alexander T.: FIELD AND LABORATORY GEOCHEMICAL ANALYSIS OF HIGH-AL ORTHOPYROXENE MEGACRYSTS IN ADIRONDACK ANORTHOSITE |
| 10-4 | 29 | Howard, Graceanne E.*; Peck, William H.; Selleck, Bruce: METAMORPHISM OF ANORTHOSITE IN THE ADIRONDACK HIGH PEAKS |
| 10-5 | 30 | Valentino, David W.*; Regan, Sean; Chiarenzelli, Jeffrey R.: PISECO LAKE GNEISSES RECORD SUBDUCTION-RELATED MAGMATISM AND OBLIQUE COLLISION PRIOR TO AMCG PLUTONISM |
| 10-6 | 31 | Pless, Claire R.*; Williams, Michael L.; Grover, Timothy W.; Smith, Ashley; Gosley, Kyle: IN-SITU MONAZITE GEOCHRONOLOGY OF MIGMATITES IN THE SHELIVING ROCK QUADRANGLE: IMPLICATIONS FOR THE TECTONIC HISTORY OF THE EASTERN ADIRONDACK HIGHLANDS, NY |
| 10-7 | 32 | Kozel, Oleg*; Peck, William H.; Selleck, Bruce: MODELING METAMORPHIC MINERAL FORMATION IN ADIRONDACK ANORTHOSITE |

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| 12-1 | 12 | Swager, Katherine C.*; Frey, Holli M.; Manon, Matthew R.F.: VOLCANIC APATITE CHEMISTRY AND ZONING IN THE ROSEAU VALLEY, DOMINICA, LESSER ANTILLES |
| 12-2 | 13 | Aragosa, Carli*; Frey, Holli M.; Manon, Matthew R.F.: MONITORING GEOCHEMISTRY IN THE VALLEY OF DESOLATION/BOILING LAKE, AN ACTIVE HYDROTHERMAL SYSTEM IN DOMINICA |
| 12-3 | 14 | Golus, Daniel F.*; Deardorff, Nick: RECRYSTALLIZATION OF BASALTIC TEPHRA THROUGH REHEATING EXPERIMENTS |
| 12-4 | 15 | Barber, Nicholas*; Jay, Anne E.; Vanderkluyssen, Loyc: A REFINED ESTIMATE OF LAVA FLOW VOLUME OF THE DECCAN TRAPS (INDIA) USING GEOGRAPHIC INFORMATION SYSTEMS |
| 12-5 | 16 | Humbert, Cyrielle F.*; Deardorff, Nick: EXPERIMENTAL CRYSTALLIZATION OF BASALTIC TEPHRA UNDER THE INFLUENCE OF NaCl: AN ANALOG FOR RECYCLING IN THE SUBMARINE ENVIRONMENT |
| 12-6 | 17 | Schwoerer, Andrew J.*: CONSTRAINING PRE-ERUPTIVE MAGMATIC CONDITIONS FOR GUATEMALAN DOME-FORMING ERUPTIONS |

SESSION NO. 11

Structural Geology (Posters)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

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| 11-1 | 1 | Berry, Allison*; Lewis, J.C.: INVESTIGATING THE NE-SW STRETHING DIRECTION AS RESULT OF MESOSCALE NORMAL FAULTS AND SHALLOW CRUSTAL EARTHQUAKES IN SOUTHERN CENTRAL TAIWAN USING THERMOCRONOMETRIC DATA |
| 11-2 | 2 | Bressers, Cate A.*; Lewis, J.C.: DEFORMATION PATTERNS FROM STRAIN INVERSIONS ALONG THE EASTERN MARGIN OF THE OROGENIC SUTURE IN EASTERN TAIWAN |
| 11-3 | 3 | Alder, Andrew D.*; Weber, John; Laó-Dávila, Daniel; Pope, Michael C.: GEOLOGICAL MAPPING, AND KINEMATIC-FAULT-SLIP AND GIGAPAN™ IMAGE ANALYSIS, KENTLAND IMPACT STRUCTURE, INDIANA, USA |
| 11-4 | 4 | Nichols, Joseph A.*; Weber, John; Laó Dávila, Daniel A.: STRUCTURAL ANALYSES OF OVERTURNED AND SHEARED ROCKS IN THE CARIBBEAN OROGEN HINTERLAND: KINEMATICS OF FAULTS AND SCALY FABRICS IN THE GALERA GRIT AND TOCO CATACLASITE, TOCO, TRINIDAD |
| 11-5 | 5 | Nypaver, C.*; Lang, Nicholas P.: A STRUCTURAL ANALYSIS OF DEVONIAN-AGED BEDROCK IN FOURMILE CREEK, ERIE, PA |
| 11-6 | 6 | Hossain, John*; Resor, Phillip G.: THE EFFECT OF REVERSE FAULT GEOMETRY ON SLIP RATE ESTIMATES |
| 11-7 | 7 | Jackson, Nicholas*; Holyoke, Caleb; Blasko, Cole; Raterron, Paul; Tokle, Leif; Kronenberg, Andreas: GRAIN SIZE DEPENDENCE OF PLASTIC STRENGTH OF MAGNESITE |
| 11-8 | 8 | Blasko, Cole*; Holyoke, Caleb; Jackson, Nicholas; Raterron, Paul; Tokle, Leif; Kronenberg, Andreas: PRESSURE DEPENDENCE OF MAGNESITE AND DOLOMITE AGGREGATES |
| 11-9 | 9 | Horbachewski, Keith*; Valentino, David; Chiarenzelli, Jeffrey: STRAIN VARIATION IN THE PISECO LAKE SHEAR ZONE, SOUTHERN ADIRONDACKS, NEW YORK |
| 11-10 | 10 | Brink-Roby, David*; Mitra, Gautam; Yonkee, Adolph; Evans, Mark: FLUID MIGRATION THROUGH THE WYOMING SALIENT OF THE SEVIER FOLD-THRUST BELT |
| 11-11 | 11 | Gabler, Logan B.*; Nance, R. Damian; Murphy, J. Brendan: PETROLOGY OF THE ARDARA APPINITES, COUNTY DONEGAL, NW, IRELAND |

SESSION NO. 13

T48. NETectonics: New Advances in Structural Geology and Tectonics in the Appalachians (Posters) (GSA Structural Geology and Tectonics Division)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

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|-------|----|---|
| 13-1 | 18 | Chojnacki, Michael R.*; Jacobs, Logan P.; Campbell, Patricia A.: DOES THE PENNSYLVANIAN-AGED MORGANTOWN SANDSTONE RECORD RAPID TRANSPORT INTO THE DEPOSITIONAL BASIN FORMED DUE TO UPLIFT OF THE APPALACHIAN MOUNTAINS? DEPOSITIONAL AND STRUCTURAL FEATURES OF THE BASAL MORGANTOWN SANDSTONE, PITTSBURGH, PA |
| 13-2 | 19 | MacDonald, Corbin B.*; Evans, Mark A.: EXAMINATION OF CRYSTAL GROWTH AND FLUID HISTORY IN HYDROTHERMAL QUARTZ VEINS USING VEIN PETROGRAPHY, FLUID-INCLUSION MICROTHERMOMETRY, AND SEM-CL: EXAMPLES FROM THE PENNSYLVANIA VALLEY AND RIDGE PROVINCE |
| 13-3 | 20 | Evans, Mark A.*: THE STRUCTURAL GEOMETRY AND DEVELOPMENT OF THE CENTRAL AND EASTERN PART OF THE PENNSYLVANIA SALIENT |
| 13-4 | 21 | Zygmunt, Nick*: FRACTURE HISTORY OF THE WEIR MOUNTAIN SYNCLINE AND LEHIGTON ANTICLINE, EASTERN VALLEY AND RIDGE PROVINCE, PENNSYLVANIA |
| 13-5 | 22 | Schweigel, Tayler*; Jacobi, Robert D.; Hrywnak, Anna; Hanson, Stacey; Mitchell, Charles E.: IMPLICATIONS OF STRUCTURES IN UNORIENTED CORES OF UTICA BLACK SHALE |
| 13-6 | 23 | Mitchell, Charles E.*; Amodeo, Stephane C.; Frieman, Richard; Jacobi, Robert D.: SEDIMENTARY GEOCHEMISTRY AND GRAPTOLITE FAUNAS IN THE UTICA SHALE OF NEW YORK STATE RECORD THE INTERACTION OF LATE ORDOVICIAN EUSTACY AND FAULT-DRIVEN BASIN SUBSIDENCE |
| 13-7 | 24 | Jacobi, Robert D.*; Mitchell, Charles E.: RIDGE SUBDUCTION INCORPORATED INTO TECTONIC MODELS OF THE TACONIC OROGENY IN SOUTHERN NEW ENGLAND AND NEW YORK STATE AND ITS BEARING ON THE ORDOVICIAN UTICA FORELAND BASIN |
| 13-8 | 25 | O'Hara, Alex P.*; Jacobi, Robert D.: CALCULATING FRACTURE FREQUENCY BOUNDARIES USING LINEAR PIECEWISE REGRESSION AND THE AKAIKE INFORMATION CRITERION: A NEW APPROACH TO REGIONAL FRACTURE ANALYSIS |
| 13-9 | 26 | Divan, Erik J.*; Wheatcroft, Audrey; Eusden, J. Dykstra: SALINIC TO NEOACADIAN DEFORMATION IN THE MIGMATIZED CENTRAL MAINE BELT OF WESTERN MAINE |
| 13-10 | 27 | Caldwell, Steven M.*; Morales, Victor M.; Solar, Gary S.; Tomascak, Paul B.: THREE-DIMENSIONAL STRUCTURE OF DEFORMED |

SESSION NO. 12

T28. Recent Advances in Volcano Observation and Monitoring (Posters) (GSA Geophysics Division)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

MIGMATITES AND GRANITES IN THE NORUMBEGA SHEAR ZONE SYSTEM, SOUTHERN MAINE

SESSION NO. 14

T49. NEtectonics: New Advances in Petrology, Geochemistry and Geochronology in the Appalachians (Posters) (GSA Structural Geology and Tectonics Division)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

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|-------|----|--|
| 14-1 | 28 | Mako, Calvin A.*; Caddick, M.J.; Law, Richard D.: PETROLOGY AND MONAZITE GEOCHRONOLOGY OF THE SCARBORO FORMATION, JEFFERSON, MAINE |
| 14-2 | 29 | Suarez, Kaitlyn*; Garver, John I.: CHARACTERISTICS OF ZIRCON AND RADIOACTIVITY OF THE DEVONIAN TUNK LAKE PLUTON, MAINE |
| 14-3 | 30 | Wheatcroft, Audrey*; Divan, Erik J.; Eusden, J. Dykstra; O'Sullivan, Paul B.: SILURIAN STRATIGRAPHY AND GEOCHRONOLOGY IN THE MIGMATITE TERRAIN OF WESTERN MAINE |
| 14-4 | 31 | Hillenbrand, Ian W.*; Eusden, J. Dykstra; O'Sullivan, Paul B.; Bradley, Dwight C.: NEWLY DISCOVERED ALBEE FORMATION IN NORTHERN NH: DETRITAL ZIRCONS, STRUCTURE, AND TECTONICS |
| 14-5 | 32 | Aiken, Cheyne L.*; Webb, Laura E.; Tam, Evan: EXHUMATION OF THE TILLOTSON PEAK COMPLEX IN NORTHERN VERMONT |
| 14-6 | 33 | Purvis, Phillip*; Anderson, J. Lawford; Chatterjee, Nilanjan: PETROLOGY OF THE ROLLSTONE PEGMATITE, FITCHBURG, MA |
| 14-7 | 34 | Buchanan, John Wesley*; Kuiper, Yvette D.; Hepburn, J. Christopher; Williams, Michael L.: CONSTRAINTS ON DEVONIAN-CARBONIFEROUS DEFORMATION IN THE NASHOBA TERRANE, EASTERN MASSACHUSETTS |
| 14-8 | 35 | Lucas, Benjamin*; Hollocher, Kurt; Robinson, Peter; Mabee, Stephen B.: PRESCOTT INTRUSIVE COMPLEX, CENTRAL MASSACHUSETTS, GEOCHEMISTRY AND STRUCTURAL REINTERPRETATION |
| 14-9 | 36 | Devlin, Bill*; Wintsch, Robert: WAS THE STRAITS SCHIST OF WESTERN CONNECTICUT DEPOSITED IN A RETROARC FORELAND BASIN? |
| 14-10 | 37 | Shank, Stephen G.*: CROSS SECTION ACROSS PALEOZOIC PIEDMONT TERRANE, SOUTHERN LANCASTER COUNTY, PA |
| 14-11 | 38 | Shorten, Chilisa M.*; Fitzgerald, Paul G.: POST-OROGENIC THERMAL HISTORY AND EXHUMATION OF THE NORTHERN APPALACHIAN BASIN CONSTRAINED THROUGH LOW-TEMPERATURE THERMOCHRONOLOGY |

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 15

T6. FOSSIL Collaborations II: Enhancing Paleontology through Professional and Amateur Partnerships

1:30 PM, Omni William Penn Hotel Conference Center A, Conference Level

Eleanor E. Gardner, Presiding

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| 15-1 | 1:30 PM | Westgaard, John*; Hanks, H. Douglas: DIRT PILE DREAMS - ACT III: FINALE OR PROLOGUE ? |
| 15-2 | 1:50 PM | Anderson, Derek T.*: CITIZEN SCIENTISTS AND LATE PLEISTOCENE RESEARCH IN THE SOUTHEASTERN UNITED STATES |
| 15-3 | 2:10 PM | Perez, Victor J.*; Leder, Ronny M.; Lundgren, Lisa M.; Ellis, Shari; Dunckel, Betty A.; Crippen, Kent J.: THE BELGRADE PALEOBLITZ: A PILOT PROJECT TO ENGAGE AMATEUR PALEONTOLOGISTS |

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| 15-4 | 2:30 PM | Cone, Lee*; Gardner, Eleanor E.: THE GOOD, THE BAD, AND THE UGLY: AN EXPLORATION OF THE RELATIONSHIPS BETWEEN PROFESSIONAL, AMATEUR, AND COMMERCIAL PALEONTOLOGISTS |
| 15-5 | 2:50 PM | Ferrara, Chuck*: THE VALUE OF AMATEUR PALEONTOLOGY: A CASE STUDY FROM THE SOUTHWEST FLORIDA FOSSIL SOCIETY |
| | 3:10 PM | BREAK |
| 15-6 | 3:25 PM | Kowinsky, Jayson*: DIGGING INTO THE DATA: EXAMINING RESOURCE USE ON AN AMATEUR PALEONTOLOGY WEBSITE |
| 15-7 | 3:45 PM | Lundgren, Lisa*; Crippen, Kent J.: DESCRIBING SOCIAL PALEONTOLOGY FROM AN ECOLOGICAL PERSPECTIVE |
| 15-8 | 4:05 PM | MacFadden, Bruce J.*; Gardner, Eleanor E.: SUSTAINING THE MYFOSSIL COMMUNITY, SOCIAL PALEONTOLOGY, AND RELATED ACTIVITIES |
| | 4:25 PM | DISCUSSION |
| | 4:45 PM | CONCLUDING REMARKS |

SESSION NO. 16

T14. There's an App for That: Using Technology Developments, Innovations, Resources, and Applications to Enhance Undergraduate Geoscience Education (National Association of Geoscience Teachers; GSA Geoscience Education; GSA Geophysics Division)

1:30 PM, Omni William Penn Hotel Frick, Conference Level

C. Renee Sparks, Joseph F. Reese and Steven Lindberg, Presiding

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| 16-1 | 1:30 PM | Sparks, C. Renee*: ENGAGING STUDENTS ON THE ELECTRONIC PLATFORM |
| 16-2 | 1:50 PM | Martin, Joe*; Schmidt, Amanda H.: TEACHING PYTHON SCRIPTING THROUGH ARCGIS |
| 16-3 | 2:10 PM | Beck, Mary A.*; Ryan, Jeffrey; Vidito, Chris; MacDonald, James H.; Hickey-Vargas, Rosemary: USING A REMOTELY-ACCESSED SCANNING ELECTRON MICROSCOPE (SEM) TO EVALUATE SANDS IN A 2-YEAR COLLEGE EARTH SCIENCE EARTH SCIENCE CLASS |
| 16-4 | 2:30 PM | Malinconico, Lawrence L.*; Sunderlin, David: PEDAGOGICAL EFFECTIVENESS OF USING DIGITAL APPLICATIONS FOR COLLECTION AND INTERPRETATION OF SED/STRAT AND STRUCTURAL FIELD DATA |
| | 2:50 PM | BREAK |
| 16-5 | 3:05 PM | Vollmer, Frederick W.*: SOFTWARE FOR THE QUANTIFICATION, ERROR ANALYSIS, AND VISUALIZATION OF STRAIN AND FOLD GEOMETRY IN UNDERGRADUATE FIELD AND STRUCTURAL GEOLOGY LABORATORY EXPERIENCES |
| 16-6 | 3:25 PM | Myrbo, Amy*; Loeffler, Shane; Shinneman, Avery L.C.: SELF-GUIDED CLASS FIELD TRIPS USING THE FLYOVER COUNTRY MOBILE APP COULD HELP STUDENTS WITH RESTRICTIVE SCHEDULES SEE ROCKS ANYWAY |
| 16-7 | 3:45 PM | Muller, Otto H.*; Valentino, David: NYSGA GUIDEBOOK CHAPTERS AND GEOSPATIAL INDEX NOW AVAILABLE |
| 16-8 | 4:05 PM | Reese, Joseph F.*: "TAKE A (GEOLOGIC) JOURNEY AROUND PENNSYLVANIA ...": PA DCNR INTERACTIVE ONLINE MAP RESOURCES - A TREASURE TROVE FOR THE GEOSCIENCE EDUCATOR TEACHING THE TECTONIC HISTORY OF PENNSYLVANIA |

SESSION NO. 17

T16. Research Associated with The Marcellus Shale Energy and Environment Laboratory (MSEEL) (GSA Geophysics Division)

1:30 PM, Omni William Penn Hotel Monongahela, 17th Floor

Timothy Carr and Dan Billman, Presiding

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| 17-1 | 1:30 PM | Hupp, Brittany N.*; Weislogel, Amy L.; Donovan, Joseph J.: PROVENANCE OF THE MARCELLUS SHALE: GEOCHEMICAL INSIGHTS INTO THE SOURCE TO SINK |
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- RELATIONSHIPS WITHIN THE MIDDLE DEVONIAN ACADIAN FORELAND BASIN**
- 17-2 1:50 PM Moore, Johnathan*; Hakala, J. Alexandra; Vankeuren, Amelia; Phan, Thai T.; Crandall, Dustin: **EXPERIMENTS EVALUATING GEOCHEMICAL ALTERATION OF MATRIX MATERIALS ADJACENT TO SIMULATED HYDRAULIC FRACTURES**
- 17-3 2:10 PM Wilson, Travis*; Sharma, Shikha: **INFERRING BIOGEOCHEMICAL INTERACTIONS IN DEEP SHALE RESERVOIRS AT THE MARCELLUS SHALE ENERGY AND ENVIRONMENT LABORATORY (MSEEL)**
- 17-4 2:30 PM Stuckman, Mengling, Y.*; Lopano, Christina L.; Berry, Samantha; Hakala, J. Alexandra: **CHARACTERIZING TRACE METAL RELEASE IN DRILL CUTTINGS FROM MARCELLUS SHALE ENERGY DEVELOPMENT**
- 17-5 2:50 PM Carr, Timothy*: **THE SIGNIFICANCE OF MARCELLUS SHALE HETEROGENEITY ON HYDRAULIC FRACTURE STIMULATION**
- 17-6 3:10 PM Lone Fight, Lisa*; Soeder, Daniel J.; Sawyer, J. Foster: **MANDAN, HIDATSA AND ARIKARA NATION, BAKKEN ENVIRONMENTAL ACCESS RESEARCH SITE**

SESSION NO. 18

T27. Precambrian Assembly of a Continent from the Northeast to the Mid-Continent to the Southwest: Modern Approaches to Study Ancient Crust (GSA Geophysics Division)

1:30 PM, Omni William Penn Hotel Lawrence Welk Room, Mezzanine Level

Benjamin W. Hallett and Christopher Daniel, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 18-1 1:35 PM Holland, Mark E.*; Karlstrom, Karl E.; Gehrels, George E.; Pecha, Mark: **FORMATION OF THE MOJAVE CRUSTAL PROVINCE IN A BACK ARC BASIN: DISCERNING TECTONIC PROCESSES WITH PAIRED U-PB-HF ANALYSES FROM DETRITAL AND PLUTONIC ZIRCON**
- 18-2 1:55 PM Daniel, Christopher G.*; Andronicos, Christopher L.; Aronoff, Ruth F.; Doe, Michael F.; McFarlane, Christopher R.M.; Jones, James V.: **MESOPROTEROZOIC CA. 1.5–1.45 GA DEPOSITION AND VOLCANISM IN THE SOUTHWESTERN UNITED STATE: ONSET OF THE PICURIS OROGENY**
- 18-3 2:15 PM Hallett, Benjamin W.*; Kotlowski, Evan; Daniel, Christopher G.: **PETROLOGIC CONSTRAINTS FROM A DISCONTINUOUS REGIONAL METAMORPHIC FIELD GRADIENT DURING THE PICURIS OROGENY IN THE RINCON RANGE, NORTH-CENTRAL NEW MEXICO**
- 18-4 2:35 PM Aronoff, Ruth F.*; Andronicos, Christopher L.; Vervoort, Jeffrey: **THE PICURIS OROGENY PART 1: A CONTINENT SCALE CONVERGENT MARGIN**
- 18-5 2:55 PM Andronicos, Christopher L.*; Aronoff, Ruth; Vervoort, Jeff D.; Daniel, Christopher: **THE PICURIS OROGENY, PART 2: 1.50 TO 1.35 GA METAMORPHISM AND DEFORMATION IN THE SOUTHWESTERN UNITED STATES**
- 3:15 PM **BREAK**
- 18-6 3:30 PM Higgins, Ian Rodger*; Lutz, Tim; Bosbyshell, Howell: **3D ANALYSIS OF GARNET PORPHYROBLAST ORIENTATION IN THE HONEY BROOK ANORTHOSITE OF PENNSYLVANIA**
- 18-7 3:50 PM Aleinikoff, John N.*; Walsh, Gregory J.: **NEW EVIDENCE FOR LATE TO POST-SHAWINIGAN INTRUSION OF THE HAWKEYE GRANITE GNEISS AND LYON MOUNTAIN GRANITE GNEISS, ADIRONDACK HIGHLANDS, NY**
- 18-8 4:10 PM Moecher, David P.*; Bowersox, J. Richard; Hickman, John B.: **IS THE EAST CONTINENT RIFT BASIN REALLY A RIFT BASIN, OR IS IT A FORELAND BASIN? AND DID THE GRENVILLE OROGENY ‘TAKE A BREATH’ DURING MIDCONTINENT RIFTING? NEW EVIDENCE FROM ZIRCON U-PB GEOCHRONOLOGY OF THE MIDDLE RUN FM. AND BASEMENT ORTHOGNEISS IN DRILL CORE FROM KENTUCKY**

- 18-9 4:30 PM Peterman, David*; Watts, Doyle R.; Hauser, Ernest C.; Parent, Andrew: **SEISMIC PROFILING NEAR MIDDLETOWN, OHIO: AN INTERPRETATION OF PRE-MT. SIMON DEFORMATIONAL HISTORY IN THE EASTERN MIDCONTINENT**
- 18-10 4:50 PM Parent, Andrew*; Hauser, Ernest C.; Watts, Doyle R.; Peterman, David: **UPPER CRUSTAL SEISMIC SEQUENCES BELOW WEST-CENTRAL INDIANA: LOCAL INTERPRETATION AND REGIONAL SIGNIFICANCE**

SESSION NO. 19

T31. Progress Toward Understanding Present and Past River Responses to Climate in Eastern and Midwestern North America (GSA Sedimentary Geology Division)

1:30 PM, Omni William Penn Hotel Allegheny, 17th Floor

James Steven Kite, Todd Grote and G. William Monaghan, Presiding

- 19-1 1:30 PM Carson, Eric C.*; Ceperley, Elizabeth G.; Rawling, J. Elmo: **THE ROLE OF QUATERNARY GLACIATIONS IN REORGANIZING THE OHIO AND UPPER MISSISSIPPI RIVERS**
- 19-2 1:50 PM Kite, J. Steven*: **SPATIAL IMPACTS OF GLACIOFLUVIAL AGGRADATION AND PERIGLACIAL COLLUVIATION ON LATE WISCONSIN TERRACE DEVELOPMENT ON UNGLACIATED RIVERS IN THE UPPER OHIO RIVER BASIN**
- 19-3 2:10 PM Monaghan, G. William*; Bird, Broxton W.; Herrmann, Edward W.: **EVOLUTION OF THE OHIO RIVER VALLEY AFTER OUTWASH CEASED**
- 19-4 2:30 PM Griggs, Carol B.*; Grote, Todd; Peteet, Dorothy; Lorentzen, Brita: **POSSIBLE FLOODPLAIN INSTABILITY DURING THE YOUNGER DRYAS INDICATED BY TAMARACK LOGS FOUND IN THE LAKE ONTARIO LOWLANDS, NEW YORK STATE**
- 19-5 2:50 PM Grote, Todd*; Griggs, Carol B.; Lorentzen, Brita; Peteet, Dorothy M.: **CHANGING FLOODPLAIN ENVIRONMENTS SINCE THE YOUNGER DRYAS IN THE LAKE ONTARIO LOWLANDS, NEW YORK**
- 19-6 3:10 PM Schaney, Christopher*; Grote, Todd: **DEVELOPMENT OF A FLOOD CLIMATOLOGY FOR THE UPPER ALLEGHENY RIVER BASIN IN NORTHWESTERN PENNSYLVANIA**

SESSION NO. 20

T7. Fluvial Geomorphology of Post-Glacial Rivers (GSA Quaternary Geology and Geomorphology Division)

3:45 PM, Omni William Penn Hotel Allegheny, 17th Floor

Amanda H. Schmidt, Anne J. Jefferson and Karen B. Gran, Presiding

- 20-1 3:45 PM Gran, Karen B.*: **RIVER INCISION, INVERTED LONG PROFILES, DOWNSTREAM COARSENING, AND TERRACES: WHAT GLACIATION HAS WROUGHT ON INCISING MINNESOTA RIVERS AND HOW IT IMPACTS MANAGEMENT OF RIVERS TODAY**
- 20-2 4:05 PM Treat, Ian H.*; Gran, Karen B.; Cavallin, Austin: **FLY ASH IN RAVINE ALLUVIUM: MAPPING THE HOLOCENE-ANTHROPOCENE DIVIDE IN THE LSRB**
- 20-3 4:25 PM Mattheus, Christopher R.*; Diggins, Thomas P.: **DECOUPLING OF PUNCTUATED FLUVIAL LANDFORM DEVELOPMENT AND RIPARIAN VEGETATION SUCCESSION WITHIN THE LAKE ERIE GORGES PROVINCE OF WESTERN NEW YORK**
- 20-4 4:45 PM Barr, Robert C.*; Bird, Broxton W.: **HUMAN INFLUENCES ON CHANNEL-MIGRATION RATES: TWO EXAMPLES FROM CENTRAL INDIANA**
- 20-5 5:05 PM Campbell, Mary K.*; Schmidt, Amanda H.; Woodmansee, Sylvia Jane; Bower, Jennifer: **THE EFFECTS OF AGRICULTURAL DRAINAGE TILES ON EROSION IN THE VERMILLION RIVER WATERSHED, NORTHEASTERN OHIO**

- 20-6 5:25 PM Weber, Mitchell Warren*: **CAN ARTESIAN CONDITIONS REALLY EFFECT THE STABILITY OF AN INTERSTATE BRIDGE?**

SESSION NO. 21

T19. Geology of Marcellus-Utica Shale and How it Relates to Oil and Gas Production

3:45 PM, Omni William Penn Hotel Monongahela, 17th Floor

Wendell Barner and Randy Blood, Presiding

- 3:45 PM **INTRODUCTORY REMARKS**
- 21-1 3:50 PM Schmid, Katherine W.*; Markowski, Antonette K.: **EFFECTS OF MAJOR GEOLOGIC STRUCTURES ON ORGANIC CARBON CONCENTRATIONS AND THERMAL MATURITIES IN ORGANIC-RICH UPPER DEVONIAN SHALES**
- 21-2 4:10 PM Selleck, Bruce*: **STABLE ISOTOPE AND FLUID INCLUSION CONSTRAINTS ON THE BURIAL HISTORY OF THE UTICA FORMATION, NEW YORK STATE**
- 21-3 4:30 PM Blood, David R.*: **DEPOSITION AND DIAGENESIS OF THE UPPER ORDOVICIAN POINT PLEASANT LIMESTONE, APPALACHIAN BASIN, USA: INSIGHTS INTO ORGANIC MATTER PRODUCTION, PRESERVATION, AND RESERVOIR DEVELOPMENT**
- 21-4 4:50 PM Laughrey, Christopher D.*; Ruble, Tim; Knowles, Wayne: **GEOCHEMICAL CHARACTERIZATION OF OVER-MATURE GASES FROM MIDDLE DEVONIAN MARCELLUS FORMATION, NORTHERN APPALACHIAN BASIN, USA – INSIGHTS INTO DEEP BASIN HYDROCARBON GENERATION, ALTERATION, AND PRODUCTIVITY**
- 21-5 5:10 PM Phan, Thai T.*; Hakala, J. Alexandra; Lopano, Christina L.; Sharma, Shikha: **SEQUENTIAL EXTRACTION OF RARE EARTH ELEMENTS TO EVALUATE POST-DEPOSITIONAL GEOCHEMICAL EVOLUTION IN MARCELLUS SHALE**

AFTERNOON POSTER TECHNICAL SESSIONS

SESSION NO. 22

Geosciences Education (Posters)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 22-1 1 Neace, Sydney D.*; Bevis, Kenneth A.: **THE GRAND CANYON AS AN UNDERGRADUATE FIELD LABORATORY**
- 22-2 2 Reese, Stuart*: **PROMOTING GEOLOGIC EDUCATION THROUGH OUTSTANDING GEOLOGIC FEATURES OF PENNSYLVANIA**
- 22-3 3 Forbes, Claire M.*; Domack, Cynthia R.: **PALEONTOLOGY LABORATORY EXERCISE USING MAZON CREEK PLANT FOSSILS**
- 22-4 4 Severs, Matthew J.*; Planer, Lacie; Stezzi, Shawanna; Naik, Akshati: **ACCESSIBLE LAB SAMPLES AND RELATED DATABASE OF IGNEOUS ROCKS: MINERALOGY, TEXTURE, AND GEOCHEMISTRY**
- 22-5 5 Konieczny, Catherine*: **FUELING THE FUTURE: ENERGY EDUCATION FOR WESTERN NEW YORK**

SESSION NO. 23

T3. Back to the Basics: Focusing on Fieldwork in Today's Geological Studies (Posters) (GSA Geoscience Education Division)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 23-1 6 Fehrs, Ellen R.*; Hand, Kristen L.: **STRATIGRAPHY OF THE GATESBURG FORMATION, CENTRAL PENNSYLVANIA: THE**

NORTHEASTERN MOST EXTENT OF THE GREAT AMERICAN CARBONATE BANK IN THE CENTRAL APPALACHIANS

- 23-2 7 Toft, Meghan E.*; Walsh, Gregory J.; Williams, Michael L.; Regan, Sean P.: **PRELIMINARY RESULTS OF NEW BEDROCK MAPPING OF THE SOUTHEASTERN PART OF THE PARADOX LAKE QUADRANGLE, NEW YORK**
- 23-3 8 Remington, Connor*; Kim, Jonathan J.; Klepeis, Keith; Van Hoesen, John: **USING DRONE SURVEYS TO INTERPRET THE GEOMETRY AND KINEMATICS OF A MESOZOIC FAULT ZONE IN DOLOSTONES OF THE CHAMPLAIN VALLEY BELT, WEST-CENTRAL VERMONT**
- 23-4 9 Merschat, Arthur*; Walsh, Gregory J.; McAleer, Ryan J.; Kunk, Michael J.: **BEDROCK GEOLOGIC MAP OF THE BELLOWS FALLS AND ALSTEAD 7.5-MINUTE QUADRANGLES, NH-VT: INSIGHT INTO THE TECTONICS OF THE BRONSON HILL ANTICLINORIUM**
- 23-5 10 Severson, Allison R.*; Kuiper, Yvette D.; Buchanan, John Wesley: **PRELIMINARY STRUCTURAL ANALYSIS OF THE SOUTHEASTERN NASHOBA TERRANE, EASTERN MASSACHUSETTS: EVIDENCE FOR DUCTILE EXTRUSION?**
- 23-6 11 Lewis, J.C.*; Chan, Yu-Chang: **FIELDWORK REMAINS INDISPENSABLE TO GEOLOGICAL STUDIES WHILE OFFERING OPPORTUNITIES FOR SYNERGY WITH ANALYTICAL METHODS: EXAMPLES FROM COSTA RICA AND TAIWAN**

SESSION NO. 24

T6. FOSSIL Collaborations : Enhancing Paleontology through Professional and Amateur Partnerships (Posters)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 24-1 12 Krisher, Daniel L.*: **A DATABASE FOR THE DEVONIAN FAUNAS OF NEW YORK STATE**
- 24-2 13 Callahan, Wayne R.*; Sadowski, Henry J.; Lawrence, Anthony L.; Shankle, William J.; Conti, Lawrence G.: **THORACOSAURUS (REPTILIA: CROCODYLIDAE) IN THE VINCENTOWN FORMATION (PALEOCENE) OF NEW JERSEY, U.S.A**
- 24-3 14 Hurey, David R.*; McKenzie, Scott C.; Wendruff, Andrew J.; Spina, John: **A SURVEY OF THE PENNSYLVANIAN AMPHIBIA OF THE LINTON, OHIO LAGERSTATT**

SESSION NO. 25

T40. Applied Geology, Environmental, Engineering, Hydrogeology, and Applied Geophysics (Posters) (GSA Environmental and Engineering Geology Division; GSA Geophysics Division; GSA Hydrogeology Division)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 25-1 15 Getchell, Jill*; Davis, J. Matthew: **THE EFFECT OF GROUNDWATER FLOW ON THE DESIGN OF VERTICAL GEOTHERMAL HEAT PUMP GROUND LOOPS**
- 25-2 16 Rucker, Clara Rose*; Crawford, Matthew M.; Ashland, Francis X.; Fiore, Alex R.: **ELECTRICAL RESISTIVITY IMAGING OF A MULTIPLE ROCKSLIDE, PITTSBURGH, PA**
- 25-3 17 Allen, Rachel M.*; Hubeny, J. Bradford: **GEOPHYSICAL ANALYSIS OF A POORLY DRAINED GLACIAL DELTA PLAIN IN ACWORTH, NEW HAMPSHIRE**
- 25-4 18 Binns, Andrew David*; Soligo, Peter: **THE EFFECT OF URBANIZATION ON THE MORPHOLOGICAL EVOLUTION OF SCHNEIDER CREEK IN SOUTHWESTERN ONTARIO**
- 25-5 19 Hamm, Tae*: **GRAVIMETRIC DETERMINATION OF THE THICKNESS OF TAKU GLACIER: IMPACT OF GLACIER THICKNESS ON SUBGLACIAL HYDROLOGY AND POTENTIAL EROSION**

SESSION NO. 25

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|-------|----|--|-------|----|--|
| 25-6 | 20 | Watts, Cheryl Lyn*; Newton, Robert M.: MODELING SEDIMENT TRANSPORT DURING SLUICING EVENTS IN PARADISE POND, NORTHAMPTON, MASSACHUSETTS | 25-5 | 5 | Scheland, Cullen L.*; Miller, Calvin F.; Carley, Tamara L.; Foley, Michelle L.; Claiborne, Lily L.; Cribb, J. Warner; Wood, Erin M.: CONSTRAINING ERUPTIVE EVENTS PRECEDING THE PEACH SPRING TUFF SUPERERUPTION (MIOCENE, AZ): PETROLOGY AND PETROGENESIS OF ASH FALL TUFFS |
| 25-7 | 21 | Chulli, Badiia*; Talbi, Rachida; Haithem, Hcini: GEOTHERMAL AND HYDRODYNAMIC STUDY OF HYDROCARBON RESERVOIRS IN NORTH-WEST TUNISIA CORRELATION WITH POTENTIAL SOURCE ROCKS, SHALE GAS AND OIL | 25-6 | 6 | Kupers, Stephanie Adele*; Schmidt, Mariek; Campbell, Ian: A PETROGRAPHIC AND GEOCHEMICAL ANALYSIS OF THE KRKY KIMBERLITE, LAKE TAMISKAMING KIMBERLITE FIELD, ONTARIO, CANADA |
| 25-8 | 22 | Chase, Ryan*; Davis, J. Matthew: ANALYSIS OF UNDERGROUND THERMAL ENERGY STORAGE FOR GREENHOUSE HEATING: CASE STUDY OF AN ORGANIC DAIRY FARM IN NEW HAMPSHIRE, USA | 25-7 | 7 | DePasquale, Brittany M.*; Kozenjic, Nuredin; Schoonmaker, Adam: INTRUSIVE ROCKS OF THE GAME LAKE AREA AND IMPLICATIONS FOR THE ORIGIN OF THE SNOWCAMP OPHIOLITE |
| 25-9 | 23 | Khameiss, Belkasim*; Fluegeman, Richard; Hoyt, William H.: PALEONTOLOGICAL NOTES ABOUT TERTIARY ECHINODERMS FROM NORTHEAST LIBYA | 25-8 | 8 | Cunningham, Emily*; Corey, Amanda; Smith, Tyler; Cribb, Warner: PETROGRAPHIC AND GEOCHEMICAL INVESTIGATION OF MAGMATIC PROCESSES AT OLALLIE, PINHEAD AND CLEAR LAKE BUTTES, NORTHERN OREGON CASCADE RANGE |
| 25-11 | 25 | Mangold, David H.*: HISTORIC REVIEW OF LANDSLIDES AFFECTING RAILROADS IN OHIO AND PENNSYLVANIA | 25-9 | 9 | Tortora, David*; Steinen, Randolph P.; Thomas, Margaret A.: ADDITIONAL EVIDENCE FOR GANDER TERRANE FROM MUD-LOGGING AT HAMMONASSET STATE PARK, MADISON, CONNECTICUT |
| 25-12 | 26 | Hickman, Neil Patrick*; Storer, Nathan Dale; Karimi, Bobak: DETERMINING LANDSLIDE SUSCEPTIBILITY OF CLARION COUNTY THROUGH THE USE OF A FREQUENCY-RATIO LANDSLIDE SUSCEPTIBILITY MODEL IN ARCGIS | 25-10 | 10 | Rizzo, Jessa M.*: THE COLOR AND CLARITY OF FELDSPARS: EXPERIMENTS IN HEAT TREATING |
| 25-13 | 27 | Vangala, Sunitha*; Abbott, Grant; Bretz, Richard L.; Krekeler, Mark P.S.: PHOSPHATE SORPTION ON KYANITE: PROGRESS TOWARDS A GEOENVIRONMENTAL TECHNOLOGY TO COMBAT NON-POINT SOURCE POLLUTION | 25-11 | 11 | Sosa, Emma S.*; Carley, Tamara L.; Banik, Tenley J.; Claiborne, Lily L.; Miller, Calvin F.: A DETRITAL ZIRCON INVESTIGATION INTO THE MAGMATIC HISTORY OF THE ÖRÆFAJÖKULL VOLCANO IN SOUTHEASTERN ICELAND |
| 25-14 | 28 | Breda, Caroline*; Herlitz, Tristan; Myers, Joseph; Krekeler, Mark P.S.: A GEOCHEMICAL AND MINERALOGICAL INVESTIGATION OF THE ORDOVICIAN EUREKA QUARTZITE FOR USE AS A SILICON ORE FOR PHOTOVOLTAIC CELLS SHOWS PROMISE FOR PLASMA FURNACE PRODUCTION | 25-12 | 12 | Simboli, Lorin Nicole*; Kerrigan, Ryan J.; Mengason, Michael J.: PETROGRAPHIC AND GEOCHEMICAL EVIDENCE FOR THE TECTONIC ORIGIN OF BELLS MILL ROAD ULTRAMAFIC BODY OF SOUTHEASTERN, PA |
| 25-15 | 29 | Zneimer, Stephania*: MODELING REGIONAL WEATHER PATTERNS IN SOUTHERN ILLINOIS BY INTEGRATING STABLE WATER ISOTOPES FOUND IN PRECIPITATION TO DISTINGUISH VARIOUS CONTROLS ON THE LOCAL HYDROLOGIC CYCLE | 25-13 | 13 | Hunsinger, Courtney F.*; Kerrigan, Ryan J.: DETERMINING THE ORIGIN OF GRANODIORITES IN THE PENNSYLVANIAN PIEDMONT USING GEOCHEMICAL AND PETROGRAPHIC METHODS |
| 25-16 | 30 | Delano, Helen L.*; Whitfield, Thomas G.: TOWARDS A NEW LANDSLIDE SUSCEPTIBILITY MAP OF ALLEGHENY COUNTY, PA | 25-14 | 14 | Peterson, Emma Jean*; Currier, Ryan: TEXTURAL ANALYSIS OF A FLOW DIFFERENTIATED, PRE-PENOKEAN MAFIC DIKE IN THE UPPER PENINSULA, MICHIGAN |
| 25-17 | 31 | Linnekohl, Sarah*; Dandenault, Paisley; Abbott, Grant; Hoover, Adam; Grzeskowiak, Emily; Myers, Joseph; Martin, Alyssa; Burke, Michelle; Krekeler, Mark P.S.: GRAIN CHARACTERISTICS AND THE MINERALOGY OF MODERN GREAT MIAMI RIVER SEDIMENT SHOW COMPLEXITY AT HERITAGE PARK, COLERAIR TOWNSHIP, OHIO | 25-15 | 15 | DeBarba, William P.*; Carley, Tamara L.; Pamukcu, Ayla S.; Banik, Tenley J.; Sosa, Emma S.; Tintle, Leslie R.: GEOTHERMOBAROMETRY OF GLACIAL OUTWASH SEDIMENT FROM ÖRÆFAJÖKULL, ICELAND |
| 25-18 | 32 | Jahan, Khurshid*; Pradhanang, Soni; Gold, Arthur J.; Addy, Kelly: APPLICATION OF ARIMA AND ARTIFICIAL NEURAL NETWORKS TO FORECASTING NITRATE CONCENTRATION IN THE AQUIDNECK ISLAND IN RHODE ISLAND, USA | 25-16 | 16 | Kozenjic, Nuredin*; DePasquale, Brittany M.; Schoonmaker, Adam: AMPHIBOLITE OF THE GAME LAKE REGION AND ITS RELATION TO THE JOSEPHINE AND COAST RANGE OPHIOLITE |
| | | | 25-17 | 17 | Martin, Robert Malik*: CHEMICAL AND THIN SECTION ANALYSIS OF THE COAL CREEK SERPENTINITE |
| | | | 25-18 | 18 | Golden, Alexandre*; Gomez, Mallorie; Huysken, Kristin T.; Fujita, Kazuya; Harper, Danyi; McMakin, Dean: REEVALUATION OF THE JANUARY 2, 1912 NORTHERN ILLINOIS EARTHQUAKE: USING GIS AND COMPREHENSIVE MICROFILM ANALYSIS TO ASSESS FELT AREA, INTENSITY, AND EPICENTER |
| | | | 25-19 | 19 | Malone, John E.*: STRUCTURE OF THE SOUTHERN MARGIN OF THE BIG HORN BATHOLITH, WYOMING: A MAJOR ARCHEAN SHEAR ZONE? |
| | | | 25-20 | 20 | Davis, Costanza E.*; Malinconico, Lawrence L.: ANALYSIS OF THE LONG WAVELENGTH GRAVITY ANOMALIES IN PENNSYLVANIA |
| | | | 25-21 | 21 | Wislocki, Joseph J.*; Rowan, Christopher J.: ANALOGUE MODELLING OF THE FORMATION OF THE PENNSYLVANIA SALIENT: DO THE APPALACHIANS BEND AROUND AN ANCIENT RIFT? |
| | | | 25-22 | 22 | Filippone, Nicolette Victoria*; Echreshzadeh, Maryam; Tokman, Tamar L.; Remington-Howes, Marjorie; Sivo, Joseph; Marton, Fred: SHAKIN' IT UP WITH SEISMOSTEM |

SESSION NO. 26

T12. Undergraduate Research Session I (Posters) (Council on Undergraduate Research Geosciences Division)

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- | | | | | | |
|------|---|--|-------|----|---|
| 26-1 | 1 | Blakemore, Daniel R.*; Bos, Nathaniel H.; Sparks, C. Renee: CONCENTRATIONS OF PB, ZN, AND AG ASSOCIATED WITH NATIVE COPPER DEPOSITION, KEWEENAW MI | 26-19 | 19 | Malone, John E.*: STRUCTURE OF THE SOUTHERN MARGIN OF THE BIG HORN BATHOLITH, WYOMING: A MAJOR ARCHEAN SHEAR ZONE? |
| 26-2 | 2 | Bowman, Nathaniel*; Creedon, Kayla; Kopec, Kevin; Halsor, Sid P.: COMPOSITION OF WHITEFACE MOUNTAIN ANORTHOSITES AND ITS BEARING ON ROCK FORMING PROCESSES | 26-20 | 20 | Davis, Costanza E.*; Malinconico, Lawrence L.: ANALYSIS OF THE LONG WAVELENGTH GRAVITY ANOMALIES IN PENNSYLVANIA |
| 26-3 | 3 | Connors, Mary E.*; Hampton, Samuel J.: RELATIVE AGE AND FORMATION OF A PHREATOMAGMATIC DIATREME IN THE MANDAMUS IGNEOUS COMPLEX, NEW ZEALAND | 26-21 | 21 | Wislocki, Joseph J.*; Rowan, Christopher J.: ANALOGUE MODELLING OF THE FORMATION OF THE PENNSYLVANIA SALIENT: DO THE APPALACHIANS BEND AROUND AN ANCIENT RIFT? |
| 26-4 | 4 | Scholpp, Jesse*; Mack, Bradford; Luna, Antonio; Ryan, Jeffrey: MINERAL CHEMISTRY EVIDENCE FOR MAGMA MIXING IN BONINITES, SITES U1439 AND U1442, IODP EXPEDITION 352 | 26-22 | 22 | Filippone, Nicolette Victoria*; Echreshzadeh, Maryam; Tokman, Tamar L.; Remington-Howes, Marjorie; Sivo, Joseph; Marton, Fred: SHAKIN' IT UP WITH SEISMOSTEM |

MONDAY, 20 MARCH 2017

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 27

T3. Back to the Basics: Focusing on Fieldwork in Today's Geological Studies (GSA Geoscience Education Division)

8:00 AM, Omni William Penn Hotel Allegheny, 17th Floor

John Wesley Buchanan II and Sean Regan, Presiding

8:00 AM INTRODUCTORY REMARKS

- 27-1 8:05 AM Regan, Sean P.*; Chiarenzelli, Jeffrey R.; Williams, Michael L.; Aspler, Lawrence B.; Jercinovic, Michael J.; Grohn, Lisa J.: **ESTABLISHING DIRECT LINKS BETWEEN BASEMENT STRUCTURES AND BASIN EVOLUTION WITH THE LOW TEMPERATURE FLUID-MEDIATED DISSOLUTION-REPRECIPITATION OF MONAZITE AND ZIRCON**
- 27-2 8:25 AM Wright, Shawn*: **FIELDWORK AT AN IMPACT CRATER IN BASALT AS A MEANS TO RECONCILE REMOTE SENSING AND LABORATORY ANALYSES**
- 27-3 8:45 AM Miles, Maraina*; Burkhart, Patrick A.; Baldauf, Paul; Hanson, Paul: **GEOMORPHIC FORCING UPON THE WHITE RIVER BADLANDS IN THE CONTEXT OF THE MEDIEVAL CLIMATE ANOMALY, AS RECORDED BY PROXIES ACROSS THE MID-CONTINENT, NORTH AMERICA**
- 27-4 9:05 AM White, Chris E.*; Barr, Sandra M.; Barras, Angie: **FROM MAPPING TO COMPILATION: BUILDING A GEOLOGICAL MAP OF CAPE BRETON ISLAND, NOVA SCOTIA, CANADA**
- 27-5 9:25 AM Childers, Daniel P.*; Etherington, Christopher N.: **INCORPORATING FIELD AND LABORATORY RESEARCH PROJECTS IN EARLY UNDERGRADUATE GEOSCIENCES AT DELAWARE COUNTY COMMUNITY COLLEGE**

SESSION NO. 28

T17. Fundamental Measurements of Shale Properties and Identifying Data Gaps

8:00 AM, Omni William Penn Hotel Monongahela, 17th Floor

Angela Goodman, Dustin Crandall and Barbara Kutchko, Presiding

- 28-1 8:00 AM Anthony, Robin V.*; Harper, John A.; Carter, Kristin; Schmid, Katherine W.; Dunst, Brian J.; Cooney, Michele: **CORRELATION OF MIDDLE AND UPPER DEVONIAN SHALES IN THE MARCELLUS-PRODUCING REGIONS OF PENNSYLVANIA**
- 28-2 8:20 AM Bhattacharya, Shuvajit*; Carr, Timothy: **A WORKFLOW FOR QUANTITATIVE SHALE LITHOFACIES MODELING AT MULTIPLE SCALES: CASE STUDY FROM THE BAKKEN FORMATION IN NORTH DAKOTA**
- 28-3 8:40 AM Gill, Magdalena*; Moore, Johnathan; Brown, Sarah R.; Crandall, Dustin; Stadelman, Matthew: **TRANSMISSIVITY OF FRACTURED SHALE IN RESPONSE TO CYCLIC STRESSES**
- 28-4 9:00 AM Goodman, Angela*; Soeder, Daniel J.; Bromhal, Grant S.; Dillmore, Robert M.; Sanguinito, Sanguinito; Myshakin, Evgeniy; Frailey, Scott; Gorecki, Charles; Peck, Wesley D.: **DOE SCREENING METHODOLOGY FOR ESTIMATING THE PROSPECTIVE CO₂ STORAGE RESOURCE OF SHALES AND IDENTIFYING DATA GAPS**
- 28-5 9:20 AM Kutchko, Barbara*; Goodman, Angela; Dieterich, Matthew; Tkach, Mary K.; Sanguinito, Sanguinito: **CHARACTERIZATION OF THE CO₂-FLUID-SHALE INTERFACE VIA FEATURE RELOCATION USING FIELD-EMISSION SCANNING ELECTRON MICROSCOPY AND *IN SITU* INFRARED SPECTROSCOPY**

SESSION NO. 28

- 28-6 9:40 AM Solotky, Logan*: **USING MULTIVARIATE ANALYSIS OF RAMAN SPECTRA TO IMPROVE THERMAL MATURITY ASSESSMENT OF SHALES**

SESSION NO. 29

T40. Applied Geology, Environmental, Engineering, Hydrogeology, and Applied Geophysics (GSA Environmental and Engineering Geology Division; GSA Geophysics Division; GSA Hydrogeology Division)

8:00 AM, Omni William Penn Hotel Frick, Conference Level

Terry R. West, Presiding

- 29-1 8:00 AM Pontrelli, Marshall*: **EVALUATING MCADAM, NEW BRUNSWICK EARTHQUAKE SWARMS: AN ANALYSIS USING DOUBLE DIFFERENCE RELATIVE LOCATIONS**
- 29-2 8:20 AM Isiorho, K. Solomon A.*: **WHAT HAPPENS TO THE WELL FIELD NEXT AFTER A DECADE OF USE?**
- 29-3 8:40 AM Eaton, Timothy T.*; Gorokhovitch, Yuri; Soule, Dax: **ELECTRICAL RESISTIVITY SURVEY AND INTERPRETATION OF GLACIAL DEPOSITS AT JONES POINT, LOWER HUDSON RIVER VALLEY, NY**
- 29-4 9:00 AM Monecke, Katrin*; McCarthy, Francine M.G.; Ebel, John E.; Hubeny, J. Bradford; Brabander, Daniel J.; Knights, Cooper; Passaretti, Melanie; Pentesco, Justin T.; Pilkington, Paul Michael: **MULTIPROXY ANALYSIS OF UNUSUAL SEDIMENTARY UNITS OF POSSIBLE SEISMIC ORIGIN IN THE LACUSTRINE RECORDS OF SLUICE AND WALDEN PONDS, EASTERN MASSACHUSETTS, USA**
- 29-5 9:20 AM Ashland, Francis X.*: **A PROVISIONAL RAINFALL THRESHOLD FOR ABUNDANT LANDSLIDES IN THE GREATER PITTSBURGH REGION DERIVED FROM RAINFALL CHARACTERISTICS OF MAJOR STORMS AND BEDROCK GROUNDWATER LEVEL DATA**
- 9:40 AM **BREAK**
- 29-6 9:55 AM Hamel, James V.*: **FOUR FAMOUS HISTORIC LANDSLIDES OF THE PITTSBURGH AREA**
- 29-7 10:15 AM Gray, Richard*: **COLLUVIUM IN THE APPALACHIAN PLATEAU PHYSIOGRAPHIC PROVINCE OF PENNSYLVANIA, WEST VIRGINIA AND OHIO**
- 29-8 10:35 AM West, Terry R.*: **URBAN GROWTH VERSUS MINERAL EXTRACTION, A SPECIAL CONCERN INVOLVING AN UNDERGROUND LIMESTONE MINE**
- 29-9 10:55 AM Rygel, Adrienne*; Ng, Kevin; Reilly, Michael: **ENVIRONMENTAL SITE ASSESSMENT OF IRON ACID MINE DRAINAGE AT THE ABANDONED STELLAVILLE MINE, DEKALB JUNCTION, NEW YORK**
- 29-10 11:15 AM Coleman, Neil*; Wojno, Stephanie; Kaktins, Uldis: **THE JOHNSTOWN FLOOD OF 1889 – CHALLENGING THE FINDINGS OF THE ASCE INVESTIGATION REPORT**
- 29-11 11:35 AM Fajvan, Mary Ann*; Morin, Randall S.: **SPATIAL DISTRIBUTION OF RIPARIAN HEMLOCK FORESTS IN THE CHESAPEAKE BAY WATERSHED: THREATS OF AN INVASIVE INSECT ON ECOHYDROLOGY**

SESSION NO. 30

T49. NETectonics: New Advances in Petrology, Geochemistry and Geochronology in the Appalachians (GSA Structural Geology and Tectonics Division)

8:00 AM, Omni William Penn Hotel Lawrence Welk Room, Mezzanine Level

J. Christopher Hepburn, Craig Dietsch, Sandra Barr and Yvette D. Kuiper, Presiding

- 8:00 AM **INTRODUCTORY REMARKS**
- 30-1 8:25 AM Barr, Sandra M.*; Hames, Willis E.; White, Chris E.: **DETRITAL MUSCOVITE FROM THE EDIACARAN-CAMBRIAN BOUNDARY ZONE IN ATLANTIC CANADA: AGE, PROVENANCE, AND EFFECTS OF LOW-GRADE METAMORPHISM ON ⁴⁰AR/³⁹AR SYSTEMATICS**

- 30-2 8:45 AM Gibson, David*; Barr, Sandra M.; van Rooyen, Deanne; White, Chris E.: **GEOCHRONOLOGY AND GEOCHEMISTRY OF GRANITOID PLUTONS, WESTERN MAINE**
- 30-3 9:05 AM West, David P.*: **A REVIEW OF THE PRE-ACCRETIONARY HISTORY OF COASTAL MAINE PERI-GONDWANAN TERRANES**
- 30-4 9:25 AM Pollock, Stephen G.*; Gray, K.; Gibson, David; Vervoort, Jeffrey: **SILURIAN AND EARLY DEVONIAN AGES FOR THE MIXER POND AND ASSOCIATED ORTHOGNEISS PROVIDE AGE CONSTRAINTS ON MAGMATIC ACTIVITY, MIGMATIZATION, AND DEXTRAL SHEAR EVENTS IN THE LIBERTY–ORRINGTON BELT OF SOUTH-CENTRAL MAINE**
- 30-5 9:45 AM Levy, Connor*; Anderson, J. Lawford; Chatterjee, Nilanjan: **CHARACTERIZATION AND CLASSIFICATION OF THE PEABODY AND QUINCY PLUTONS IN THE EASTERN MASSACHUSETTS IGNEOUS COMPLEX**
- 10:05 AM **BREAK**
- 30-6 10:20 AM Wintsch, Robert*; Yi, Keewook; Kim, S.J.; Lee, Shinae; Devlin, William: **A SILURIAN DEPOSITIONAL AGE AND MIXED EASTERN AND WESTERN PROVENANCE FOR THE STRAITS SCHIST CONFIRMED BY DETRITAL ZIRCON GEOCHRONOLOGY**
- 30-7 10:40 AM McAleer, Ryan J.*; Merschat, Arthur; Walsh, Gregory J.; Valley, Peter M.; Kunk, Michael J.; Wintsch, R.P.: **ALLEGHANIAN DEFORMATION AND RECRYSTALLIZATION IN THE CONNECTICUT VALLEY OF VT AND NH**
- 30-8 11:00 AM Attenoukon, M.B.*; Fetherston, D.B.; Kunk, Michael J.; Wintsch, Robert P.: **PATTERNS OF PALEOZOIC METAMORPHISMS IN THE AVALON TERRANE OF SOUTHEASTERN NEW ENGLAND: EVIDENCE FOR SYN- AND POST-METAMORPHIC FAULTING FROM ⁴⁰AR/³⁹AR MINERAL AGES AND THERMOBAROMETRY**
- 30-9 11:20 AM Kuiper, Yvette D.*; Thompson, Margaret D.; Barr, Sandra M.; White, Christopher E.; Hepburn, J. Christopher; Crowley, James L.: **DETRITAL ZIRCON ANALYSIS OF BASEMENT IN THE COST NO. G-1 WELL, GEORGES BANK, OFFSHORE MASSACHUSETTS: FRAGMENTS OF WEST AFRICAN CRUST?**
- 30-10 11:40 AM Zucker, Samuel L.*; Johannesen, Katharine; Ianno, Adam: **MICROSTRUCTURAL STUDY OF A ZONED ULTRAMAFIC BODY IN THE EASTERN BLUE RIDGE MOUNTAINS**

SESSION NO. 31

The Future of Pre-LGM Chronostratigraphy for the Pleistocene: The Glacial and Interglacial Record (GSA Quaternary Geology and Geomorphology Division)

8:00 AM, Omni William Penn Hotel Conference Center A, Conference Level

Kenneth Lepper, Charles Rovey and Martin J. Head, Presiding

- 31-1 8:00 AM Dube, Mukudzei Mswazi*; Head, Martin J.; Ferretti, Patrizia: **CENTRAL NORTH ATLANTIC (IODP SITE U1313) PALEOCEANOGRAPHY AND THE STRUCTURE OF MARINE ISOTOPE STAGE 21 (EARLY PLEISTOCENE, 866–814 KA) BASED ON A HIGH-RESOLUTION DINOFLAGELLATE CYST RECORD**
- 31-2 8:20 AM Balota, Eseroghene J.*; Head, Martin J.; Okada, Makoto: **WESTERN PACIFIC PALAEOCEANOGRAPHY ACROSS THE EARLY–MIDDLE PLEISTOCENE BOUNDARY (~773 KA): DINOFLAGELLATE CYSTS OF THE CHIBA COMPOSITE SECTION, JAPAN. KEYWORDS: PALEOCEANOGRAPHY, DINOFLAGELLATES, PLEISTOCENE, JAPAN, MIS 19**
- 31-3 8:40 AM Thornton, Rachel M.*; Ward, Dylan: **GLACIAL HISTORY OF S CORDON DE PUNTAS NEGRAS, CHILE 24.3°S USING IN SITU COSMOGENIC ³⁶CL**
- 31-4 9:00 AM Dalton, April S.*; Finkelstein, Sarah A.; Forman, Steven L.; Barnett, Peter J.: **DETERMINING THE AGE OF THE MOST RECENT ICE-FREE INTERVAL IN THE HUDSON BAY LOWLANDS, CANADA, USING OSL DATING: A**

- SIGNIFICANT REDUCTION OF THE LAURENTIDE ICE SHEET DURING THE MID-WISCONSIN GLACIATION?**
- 31-5 9:20 AM McCarthy, Francine M.G.*; Gao, Cunhai; Kerr-Lawson Brooks, Leslie; McAndrews, John H.; Turton, Charles L.; Karrow, Paul F.; Bajc, Andy F.: **PALEOBOTANICAL RECORD OF SANGAMONIAN INTERGLACIAL DEPOSITS FROM EASTERN NORTH AMERICA – INSIGHTS FOR THE 21ST CENTURY**
- 31-6 9:40 AM Moss, Cheryl Johnson*; Canale, Tony D.: **MAPPING THE MARINE WANTAGH FORMATION, COMMONLY KNOWN AS THE 20 – FOOT CLAY, IN QUEENS AND BROOKLYN, NEW YORK**
- 31-7 10:00 AM Stanford, Scott D.*; Witte, Ron W.: **PRE-WISCONSINAN GLACIATIONS OF NEW JERSEY**
- 31-8 10:20 AM Rovey, Charles W.*: **DATING PRE-ILLINOIAN GLACIATIONS EAST OF THE MISSISSIPPI RIVER**
- 31-9 10:40 AM Grimley, David A.*; Phillips, Andrew C.: **GEOMORPHOLOGY OF THE ILLINOIS EPISODE GLACIATION (OIS 6) IN ILLINOIS**
- 31-10 11:00 AM Huot, Sebastien*; Loope, Henry M.; Antinao, José Luis; Monaghan, G. William: **DATING THE GREENWOOD MORaine (INDIANA) BY OPTICALLY STIMULATED LUMINESCENCE DATING (OSL): AN ALL TOO COMMON STORY OF APPLYING A TECHNIQUE IN A DIFFICULT ENVIRONMENT IN THE HOPE OF SHINING LIGHT ON AN EXCITING IDEA**
- 31-11 11:20 AM Lewis, C.F. Michael*; Todd, Brian J.: **DO EXTREME FLOOD DEPOSITS IN WABASH AND GRAND RIVER VALLEYS, INDIANA AND MICHIGAN, RELATE TO UPSTREAM SUBGLACIAL FLOODS?**
- 31-12 11:40 AM Spoering, Grant*; Rovey, Charles W.: **EVIDENCE FOR EARLY PLEISTOCENE GLACIATION SOUTH OF THE MISSOURI RIVER IN ST. LOUIS COUNTY, MISSOURI: IMPLICATIONS FOR TILL STRATIGRAPHY EAST OF THE MISSISSIPPI RIVER**

SESSION NO. 32

T43. Women in Geology: Encouraging the Future

10:00 AM, Omni William Penn Hotel Allegheny, 17th Floor

Beth A. Johnson, Presiding

- 10:00 AM **INTRODUCTORY REMARKS**
- 32-1 10:05 AM Schiappa, Tamra A.*: **THE POWER OF MENTORING FOR WOMEN IN GEOLOGY**
- 32-2 10:25 AM Root, Kayla Q.*; Douglas, Jamie C.; Tirel, Carrie J.: **SUPPORTING WOMEN IN STEM: A STUDENT'S PERSPECTIVE**
- 32-3 10:45 AM Hupp, Brittany N.*: **THE UNCONVENTIONAL MINORITY: PREPARING SINGLE PARENTS FOR SUCCESS IN THE GEOSCIENCES**
- 32-4 11:05 AM Guertin, Laura A.*: **REPRESENTING WOMEN GEOSCIENTISTS WITH SELFIES AND STORIES**
- 32-5 11:25 AM Beck, Catherine C.*: **SUPPORTING FEMALE UNDERGRADUATE STUDENTS THROUGH COLLABORATIVE RESEARCH INVOLVING GEOSCIENTISTS FROM THE FULL SPECTRUM OF CAREER STAGES**

SESSION NO. 33

T21. Passive Seismic Monitoring of Brittle and Non-Brittle Deformation during the Stimulation of Unconventional Shale Reservoirs (GSA Environmental and Engineering Geology Division; GSA Geophysics Division)

10:15 AM, Omni William Penn Hotel Monongahela, 17th Floor

Richard W. Hammack, Abhash Kumar and Erich Zorn, Presiding

- 10:15 AM **INTRODUCTORY REMARKS**

- 33-1 10:20 AM Brudzinski, Michael*; Currie, Brian S.; Skoumal, Robert J.: **IMPROVING CORRELATION ALGORITHMS TO BETTER CHARACTERIZE AND INTERPRET INDUCED SEISMICITY**
- 33-2 10:40 AM Zhu, Tiejuan*: **IMAGING INDUCED AND NATURAL FRACTURES USING FULL WAVEFORM MICROSEISMIC DATA**
- 33-3 11:00 AM Homman, Kyle*; Nyblade, Andrew A.: **SEISMICITY IN PENNSYLVANIA AND THE PENNSYLVANIA STATE SEISMIC NETWORK**
- 33-4 11:20 AM Wang, Chaoyi*; Elsworth, Derek; Li, Ziyang; Liu, Keru; Fang, Yi; Jia, Yunzhong: **WEAKENING EFFECTS OF LOW-FRICTION MICROSTRUCTURAL FILMS IN CO₂ ALTERED RESERVOIR ROCKS AND CAPROCKS**
- 33-5 11:40 AM Xiong, Fengyang*; Jiang, Zhenxue; Amooie, Mohammad Amin; Soltanian, Mohamad Reza; Moortgat, Joachim: **PORE STRUCTURE OF TRANSITIONAL SHALES IN THE ORDOS BASIN, NW CHINA: EFFECTS OF COMPOSITION ON GAS STORAGE MECHANISM**

MORNING POSTER TECHNICAL SESSIONS

SESSION NO. 34

Paleoclimate & Paleoceanography (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 34-1 1 Davis, Alyssa M.*; Zaky, Amir H.; Shaver, Kristen K.; Romanin, Marco; Wang, Lisha; Brand, Uwe: **CLIMATE CHANGE RECORD IN MODERN POLAR AND TROPICAL CARBONATE ARCHIVES (MOLLUSCS, BRACHIOPODS)**
- 34-2 2 Pekar, Stephen F.*: **MEASURING THE CLIMATE PULSE OF THE LATE EARLY EOCENE AND MIDDLE EOCENE HOthouse WORLD (51-42 MA): NEW RESULTS FROM ODP LEG 189 HOLE 1171D, SOUTH TASMAN RISEDETAILS**
- 34-3 3 Padgett, Abbey E.*; Yanes, Yurena; Lubell, David: **RELATIONSHIP BETWEEN EARLY HOLOCENE CLIMATE CHANGE AND CAPSIAN TECHNOLOGICAL AND SUBSISTENCE CHANGES IN NW AFRICA AS INFERRED FROM ARCHEOLOGICAL LAND SNAILS**
- 34-4 4 Shulman, Oriana A.*; Turetaia, Anna; Kwiatkowski, Ben; Pekar, Stephen F.: **EVALUATING THE CARIBBEAN CARBONATE CRASHES LEADING UP TO THE MIDDLE MIOCENE CLIMATIC TRANSITION (9.5 -13.8 MA): DISSOLUTION PROXY RECORDS FROM ODP LEG 165 CARIBBEAN BASIN SITE 1000**
- 34-5 5 Awad, Walaa K.*; Oboko-Ikuenobe, Francisca E.: **PALEOCENE PALEOENVIRONMENTAL AND PALEOCLIMATIC RECONSTRUCTION BASED ON PALYNOLOGICAL ANALYSIS OF THE ALO-1 WELL, SOUTHEASTERN NIGERIA**
- 34-6 6 Young, Taylor S.*; Goswami, Arghya: **REALISTIC GLOBAL PALEOBATHYMETRY FOR THE CENOMANIAN-TURONIAN (90 MA) WITH LARGE IGNEOUS PROVINCES**
- 34-7 7 Shaulis, James R.*; Mason, Robert, A.; Booth, Robert K.: **PALEOECOLOGY AND GEOMORPHOLOGY OF TURTLEHEAD ROCK BOG, A UNIQUELY VALUABLE PALEOENVIRONMENTAL ARCHIVE IN OHIO PYLE STATE PARK, PENNSYLVANIA**

SESSION NO. 35

Planetary Geology (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 35-1 8 Brinkmeyer, Vincent Edward*; Kraal, Erin: **GEOMORPHIC MAPPING OF SMALL LANDSLIDES NEAR ARAM CHAOS**

SESSION NO. 35

- 35-2 9 Murphy, Ian*; Piatek, Jennifer L.; Tornabene, Livio L.: **MORPHOLOGIC CHARACTERISTICS OF THE BEST-PRESERVED MARTIAN CRATERS: THERMOPHYSICAL MAPPING OF GASA AND ISTOK**
- 35-3 10 Hart, Roger M*; Cardace, Dawn: **COMPARING TERRESTRIAL PLANET SERPENTINIZATION IN MELANGE TERRAINS**
- 35-4 11 Vanadia, David S.*: **MAPPING THE OUTER MARGINS OF THE SERPENT MOUND IMPACT STRUCTURE TO ASSES THE EXTENT OF DEFORMATION, ADAMS, PIKE, AND HIGHLAND COUNTIES, OHIO**

SESSION NO. 36

Stratigraphy (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- Booth #
- 36-1 12 Shaver, Kristen K.*; Bajnai, David; Davis, Alyssa M.; Zaky, Amir H.; Brand, Uwe: **CYCLIC RECORD OF SEA-SURFACE TEMPERATURE AND SEA LEVEL DURING THE VISEAN (CARBONIFEROUS) OF GREAT BRITAIN**
- 36-2 13 Wang, Lisha*; Shaver, Kristen K.; Davis, Alyssa M.; Azmy, Kareem; Brand, Uwe: **HIGH-RESOLUTION CHEMOSTRATIGRAPHY OF THE FURONGIAN SERIES STAGE 10 BELOW THE CAMBRIAN-ORDOVICIAN GSSP**
- 36-4 15 Bierly, Aaron D.*; Blackmer, Gale C.: **FACIES ASSOCIATION AND STRATIGRAPHIC RELATIONSHIP OF THE MARTINSBURG FORMATION AND THE REEDSVILLE FORMATION ALONG THE NORTHWESTERN EDGE OF THE GREAT VALLEY IN PENNSYLVANIA**
- 36-5 16 Pentesco, Justin T.*; McCarthy, Francine M.G.; Brooks, Gregory R.; Monecke, Katrin; Hubeny, J. Bradford; Ebel, John E.; Hughes, Dan; Garner, Caitlin S.: **PALYNOFACIES ANALYSIS IN EASTERN NORTH AMERICAN LAKES APPLIED TO STUDIES OF PALEOSEISMICITY**
- 36-6 17 Morris, Dustin K*; Sunderlin, David: **EXPLORING DEPOSITIONAL HISTORY AND POTENTIAL CYCLICITY IN THE ALLENTOWN FORMATION, EASTON, PENNSYLVANIA**
- 36-7 18 Waid, Christopher B.*: **HIGH-RESOLUTION CYCLOSTRATIGRAPHY OF THE LOWER HURON MEMBER OF THE OHIO SHALE THROUGHOUT CENTRAL AND EASTERN OHIO**
- 36-8 19 Foster, Jared A.*; Stone, Jeffery R.: **DIATOM INFERRED ENVIRONMENTAL RECONSTRUCTION OF TWO VOLCANIC CRATER LAKES WITHIN NEWBERRY VOLCANO, OREGON**
- 36-9 20 Stone, Grace L.*; Elliott, William S.: **DETAILED SEDIMENTOLOGICAL STUDY OF THE WEST FRANKLIN LIMESTONE MEMBER (DESMOINESIAN TO MISSOURIAN) OF THE SHELburn FORMATION (UPPER PENNSYLVANIAN) OF SOUTHWESTERN INDIANA**
- 36-10 21 Evans, Kevin Ray*; Lieberman, Bruce S.; McKenna, Lawrence W.; Weichert, Wesley Donald; MacLeod, Kenneth G.: **LATE MIDDLE CAMBRIAN (STAGE 3) SHALLOW SHELF SUCCESSION IN THE PATUXENT RANGE, ANTARCTICA**
- 36-11 22 Haines, Forest*: **POSTERS OF CYCLES AND MARKER BEDS OF THE CARBONATE LOWER MISSISSIPPIAN STRATOTYPE IN WESTERN CANADA, WESTERN USA, SOUTHEASTERN USA WITH RECON SECTIONS IN ARGENTINA AND IRELAND**
- 36-12 23 Giblin, Jacqueline*; Wizevich, Michael C.; Luna, Melissa: **PROVENANCE ANALYSES OF SEDIMENTARY STRATA IN THE MESOZOIC RIFT BASINS IN CONNECTICUT USING DETRITAL ZIRCON GEOCHRONOLOGY**
- 36-13 24 Littlefield, Collin R.*; Cornell, Sean R.; Lands, Angela: **PRELIMINARY SPECTRAL ANALYSIS OF THE SALONA-COBURN (UPPER ORDOVICIAN) INTERVAL FROM CENTRAL PA USING BED BY BED THICKNESS MEASUREMENTS**

SESSION NO. 37

T47. Omnipresent Ichnology: Traces of Life From Mountain Slopes to the Deep Sea (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- Booth #
- 37-1 25 Cribb, Alison*; Darroch, Simon A.F.; Laflamme, Marc: **INTERPRETING COMPLEXITY OF TRACE FOSSILS FROM THE LATEST NEOPROTEROZOIC NAMA GROUP, NAMIBIA**
- 37-2 26 Swaninger, Emma*; Hembree, Daniel I.: **LARGE BURROWS IN FLUVIAL DEPOSITS OF THE EARLY PERMIAN (ASSELIAN) DUNKARD GROUP, SOUTHEAST OHIO, U.S.A**
- 37-3 27 Hyatt, James A.*; Farlow, James O.: **USING SCANNING AND PHOTOGRAMMETRY TO DEVELOP OBJECTIVE GEOMETRIC MEASURES AND EDUCATIONAL RESOURCES FOR A EUBRONTES TRACKSITE, DINOSAUR STATE PARK, CT**
- 37-4 28 Horner, Robert J.*; McGregor, Graham; Holbrook, John: **VEGETATION INDUCED SEDIMENTARY STRUCTURES AND FOSSILIZED TREES IN TERMINAL SPLAY SANDSTONE BEDS OF THE CRETACEOUS-PALEOCENE RATON FORMATION, COLORADO**
- 37-5 29 August, Jessica M.*; Buynevich, Ilya V.; Ward, Dane C.; Sparacio, Christopher A.; Bien, Walter F.: **SUBSURFACE (800 MHZ GEORADAR) IMAGING OF A NORTHERN PINESNAKE NEST STRUCTURE, WARREN GROVE RANGE, NEW JERSEY**
- 37-6 30 Combs, Kassandra L.*; Freedman, Joanna; Forst, Tyler; Kopczynski, Karen A.; Buynevich, Ilya V.: **BIOGEOMORPHIC EFFECTS OF SEMI-FOSSORIAL MAMMALS ON THE RIPARIAN ZONE OF A SMALL FORESTED CREEK, SOUTHEASTERN PENNSYLVANIA**
- 37-7 31 Sparacio, Christopher A.*; Buynevich, Ilya V.; Kopczynski, Karen A.; Vasylenko, Klavdiya; Curran, H. Allen: **DECAPOD DATA MINING: HISTORY OF RESEARCH ON SUPRATIDAL BRACHYURAN BURROWS**

SESSION NO. 38

T12. Undergraduate Research Session II (Posters) (Council on Undergraduate Research Geosciences Division)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

- Booth #
- 38-1 1 Zamperoni, Anthony*; Johnston, John W.; Wolfe, Brent B.; Hall, Roland I.; Lepper, Kenneth; Jol, Harry M.; Endres, Tony; Duguay, Claude: **CHARACTERIZING RELICT SHORELINES TO ESTABLISH THE MOST DETAILED ACCOUNT OF LAKE-LEVELS IN THE PEACE ATHABASCA DELTA: A KEY HYDROLOGIC NODE OF THE MACKENZIE RIVER BASIN, NORTHWESTERN CANADA**
- 38-2 2 Scruggs, Courtney Rae*; Dekhordy, Farzaneh Mahmood Poor; Briggs, Martin A.; Day-Lewis, Frederick D.; Zarnetske, Jay; Mitzman, Rayna; Lane, John W.: **IN-SITU QUANTIFICATION OF LESS-MOBILE POROSITY IN SAND-AND-GRAVEL GLACIAL KETTLE POND SEDIMENTS AT SNAKE POND, CAPE COD, MASSACHUSETTS**
- 38-3 3 Williams, Juliette P.*; FitzGerald, Duncan M.; Farron, Sarah; Novak, Alyssa: **THE EFFECTS OF EDGE EROSION ON LONG-TERM SUSTAINABILITY OF THE GREAT MARSH**
- 38-4 4 Flynn, Melanie*; Russo, William; Schmidt, Matthew; Renninger, Dustin; Aungst, Alison; Trudeau, Matt; Sceffo, Deven; Leri, Deanna; Ruvo, Dane; Miller, Brandon; Abernathy, Austin; Pfahler, Alyssa; Cole, Matt; Schwartz, Zach; Oxenford, Ryan; Johnson, Chros; Losco, Russell; Nikitina, Daria: **QUANTIFICATION OF SOIL FORMATION ON A RECENT LAVA FLOW AT MT. ARENAL, COSTA RICA**
- 38-5 5 Binger, David*; Haritashya, Umesh K.: **ANALYZING RETREATING GLACIERS AND GROWING PROGLACIAL LAKES IN FOUR DIFFERENT MOUNTAIN RANGES OVER THREE DECADES USING REMOTE SENSING SATELLITE IMAGES**

- 38-6 6 Tomko, Sara Jean*; Cullen, Cecilia M.: **ASSESSING THE ROLE OF GLACIAL WATER IN THE PERUVIAN BOFEDALES WITH WATER ISOTOPES**
- 38-7 7 Kaye, Michael*: **STABLE ISOTOPE GEOCHEMISTRY AND HYDROLOGY OF THE LAKE JUNÍN WATERSHED, PERU**
- 38-8 8 Pease, Allison*; Davis, James: **SEA LEVEL BUDGET ALONG THE EAST COAST OF NORTH AMERICA**
- 38-9 9 Mann, Kacy J.*: **MONITORING, COLLECTING, AND ANALYZING THE WATER QUALITY DATA OF STREAMS IN CENTRAL PENNSYLVANIA**
- 38-10 10 Hetman, Madisen*; Moore, Dalton; Nuss, Sarah; Rygel, Adrienne: **WATER QUALITY ASSESSMENT AND NUTRIENT LOADING OF THE GRASSE RIVER, ST. LAWRENCE COUNTY, NEW YORK**
- 38-11 11 Nuss, Sarah*; Hetman, Madisen; Moore, Dalton; Rygel, Adrienne: **FIELD ASSESSMENT OF EROSION POTENTIAL AND SEDIMENT LOADING OF THE GRASSE RIVER, ST. LAWRENCE COUNTY, NEW YORK**
- 38-12 12 Moore, Dalton*; Hetman, Madisen; Nuss, Sarah; Rygel, Adrienne: **USING THE WATER EROSION PREDICTION PROJECT (WEPP) MODEL TO ASSESS EROSION POTENTIAL AND SEDIMENT LOADING OF THE GRASSE RIVER, ST. LAWRENCE COUNTY, NEW YORK**
- 38-13 13 Estes, Connor D.*; Peck, John A.: **CONTINUED MONITORING OF THE EFFECTS OF TWO DAM REMOVALS ON THE MIDDLE CUYAHOGA RIVER, OHIO**
- 38-14 14 Tompkins, Jared*; Wilson, Lori: **TOTAL PHOSPHOROUS IN GEOLOGICAL AND AGRICULTURAL SAMPLES FROM EKU'S MEADOWBROOK FARM**
- 38-15 15 Buskirk, Reid E.*; Evans, Hunter R.; Borowski, Walter S.; Malzone, Jonathan M.: **NUTRIENT CONTAMINATION FROM NON-POINT SOURCES: DISSOLVED NITRATE AND AMMONIUM IN SURFACE AND SUBSURFACE WATERS AT EKU MEADOWBROOK FARM, MADISON COUNTY, KENTUCKY**
- 38-16 16 Evans, Hunter R.*; Buskirk, Reid E.; Borowski, Walter S.; Malzone, Jonathan M.: **NUTRIENT CONTAMINATION FROM NON-POINT SOURCES: DISSOLVED PHOSPHATE IN SURFACE AND SUBSURFACE WATERS AT EKU MEADOWBROOK FARM, MADISON COUNTY, KENTUCKY**
- 38-17 17 Gromofsky, Gabrielle A.*; Peck, John A.: **ASSESSING SEDIMENT MAGNETISM AS A PROXY FOR HEAVY METAL POLLUTION IN A NORTHERN OHIO FLUVIAL SYSTEM**
- 38-18 18 Mosesso, Lauren*; Hollberg, Coalter; Odhiambo, Ben K.: **THE IMPACT OF SOIL CHARACTERISTICS AND SEA LEVEL RISE ON PHOSPHORUS DYNAMICS IN COASTAL AND UPSTREAM WETLANDS IN THE LOWER CHESAPEAKE BAY**
- 38-19 19 King, Meghan*; Odhiambo, Ben K.: **APPLICATION OF SOIL AND WATER ASSESSMENT TOOL (SWAT) TO MODEL THE IMPACT OF PROGRESSIVE LAND-USE CHANGES ON SEDIMENT AND NUTRIENT FLUXES IN RIVANNA RIVER BASIN, VIRGINIA, USA**
- 38-20 20 Isihara, Hana L.*; Mauriello, Haley E.; Lawrence, Kira T.; Castañeda, Isla S.; Peterson, Laura C.: **A PRELIMINARY ASSESSMENT OF THE CONSISTENCY OF NEOGENE SEA SURFACE TEMPERATURE ESTIMATES FROM THE $U^{K_{37}}$ AND TEX_{86} PALEOTHERMOMETERS**
- 38-21 21 Teresi, Joseph*: **A SPATIAL RELATIONSHIP BETWEEN STREAM SLOPE STABILITY AND WATER QUALITY WITHIN AN URBAN WATERSHED IN ROCK ISLAND, IL**
- 38-22 22 Chouinard, Courtney L.*: **ELEMENTAL CONTAMINATION OF ANCIENT COPPER MINE IN KILLARNEY, IRELAND**
- 38-23 23 Cook, Zachary B.*: **HEAVY METAL CONTAMINATION FOUND IN WATER SOURCES THROUGHOUT MAINLAND CHINA**
- 38-24 24 Martin, Emma T.*; Quirk, Emma E.; Broderhausen, Erica C.; Chiang, Kelly; FitzGerald, Duncan M.; Novak, Alyssa; Farron, Sarah: **THE EFFECT OF BIOMASS ON MARSH EDGE EROSION IN RELATION TO RISING SEA LEVELS**
- 38-25 25 Marks, Kirk*; O'Neal, Evan; Williams, Amy J.: **EFFECTS OF ACID MINE DRAINAGE ON AQUEOUS GEOCHEMISTRY OF BIG MINE RUN AND MAHANAY CREEK IN EAST-CENTRAL PENNSYLVANIA: A DOWNSTREAM EVALUATION**
- 38-26 26 Sommer, Kaitlin M.*; Crowley, Brooke E.; Haak, Bruce: **ASSESSING NATAL REGIONS FOR MIGRATORY JUVENILE ACCIPITERS USING HYDROGEN ISOTOPES**
- 38-27 27 Warren, Emily L.*; Teed, Rebecca E.; McGowin, Audrey E.: **SOURCE DETERMINATION OF ARSENIC, LEAD, AND CADMIUM IN THE YELLOW SPRING SEDIMENT IN GLEN HELEN NATURE PRESERVE, OH**
- 38-28 28 Smart, Kyle E.*; Balogh-Brunstad, Zsuzsanna: **CONTRIBUTION OF FULVIC ACID TO SOIL-MINERAL WEATHERING**
- 38-29 29 Horton, Taylor*; Allen, Douglas E.; Oettgen, Hannah L.; Brabander, Daniel J.; Knudstrup, Renee; Nadeau, Patricia A.: **TRACING HISTORICAL LANDFILL LEACHATE TRANSPORT THROUGH THE USE OF DENDROCHRONOLOGY AND DENDROCHEMISTRY AT BATTIS ROAD LANDFILL, MERRIMAC, MA**
- 38-30 30 Kern, Courtney M.*; Mihindukulasooriya, Lorita; Ortiz, J.D.; Davis, Alexandra; Arcuri, Marissa L.: **EVALUATING WEEKLY VARIATION OF ALGAL BIOMASS IN THE OLD WOMAN CREEK ESTUARY USING VISIBLE SPECTRAL REFLECTANCE**
- 38-31 31 Piske, Jacob*: **NUTRIENT VARIATIONS OF SIX SURFACE WATER BODIES IN MCHENRY COUNTY, IL**
- 38-32 32 Mills, Jonathan*; Duroe, Kiersten; Kinsman-Costello, Lauren E.; Herndon, Elizabeth: **EVALUATING PHOSPHORUS SOLUBILITY IN TUNDRA AND BOREAL ECOSYSTEMS**
- 38-33 33 Drennan, Caitlin A.*; Bergslien, Elisa: **TESTING FOR METALS WITHIN THE SOIL AND THE WATER ALONG THE BUFFALO RIVER**
- 38-34 34 Barkley, Jeremy R.*; Ritter, John B.: **LONG-TERM ASSESSMENT OF LOWHEAD DAM REMOVAL OR MODIFICATION AND ITS EFFECT ON URBAN STREAM QUALITY, SPRINGFIELD, OH**
- 38-35 35 Thatcher, Sean*: **SEA-LEVEL RISE: A GEOSPATIAL APPROACH TO COASTAL STABILITY IN STATEN ISLAND, NY**
- 38-36 36 Magyan, Sarah E.*; Dempsey, Christopher: **ASSESSING MONTHLY CHANGES AND THE DEGRADATION OF TERRESTRIALLY DERIVED DISSOLVED ORGANIC CARBON IN A TEMPERATE LAKE**
- 38-37 37 Hyden, Jordyn*; El Kadiri, Racha: **DROUGHTS IN A CHANGING CLIMATE: A REVIEW**
- 38-38 38 Cole, Alex*; Oettgen, Hannah L.; Brabander, Daniel J.; Allen, Douglas E.: **IMPACT OF ROAD POLLUTION AND RUNOFF ON THE HEAVY METAL CONCENTRATIONS OF SEDIMENTS WITHIN THE FOREST RIVER ESTUARY, SALEM, MA**
- 38-39 39 Belske, Cassidy Anne*: **LEAD LEACHED FROM HOUSEHOLD PLUMBING AND THE EFFECT OF WATER PH LEVELS**
- 38-40 40 Molloy, James B.*; Rodbell, Donald: **HEAVY METAL SOIL CONTAMINATION OF THE LAKE JUNÍN BASIN FROM MINE TAILINGS DUST**
- 38-41 41 Waters, Linda*; Oettgen, Hannah L.; Brabander, Daniel J.; Allen, Douglas E.; Hanson, Lindley S.: **UNEARTHING THE GEOCHEMICAL FINGERPRINT OF THE 1914 GREAT SALEM MA CONFLAGRATION: EVIDENCE FROM THE PALMER COVE PARK LANDFILL**

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 39

T11. Improving Undergraduate STEM Education and Advancing Diversity in the Geosciences—How Are We Doing? (GSA Geoscience Education Division; GSA Geophysics Division; International Association for Geoscience Diversity)

1:30 PM, Omni William Penn Hotel Allegheny, 17th Floor

Jonathan Lewis, Sharon Cooper and Karen B. Thomson, Presiding

1:30 PM INTRODUCTORY REMARKS

39-1 1:35 PM Hall, Sarah R.*; Schmidt, Calla M.; Walker, Becca: **CHALLENGES AND OPPORTUNITIES IN THE DEVELOPMENT OF A MULTI-INSTITUTION FIELD-BASED PROFESSIONAL DEVELOPMENT PROGRAM FOR ENVIRONMENTAL-STEM (ESTEM) UNDERGRADUATES**

39-2 1:55 PM Davis, Jennifer*; Cardace, Dawn; Kortz, Karen; Rieger, Duayne; Savage, Brian: **A NEW DUAL ENROLLMENT RESEARCH SKILLS CLASS TO BUILD CONFIDENCE AND INTEREST IN A POPULATION OF POTENTIAL GEOSCIENCE MAJORS**

39-3 2:15 PM McCarthy, Heather J.*; Williams, Kevin K.: **STUDENT ATTITUDES IN INTRODUCTORY GEOSCIENCE COURSES**

39-4 2:35 PM Ryan, Jeffrey*; Luna, Antonio; Vidito, Chris; Hickey-Vargas, Rosemary; MacDonald, James H.; Beck, Mary A.: **LEVERAGING IODP SAMPLES, DATA AND EDUCATION/ OUTREACH RESOURCES IN SUPPORT OF A COURSE-BASED UNDERGRADUATE RESEARCH EXPERIENCE (CURE): BENEFITS AND CHALLENGES**

2:55 PM BREAK

39-5 3:10 PM Cooper, Sharon*; Lewis, J.C.: **INITIAL RESULTS AND SOCIAL MEDIA PRESENCE OF THE STEM STUDENT EXPERIENCES ABOARD SHIPS (STEMSEAS) PROGRAM**

39-6 3:30 PM Bryant, Raquel M.*; Cooper, Sharon; Lewis, Jonathan C.; Thomson, Karen B.: **THE ROLE OF SOCIAL MEDIA IN RECRUITMENT AND RETENTION OF DIVERSE GEOSCIENCE UNDERGRADUATES**

39-7 3:50 PM Stark, Baylee S.*; Hundley, Stacey A.: **AN INTERACTIVE SCALE-UP CLASSROOM VS. A TRADITIONAL INSTRUCTOR-LED CLASSROOM: A COMPARISON OF STUDENT LEARNING GAINS IN AN EARTH SCIENCE COURSE FOR NON-SCIENCE MAJORS**

39-8 4:10 PM Musser, Linda R.*: **OPEN EDUCATIONAL RESOURCES AND AFFORDABLE INSTRUCTIONAL RESOURCES – CAN THEY PROMOTE RETENTION AND DIVERSITY?**

SESSION NO. 40

T26. Biogeochemical Cycling and Biomineralization: Observations at the Microscale

1:30 PM, Omni William Penn Hotel Frick, Conference Level

Dawn Cardace, Zsuzsanna Balogh-Brunstad and Amanda Albright Olsen, Presiding

40-1 1:30 PM Balogh-Brunstad, Zsuzsanna*; Smart, Kyle E.: **MINERAL TRANSFORMATION THROUGH FUNGAL WEATHERING**

40-2 1:50 PM Cardace, Dawn*: **TRACKING SHIFTS IN BIOGEOCHEMICAL INTERACTIONS IN ULTRAMAFIC ROCK SYSTEMS**

40-3 2:10 PM Shaikh, Mahrukh*; Cardace, Dawn: **ION CHROMATOGRAPHY ANALYSIS OF GROUNDWATERS FROM THE COAST RANGE OPHIOLITE MICROBIAL OBSERVATORY (CROMO) WATER MONITORING WELLS.**

40-4 2:30 PM Sousa, Alexander*; Cardace, Dawn: **SERPENTINIZATION-RELATED MICROBE-MINERAL RELATIONSHIPS WITH MFTIR-SPECTROSCOPY**

40-5 2:50 PM Yarger, Brianne*; Frederick, Hannah; Zemanek, Laura; Singer, David M.; Herndon, Elizabeth: **GETTING TO THE ROOT OF NONPOINT SOURCE POLLUTION IN ABANDONED MINE LANDS: BIOGEOCHEMICAL CYCLING OF MANGANESE IN FORESTED COAL MINE SPOIL**

40-6 3:10 PM Duroe, Kiersten*; Mills, Jonathan; Kinsman-Costello, Lauren E.; Herndon, Elizabeth: **IRON REDOX CYCLING AND IMPACTS ON PHOSPHORUS SOLUBILITY IN TUNDRA AND BOREAL ECOSYSTEMS**

SESSION NO. 41

T45. Sources, Transport and Fate of Trace Elements and Organics in the Environment

1:30 PM, Omni William Penn Hotel Monongahela, 17th Floor

Tara Kneeshaw and Colleen McLean, Presiding

1:30 PM INTRODUCTORY REMARKS

41-1 1:35 PM Kneeshaw, Tara*; Driver, Erin: **SPATIAL VARIABILITY AND KINETIC CONTROLS ON BIOGEOCHEMICAL PROCESSES: INSIGHTS INTO THE ROLE OF HYDROLOGIC VARIABILITY AND DONOR AVAILABILITY**

41-2 1:55 PM Richardson, Justin B.*; Derry, Louis A.; Richter, Daniel deB.: **WEATHERING LOSSES AND PHASE PARTITIONING OF ALUMINUM IN THE CRITICAL ZONE USING GALLIUM/ ALUMINUM RATIOS**

41-3 2:15 PM Mango, Helen*; Hluchy, Michele M.: **VERTICAL AND HORIZONTAL MIGRATION OF METAL CONTAMINANTS FROM ILLEGAL GARBAGE BURN PILES IN WEST HAVEN, VERMONT**

41-4 2:35 PM Bell, Matthew*; Khalequzzaman, Md.: **WATER QUALITY INDEX ASSESSMENT OF THE HEADWATER SYSTEM FEEDING THE LOCK HAVEN PUBLIC DRINKING WATER SUPPLY**

41-5 2:55 PM Gutches, Kristina M.*; Garvin, Shannon; Jin, Li; Lu, Wanyi; Levy, Zeno; Lautz, Laura K.; Lu, Zunli: **EVALUATING THE NATURAL TRANSPORT PATHWAYS OF IODINE IN HEADWATER CATCHMENTS**

3:15 PM BREAK

41-6 3:30 PM Riemersma, Peter E.: **ROAD SALT IMPACT ON SURFACE AND GROUNDWATER DURING SNOW MELT OFF AND RAINFALL EVENTS IN 2015 AND 2016 AT ALLENDALE MIDDLE SCHOOL, MICHIGAN**

41-7 3:50 PM Long, David T.*; Voice, Thomas C.: **USING OF C-Q HYSTERESIS PLOTS AND INTEGRATIVE POLLUTOGRAPHS TO INFER SOLUTE BEHAVIOR AND WATERSHED PROCESSES**

41-8 4:10 PM Bergslien, Elisa*: **TRACKING HEAVY METALS IN THE FIELD: ISSUES WITH PORTABLE X-RAY FLUORESCENCE (PXRF) SPECTROMETRY OF SOILS**

41-9 4:30 PM Pajuluoma, Gordon*; Gellach, Christopher A.; Juarez, Theodore J.; Lundquist, Arthur H.: **EFFECT OF WATER SAMPLE TRANSPORTATION CONDITIONS ON THE REPORTED ANALYTICAL RESULTS OF CYANIDE**

41-10 4:50 PM Kinder, Katherine M.*; Gellach, Christopher A.; Dusenbury, James S.; Timmes, Thomas C.; Hughes, Thomas M.: **EVALUATING THE IMPACT OF AIR TEMPERATURE AND AMBIENT BENZENE VAPOR CONCENTRATIONS ON CONDENSATION WATER FROM AIR TECHNOLOGY PRODUCT WATER**

41-11 5:10 PM Elyamani, Karim*; Gellach, Christopher A.; Majar, Maria K.; Dusenbury, James S.; Brown, Carlis W.; Kinder, Katherine M.: **IMPACT OF RELATIVE HUMIDITY AND AIRBORNE BENZENE CONCENTRATIONS ON CONDENSATION WATER FROM AIR TECHNOLOGY PRODUCT WATER**

SESSION NO. 42**T46. Ground Penetrating Radar Applications in the Earth Sciences and Archaeology**

1:30 PM, Omni William Penn Hotel Conference Center A, Conference Level

Harry M. Jol, Presiding

- 42-1** 1:30 PM Williams, Kevin K.*: **REVEALING LOST BURIALS IN WESTERN NEW YORK USING GROUND PENETRATING RADAR**
- 42-2** 1:50 PM Thieme, Donald M.*; Brown, Bruce: **GPR INVESTIGATIONS OF THE ROMAN BATHS AT CARSLAE, ITALY**
- 42-3** 2:10 PM Erickson, James Scott*; Seamans, Jackelyn M.; Wavrin, Thomas A.; Kleinschmidt, Alexander S.; Jol, Harry M.; Daubaras, Mantas: **A GROUND PENETRATING RADAR INVESTIGATION OF ARCHAEOLOGICAL SITES IN VARNIA REGIONAL PARK, NORTHWESTERN LITHUANIA**
- 42-4** 2:30 PM Buynevich, Ilya V.*: **ONE TRACE, TWO TRACE, OLD TRACE, NEW TRACE: GEORADAR APPLICATIONS IN ZOOGEOMORPHOLOGY AND ICHNOLOGY**
- 42-5** 2:50 PM Jol, Harry M.*; Loope, Walter L.; Seamans, Jackelyn M.; Hynek, Madeline; Kleinschmidt, Alexander S.: **GROUND PENETRATING RADAR IMAGING OF A LAKE SUPERIOR HOLOCENE BARRIER: NEW INSIGHTS FROM LONESOME POINT, MICHIGAN**

SESSION NO. 43**T48. NEtectonics: New Advances in Structural Geology and Tectonics in the Appalachians (GSA Structural Geology and Tectonics Division)**

1:30 PM, Omni William Penn Hotel Lawrence Welk Room, Mezzanine Level

Yvette D. Kuiper, Michael L. Williams and John Wesley Buchanan II, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 43-1** 1:35 PM Anderson, Erik*; Johnson, Scott E.: **MINIMUM FINITE SHEAR STRAIN ESTIMATES AND IMPLICATIONS FOR STRAIN LOCALIZATION AT THE BASE OF THE SEISMOGENIC ZONE: A CASE STUDY FROM THE SANDHILL CORNER SHEAR ZONE, MAINE, USA**
- 43-2** 1:55 PM Pollock, Stephen G.*; Rowe, Christie D.; Swanson, Mark; Ross, Catherine: **THE MONROE HIGH STRAIN ZONE: A NEWLY RECOGNIZED FEATURE IN THE NORUMBEGA FAULT SYSTEM OF SOUTH – CENTRAL AND CENTRAL MAINE**
- 43-3** 2:15 PM Ludman, Allan*: **MULTIPLE DEFORMATION OF CHLORITE-GRADE LATE ORDOVICIAN TO EARLY DEVONIAN STRATA IN EASTERN MAINE**
- 43-4** 2:35 PM Walsh, Gregory J.*; Valley, Peter M.; Mersch, Arthur J.; McAleer, Ryan J.; Ratcliffe, Nicholas M.; Thompson, Peter J.; Holm-Denoma, Christopher S.; Roden-Tice, Mary K.; Regan, Sean P.; Aleinikoff, John N.: **TECTONIC EVOLUTION OF THE CONNECTICUT VALLEY REGION IN SOUTH-CENTRAL VERMONT AND WEST-CENTRAL NEW HAMPSHIRE**
- 43-5** 2:55 PM Moecher, David P.*; Massey, Matthew A.; McCulla, James K.: **NEW ZIRCON AND MONAZITE U-PB SIMS AGES FOR METAPLUTONIC AND METAPELITIC GNEISSES IN THE PALMER ZONE OF TRANSPRESSION, CENTRAL MA AND CT: CONSTRAINTS ON TIMING OF DEFORMATION, HIGH GRADE METAMORPHISM AND DELAMINATION(?)**
- 43-6** 3:15 PM Massey, Matthew A.*; Berg, Christopher A.; Moecher, David P.: **PRE- AND SYN-KINEMATIC P-T CONSTRAINTS ACROSS A ZONE OF TRANSPRESSION, VERTICAL EXTRUSION, AND LATERAL ESCAPE IN THE SOUTHERN NEW ENGLAND APPALACHIANS**
- 3:35 PM **BREAK**
- 43-7** 3:50 PM Kuiper, Yvette D.*; Wintsch, Robert P.; Severson, Allison R.; Attenoukon, Miriam B.: **A CASE FOR ALLEGHANIAN 'MINI' INDENTER TECTONICS IN THE SOUTHEASTERN NEW ENGLAND APPALACHIANS**

- 43-8** 4:10 PM Ebel, John E.*: **THE TECTONIC STRUCTURE OF THE CRUST AND UPPER MANTLE OF THE NORTHEASTERN UNITED STATES AND SOUTHEASTERN CANADA FROM SEISMOLOGICAL STUDIES**
- 43-9** 4:30 PM Long, Maureen D.*; Benoit, Margaret H.: **STRUCTURE OF THE CRUST AND MANTLE LITHOSPHERE ACROSS THE CENTRAL APPALACHIANS AND IMPLICATIONS FOR TOPOGRAPHIC EVOLUTION AND EOCENE VOLCANISM**
- 43-10** 4:50 PM Ace, Ashley*; McQuarrie, Nadine; Sak, Peter B.; Grundy, Bob; Lavergne, Barrett: **REFINING SHORTENING STYLES IN THE APPALACHIANS BY THE INCORPORATION OF HIGH RESOLUTION SEISMIC DATA**
- 43-11** 5:10 PM Olsen, Joshua E.S.*; McQuarrie, Nadine; Ace, Ashley: **REFINING BALANCED CROSS SECTION KINEMATIC SEQUENCES WITH FLEXURAL AND EROSIONAL FORWARD MODELING**

SESSION NO. 44**T41. Geoarchaeology (GSA Archaeological Geology Division)**

3:25 PM, Omni William Penn Hotel Conference Center A, Conference Level

Harry M. Jol and Philip P. Reeder, Presiding

- 44-1** 3:25 PM Kollar, Albert D.*; Feely, Martin; Joyce, Ambrose; Fedosick, Rich; Hughes, Kay: **THE INDUSTRIAL ARCHAEOLOGY OF THE CONNEMARA MARBLE: CROSS-ATLANTIC CONNECTIONS BETWEEN WESTERN IRELAND AND THE CARNEGIE MUSEUM OF NATURAL HISTORY, PITTSBURGH, PENNSYLVANIA**
- 44-2** 3:45 PM Langworthy, Mary*; Beck, Catherine C.; Allen, Mary Margaret; Feibel, Craig S.; Wegter, Bruce: **PALEOENVIRONMENTAL HISTORY AND REGIONAL INTERPRETATION FOR THE HOMINOID-BEARING LOCHERANGAN LOCALITY IN WEST TURKANA, KENYA**
- 44-3** 4:05 PM Wenhold, Leah*; Rankin, Jennifer; Buynevich, Ilya V.; Stewart, Michael: **MAGNETIC SUSCEPTIBILITY TRENDS WITHIN A DELAWARE RIVER FLOODPLAIN SEQUENCE, SNYDER SITE, NEW JERSEY**
- 44-4** 4:25 PM Luczak, Jonathan*; Workman, Vanessa; Foglia, Phillip R.; Freund, Richard A.; Jol, Harry M.: **PRELIMINARY RESULTS OF A PXRF ANALYSIS ON CERAMICS FROM THE EASTERN MEDITERRANEAN REGION**
- 44-5** 4:45 PM Reeder, Philip P.*; Jol, Harry M.; Freund, Richard A.: **COMBINING GEOPHYSICAL AND SPATIAL DATA TO LOCATE EXCAVATION SITES**
- 44-6** 5:05 PM Jol, Harry M.*; Freund, Richard A.; Reeder, Philip P.; Erickson, James S.; Wavrin, Thomas A.; Kleinschmidt, Alexander S.; Seamans, Jackelyn M.: **GEOARCHAEOLOGICAL INVESTIGATIONS AT A HOLOCAUST SITE (PONAR), LITHUANIA: SUBSURFACE IMAGING IN SEARCH FOR A PROCESSING TRENCH AND BURIAL PIT**

SESSION NO. 45**T42. Surficial Geologic Mapping**

3:45 PM, Omni William Penn Hotel Frick, Conference Level

Kevin A. Kincade and Gary M. Fleege, Presiding

- 45-1** 3:45 PM Rayburn, John A.*; DeSimone, David J.: **A REVISED CORRELATION OF GLACIAL LACUSTRINE STRANGLINES BETWEEN THE CHAMPLAIN AND HUDSON VALLEYS HELPS PINPOINT A MISSING THRESHOLD**
- 45-2** 4:05 PM Kozlowski, Andrew L.*; Bird, Brian; Mahan, Shannon A.; Feranec, Robert S.; Leone, James: **SURFICIAL GEOLOGIC MAPPING OF THE UNION SPRINGS QUADRANGLE, NEW YORK: AN EXAMPLE OF THE UNBEKNOWNST SOCIETAL NEED FOR 3D GEOLOGIC MAPPING**
- 45-3** 4:25 PM Burt, Abigail K.*; Mulligan, Riley P.M.: **LATE GLACIAL ONTARIO LOBE ICE ON THE NIAGARA PENINSULA: HOW FAR DID IT GO?**

- 45-4 4:45 PM Erber, Nathan R.: **SURFICIAL GEOLOGY OF THE CHILLICOTHE, OHIO REGION**
- 45-5 5:05 PM Kehew, Alan E.*; Esch, John M.; Yellich, John A.; Karki, Sita; Backhaus, Karl J.: **SURFICIAL GEOLOGY OF A COMPLEX INTERLOBATE AREA, CASS COUNTY, MICHIGAN**

AFTERNOON POSTER TECHNICAL SESSIONS

SESSION NO. 46

Paleontology (Posters)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 46-1 1 Bertsos, Maxwell J.*; Ciampaglio, C.N.; Jacquemin, Stephen J.: **EVIDENCE OF TOOTH SHAPE VARIATION IN *CARCHAROCLES MEGALODON* ACROSS OCEAN BASINS**
- 46-2 2 Mitchell, Michaela G.*; Ciampaglio, Charles N.; Jacquemin, Stephen J.: **CONVERGENT EVOLUTION IN TOOTH MORPHOLOGY OF FILTER FEEDING LAMNIFORM SHARKS**
- 46-3 3 Read, Michael T.*; Nestell, Merlynd K.: **SAKMARIAN (EARLY PERMIAN) SULCUS-BEARING SWEETOGNATHID CONODONTS FROM NEVADA: EARLY EXPERIMENTATION AND NOVEL CARINAL CONFIGURATIONS**
- 46-4 4 Censullo, Shaolin Meliora*; McRoberts, Christopher: ***TRIARTHURUS* FROM THE UPPER ORDOVICIAN OF NEW YORK REVISITED: TAPHONOMIC, TAXONOMIC AND MORPHOMETRIC ANALYSIS OF *TRIARTHURUS BECKII* GREEN AND *TRIARTHURUS EATONI* (HALL)**
- 46-5 5 Layng, Alexander P.*; Day, James; Tierney Cramer, Kate: **USING LANDMARK ANALYSIS TO DETERMINE THE RELATIONSHIP BETWEEN *SPINOCYRTIA* SHELL MORPHOLOGY AND EUSTATIC SEA-LEVEL VARIATION IN THE DEVONIAN**
- 46-6 6 Stoller, Michael R.*: **OSTEOLOGY OF MIOCENE FOSSIL FISHES FROM THE NEVADA TEST SITE**
- 46-7 7 Feldman, Howard R.*; Belowich, Talia J.; Braver, Tova; Laks, Sarah: ***DIELASMA* OR *TUNETHYRIS*? A TAXONOMIC CONUNDRUM**
- 46-8 8 New, Evan*; Yanes, Yurena; Cameron, Robert A.D.; Teixeira, Dinarte: **PLEISTOCENE-HOLOCENE PALEOCLIMATIC INFERENCES IN THE MADEIRA ARCHIPELAGO INFERRED FROM STABLE ISOTOPE COMPOSITION OF FOSSIL LAND SNAIL SHELLS**
- 46-9 9 Gocklin, Christopher R.*; Maisch, Harry; Becker, Martin A.; Chamberlain, John A.; Dubaldi, Michael; Bartholomew, Alexander; Chamberlain, Rebecca B.: **RECONSTRUCTING SURFICIAL GEOLOGY IN THE NORTHERN NEW JERSEY PIEDMONT UTILIZING FOSSILIFEROUS GLACIAL ERRATICS FROM THE LOWER AND MIDDLE DEVONIAN OF EASTERN NEW YORK**
- 46-10 10 Subramanian, Avinash*; Parris, David C.: **NEW INFORMATION ON THE GRAPTOLITE BIOSTRATIGRAPHY OF THE JUTLAND ALLOCHTHON**
- 46-11 11 Farrar, Lyndsey E.*; Fall, Leigh M.: **HOW DOES BODY SIZE AND ABUNDANCE OF TRILOBITES CHANGE ALONG A WATER DEPTH GRADIENT IN THE TRENTON GROUP (MIDDLE ORDOVICIAN) OF CENTRAL NEW YORK?**
- 46-12 12 Shaw, Jack O.*; Hunt, Gene; Sunderlin, David: **ASSESSING CHANGES IN SEXUAL DIMORPHISM IN OSTRACODE LINEAGES DURING THE LATE CRETACEOUS**
- 46-13 13 Stokes, Jacob R.*; Erway, Catherine; Pfadt, Victoria A.; McKenzie, Scott C.: **THE WORLD'S OLDEST BEE? A CRATO LIMESTONE INSECT WITH APOIDEA-LIKE FEATURES**
- 46-14 14 Mason, Chad R.*; Huelsman, Stephen C.; Ciampaglio, C.N.; Clayton, Angela Ann: **DESCRIPTION OF A LATE MISSISSIPPIAN (CHESTERIAN) VERTEBRATE BEARING LIMESTONE UNIT WITHIN THE LEITCHFIELD FORMATION**

- 46-15 15 Harris, Ann W.*; Etensohn, Frank R.: **POPULATION ANALYSIS OF A LATE MISSISSIPPIAN (CHESTERIAN) ECHINODERM FAUNULE ACROSS FOUR CONTIGUOUS DEPOSITIONAL ENVIRONMENTS, CARTER COUNTY, EAST-CENTRAL KENTUCKY**
- 46-16 16 Cushen, Kate E.*; Bartholomew, Alex J.: **MIDDLE DEVONIAN PLANT SPECIMENS FROM THE PLATTEKILL FM., SHOKAN, NY**
- 46-17 17 Thomka, James R.*; Eddy, Donald B.: **REPEATED REGENERATION OF PIRASOCRINID CRINOID SPINES IN THE UPPER PENNSYLVANIAN AMES LIMESTONE, EAST-CENTRAL OHIO**

SESSION NO. 47

T20. Environmental and Engineering Problems and Solutions Associated with the Marcellus-Utica Shale Play (Posters) (GSA Environmental and Engineering Geology Division)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 47-1 18 Tkach, Mary K.*; Gardiner, James; Kutchko, Barbara: **IMAGE ANALYSIS OF GAS WELL CEMENT EXPOSED TO COAL MINE WATER**
- 47-2 19 Nash, Rose T.*; Weiant, Morgen; Bell, Matthew; Khalequzzaman, Md.: **LONG-TERM MONITORING OF AMD AND MARCELLUS-RELATED PARAMETERS IN BEECH CREEK AND CLEARFIELD WATERSHEDS, PA**
- 47-3 20 Pelepkio, Seth*; Beattie, Stew; Byron, Lindsay Ann; Catalano, A. Douglas; Swank, Rick: **PENNSYLVANIA LEGACY WELL INTEGRITY AND EMISSIONS STUDY**
- 47-4 21 Billman, Dan*; Skoff, Dale: **SHALE PLAY DEVELOPMENT AND WATER MANAGEMENT IN PENNSYLVANIA: MEETING THE NEED FOR BRINE DISPOSAL WELLS**
- 47-5 22 Caccamo, Victoria A.*: **THE EFFECTS OF FLOW-RATE AND SOLUTE CONCENTRATION ON THE FATE AND TRANSPORT OF CHLORINATED SOLVENTS THROUGH CORES OF BERE A SANDSTONE**
- 47-6 23 Steinhauser, D.J.*; Franz, Eric; Venn, Cynthia; Hallen, Christopher P.: **ARE THERE EFFECTS OF HYDRAULIC FRACTURING ON CRYSTAL LAKE IN LYCOMING COUNTY, PENNSYLVANIA?**

SESSION NO. 48

T24. Urban Biogeochemistry and Geochemistry (Posters) (GSA Environmental and Engineering Geology Division; GSA Geology and Society Division)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 48-1 24 Forgrave, Rebecca K.*; Groszewski, Kassia L.; Chung, Angela H.; Elliott, Emily M.: **QUANTIFYING URBAN ATMOSPHERIC NITROGEN DEPOSITION FLUXES USING ION EXCHANGE RESINS**
- 48-2 25 Bird, Darcy Lynn*; Moore, Joel; Groffman, Peter: **INCREASING MAJOR ION CONCENTRATIONS AND CHANGING ION RATIOS IN URBAN STREAMS OVER A 15-YEAR PERIOD IN BALTIMORE, MD**
- 48-3 26 Chung, Angela H.*; Elliott, Emily M.; Nim, Carl: **CHARACTERIZATION OF REACTIVE NITROGEN TRANSPORT IN PITTSBURGH'S RIVERS**
- 48-4 27 Mullins, Angela R.*; Bain, Daniel J.; Lavin, Sarah M.: **EVALUATION OF INFILTRATION-BASED GREEN INFRASTRUCTURE GEOCHEMICAL RESPONSE TO SEASONAL CHANGES IN PITTSBURGH, PA AND IMPLICATIONS FOR CHEMICAL FLUX**
- 48-5 28 Saba, David J.*; Graney, Joseph: **QUANTIFYING FACTORS THAT INFLUENCE DEICER EXPORT AND RETENTION IN A MULTI-LANDUSE WATERSHED IN UPSTATE NY**
- 48-6 29 Connors, Carolyn Anne*; Verheyden, Anouk: **IMPACTS OF URBANIZATION ON STREAM BIOGEOCHEMISTRY IN SCHENECTADY COUNTY, NY**

- 48-7 30 Donato, Nicole*; Sun, Hongbing; Chaves, Maria; Sarwar, Muhammad: **VARIATIONS OF LEAD CONCENTRATIONS IN SOIL PROFILES NEAR AN INTERSTATE HIGHWAY IN NEW JERSEY**
- 48-8 31 Hayden, Alice H.*; Verheyden, Anouk; MacManus-Spencer, Laura A.: **TEMPORAL AND SPATIAL VARIABILITY OF PFOA IN HOOSICK FALLS, NY**
- 48-9 32 Vangala, Sunitha*; Dietrich, Matthew; Burke, Michelle; Wolfe, Amy; Argyilan, Erin P.; Krekeler, Mark P.S.: **A PRELIMINARY FIELD EMISSION SCANNING ELECTRON MICROSCOPY (FESEM) AND TRANSMISSION ELECTRON MICROSCOPY (TEM) FORAY INTO STREET SEDIMENTS OF GARY, INDIANA: MAJOR ENVIRONMENTAL HEALTH CONCERNS ARE EVIDENT**

TUESDAY, 21 MARCH 2017

MORNING ORAL TECHNICAL SESSIONS

SESSION NO. 49

Paleontology and Stratigraphy I

8:00 AM, Omni William Penn Hotel Monongahela, 17th Floor

Tamra A. Schiappa, Presiding

- 49-1 8:00 AM Strother, Paul K.*: **ORDOVICIAN "SPORE-THALLI" FROM THE KANOSH SHALE AT FOSSIL MOUNTAIN, UTAH**
- 49-2 8:20 AM Guensburg, Thomas E.*; Sprinkle, James: **NEW EVIDENCE OF EARLY HYBOCRINID TEGMENS; PHYLOGENETIC IMPLICATIONS**
- 49-3 8:40 AM Van Iten, Heyo*; Gagnon, Laurence; Cournoyer, Mario: **PROBABILISTIC APPROACHES TO PROBLEMS IN TAPHONOMY: PROBABLE ATTACHMENT OF CONULARIIDS TO BRACHIOPODS IN THE UPPER ORDOVICIAN COLLINGWOOD SHALE (ONTARIO, CANADA)**
- 49-4 9:00 AM Paton, Timothy*; Brett, Carlton E.; Schrantz, Richard N.; Kampouris, George; Phelps, Daniel J.: **GENESIS AND PRESERVATION OF MOUNDED HARDGROUNDS IN THE LATE ORDOVICIAN (KATIAN) OF KENTUCKY AND ONTARIO: THE PERSISTENCE AND MIGRATION OF THE "KIRKFIELD FAUNA"**
- 49-5 9:20 AM Aucoin, Christopher D.*; Brett, Carlton E.; Schwalbach, Cameron E.: **DETERMINING ENVIRONMENTAL PARAMETERS USING FAUNAL GRADIENTS IN THE UPPER ORDOVICIAN (KATIAN; RICHMONDIAN) ROWLAND MEMBER OF THE WAYNESVILLE FORMATION, CINCINNATI ARCH**
- 9:40 AM **BREAK**
- 49-6 9:55 AM Parker, Wesley G.*; Yanes, Yurena; Surge, Donna; Mesa, Eduardo: **CALIBRATING THE OXYGEN STABLE ISOTOPES OF THE ROCKY INTERTIDAL GASTROPODS *PATELLA CRENATA* AND *PHORCUS (OSILINUS) ATRATUS* FROM THE CANARY ISLANDS AS PALEOCLIMATIC PROXIES**
- 49-7 10:15 AM Yanes, Yurena*; Al-Qattan, Nasser M.; Rech, Jason; Pigati, Jeffrey; Nekola, Jeffrey A.: **HEMISPHERIC-SCALE CALIBRATION OF THE OXYGEN STABLE ISOTOPE COMPOSITION OF SMALL LAND SNAILS FROM NORTH AMERICA**
- 49-8 10:35 AM Laneville, Michael W.*; Evans, James E.: **MIDDLE CAMBRIAN TIDALLY-INFLUENCED, SILICICLASTIC SHELF DEPOSITS, WESTERN OHIO (U.S.A.): SUBSURFACE FACIES ANALYSIS OF THE EAU CLAIRE FORMATION AND CONASAUGA FORMATION**

- 49-9 10:55 AM Weichert, Wesley Donald*; Evans, Kevin Ray: **STRATIGRAPHIC ANALYSIS OF CARBON ISOTOPE AND GAMMA-RAY RECORDS OF UPPER CAMBRIAN CARBONATE CYCLES FROM UTAH AND NEVADA**
- 49-10 11:15 AM Tuskes, K.*: **CYCLOSTRATIGRAPHY AND ASTROCHRONOLOGY OF THE LATE DEVONIAN KELLWASSER CRISIS, NORTHERN APPALACHIAN BASIN, USA**

SESSION NO. 50

Petrology, Mineralogy and Economic Geology

8:00 AM, Omni William Penn Hotel Lawrence Welk Room, Mezzanine Level

Daniel B. Harris, Presiding

- 50-1 8:00 AM White, John C.*; May, Mitchell A.; Simpson, Cassie E.: **A COMPARISON OF METHODS USED TO QUANTIFY CONDITIONS OF PARTIAL MELTING: A CASE STUDY FROM LINOSA, ITALY**
- 50-2 8:20 AM Crabtree, Stephen*; Huber, Abigail; Beck, Karl: **THERMODYNAMIC ASSESSMENT OF THE MAGMATIC HISTORY OF BLUE ROCK SHIELD VOLCANO, JACKSON CO., OREGON: APPLICATION OF A NEW D_m (OLIVINE-MELT) GEOTHERMOMETER AND OTHER MODELS**
- 50-3 8:40 AM Crabtree, Stephen*; Waters, Laura: **COMPARISONS IN A SUITE OF CRYSTAL-RICH AND CRYSTAL-POOR LAVAS IN THE SANGANGUEY VOLCANIC FIELD, NAYARIT, MEXICO: IMPLICATIONS FOR THE ORIGINS OF ANDESITE AND DACITE LIQUIDS**
- 50-4 9:00 AM Saja, David B.*; Anderson, Danielle M.: **FIBROUS-VEIN QUARTZ PEBBLES IN THE SHARON FORMATION, NORTHEASTERN OHIO: AN INDICATOR OF A METAMORPHIC SOURCE TERRANE**
- 50-5 9:20 AM Gray, Spencer*; Hall, Sarah R.; Bailey, David G.; Michalak, Melanie J.: **NEW GEOCHEMICAL AND GEOCHRONOLOGICAL DATA FROM TWO GRANITIC ISLANDS OF DOWNEAST MAINE: MOUNT DESERT ROCK AND GREAT DUCK ISLAND**
- 9:40 AM **BREAK**
- 50-6 9:55 AM Farag, Adel*; Lange, Eric S.; Nicholson, Kirsten N.: **PRELIMINARY RESULTS OF PETROGRAPHIC ANALYSIS AND GEOCHEMICAL CHARACTERIZATIONS OF THE PERMIAN- TRIASSIC SEVEN DEVILS GROUP- WESTERN IDAHO**
- 50-7 10:15 AM McGrath, Monica*; Stewart, Brian W.; Sanchez, Matthew S.: **UNRAVELING THE PETROGENESIS OF ORE BODY TALC DEPOSITS: A GEOCHEMICAL AND PETROLOGICAL STUDY**
- 50-8 10:35 AM Taylor, Mack*; Krekeler, Mark P.S.: **PROGRESS IN UNDERSTANDING GOLD MINERALIZATION AT ROUND MOUNTAIN GOLD MINE, NEVADA FROM FIELD EMISSION SCANNING ELECTRON MICROSCOPY**
- 50-9 10:55 AM Marechal, Francois*: **CAN WE APPLY SOFT DRINKS INDUSTRY KNOWLEDGE FOR ECONOMICALLY FEASIBLE CO₂ DISPOSAL & PERMANENT ENTRAPMENT IN DEVONIAN AGED HYPERSALINE BRINES IN ALBERTA?**
- 50-10 11:15 AM Bhattacharya, Shuvajit*; Pasumarti, Ashwin; Main, Joel; Sminchak, Joel R.: **GEOMECHANICAL ASSESSMENT OF SUB-KNOX FORMATIONS FOR SAFE CO₂ INJECTION STUDY IN THE MIDWEST U.S**

SESSION NO. 51

T13. Changing Agricultural Landscapes and Impacts on Groundwater Quality and Quantity (GSA Geology and Society Division; GSA Hydrogeology Division)

8:00 AM, Omni William Penn Hotel Allegheny, 17th Floor

Jana Levison and Marie Larocque, Presiding

- 51-1 8:00 AM Borowski, Walter S.*; Malzone, Jonathan M.: **MEDIATION OF EUTROPHICATION OF SURFACE AND SUBSURFACE**

WATER FROM NON-POINT SOURCES: NUTRIENT MONITORING AT MEADOWBROOK FARM (MADISON COUNTY, KENTUCKY)

- 51-2 8:20 AM Kelley, Laura*; Evans, Hunter R.; Buskirk, Reid E.; Malzone, Jonathan M.; Borowski, Walter S.: **GROUNDWATER AND SURFACE WATER IN A LANDSCAPE WITH SHALLOW BEDROCK: IMPLICATIONS FOR AGRICULTURAL NUTRIENT EXPORT**
- 51-3 8:40 AM Saleem, Shoaib Rashid*; Levison, Jana K.; Parker, Beth; Martin, Ralph C.: **DEVELOPMENT OF A FIELD-SCALE MODEL TO SIMULATE NITRATE TRANSPORT IN GROUNDWATER FROM AGRICULTURAL LANDS**
- 51-4 9:00 AM Schlaudt, Elisabeth A.*; Bahr, Jean M.; Wade, Kenneth S.: **MODELING MITIGATION STRATEGIES FOR SLOUGH MANAGEMENT IN SAUK COUNTY, WI**
- 51-5 9:20 AM Osman, A.R.M.*; Levison, Jana K.; Larocque, Marie; Martin, A.; Gagné, S.: **BUILDING A HYDROGEOLOGICAL CONCEPTUAL MODEL OF A WATER-STRESSED AGRICULTURAL WATERSHED**
- 51-6 9:40 AM McGuire, Virginia L.*: **CHANGE IN WATER IN STORAGE IN THE HIGH PLAINS AQUIFER, PREDEVELOPMENT (ABOUT 1950) TO 2015**

SESSION NO. 52

T25. Biogeochemistry & Geobiology of Anoxic/Euxinic Systems

8:00 AM, Omni William Penn Hotel Frick, Conference Level

Molly O'Beirne, Josef P. Werne and William Gilhooly III, Presiding

- 52-1 8:00 AM Havig, Jeff*; Hamilton, Trinity L.; McCormick, Mike; McClure, Brianna; Sowers, Todd; Wegter, Bruce; Kump, Lee R.: **WATER COLUMN AND SEDIMENT CARBON ISOTOPE GEOCHEMISTRY OF PERMANENTLY REDOX-STRATIFIED FAYETTEVILLE GREEN LAKE, NEW YORK, USA**
- 52-2 8:20 AM Kafantaris, Fotios-Christos A.*; Kurek, Martin; Druschel, Gregory; Gilhooly, William; Dvorski, Sabine; Schmitt-Kopplin, Philippe: **REACTIVITY OF POLYSULFIDES AND ITS CONTRIBUTION TO CRYPTIC SULFUR CYCLING IN ANOXIC/EUXINIC BASINS**
- 52-3 8:40 AM Myrbo, Amy*; Swain, Edward B.: **MULTIPLE NEGATIVE CONSEQUENCES OF SULFATE POLLUTION OF FRESHWATER SYSTEMS: NUTRIENTS, MERCURY, METHYLMERCURY, AND MORE**
- 52-4 9:00 AM Hamilton, Trinity L.*: **MODEL PHOTOAUTOTROPHS ISOLATED FROM A PROTEROZOIC OCEAN ANALOG**

SESSION NO. 53

T29. Paleolimnological Studies of Climate Variability and Environmental Response (GSA Limnogeology Division)

8:00 AM, Omni William Penn Hotel Conference Center A, Conference Level

Arielle Woods and Mark B. Abbott, Presiding

- 53-1 8:00 AM Finkelstein, Sarah A.*; Hargan, Kathryn E.; Ruhland, Kathleen M.; Packalen, Maara; Smol, John P.; Keller, Wendel; Paterson, Andrew M.: **A MULTI-PROXY RECORD OF HOLOCENE PALEOCLIMATE AND PALEOLIMNOLOGICAL CHANGE FROM NORTH RAFT LAKE, HUDSON BAY LOWLANDS, NORTHERN ONTARIO, CANADA**
- 53-2 8:20 AM Kraft, Matthew*; Lini, Andrea; Norton, Taylor; Zanon, Jake: **THE EARLY EVOLUTION OF LAKE CHAMPLAIN AS RECORDED IN ST. ALBANS BAY, VT**
- 53-3 8:40 AM Dziekan, Mitchell R.*; Fisher, Timothy G.; Loope, Henry M.; McCarthy, Francine M.G.: **ORIGINS OF BASAL SEDIMENT WITHIN KETTLE LAKES IN SOUTHERN MICHIGAN AND NORTHERN INDIANA: CLIMATE CHANGE, GROUNDWATER FLUCTUATIONS, OR TRASH**
- 53-4 9:00 AM Bird, Broxton*; Wilson, Jeremy J.; Gilhooly, William; Steinman, Byron A.; Stamps, Lucas G.; Albert, Ashley; Abbott, Mark B.; Pompeani, David; Finkenbinder, Matthew S.; Hillman, Aubrey Leigh: **MIDCONTINENTAL LAKE-BASED**

PALEOCLIMATE RECORDS OF LATE HOLOCENE HYDROCLIMATE VARIABILITY AND NATIVE AMERICAN POPULATION DYNAMICS

- 9:20 AM **BREAK**
- 53-5 9:35 AM Park Boush, Lisa E.*; Myrbo, Amy; Buynevich, Ilya V.; Yakabowskas, Dana Michelle; Berman, Mary Jane; Gnivecki, Perry L.; Kjellmark, Eric: **COMPARING TWO LATE HOLOCENE MULTI-PROXY PALEOCLIMATE RECORDS FROM ELEUTHERA, BAHAMAS**
- 53-6 9:55 AM Antinao, José Luis*; Tiner, Rachel; Negrini, Robert M.; Maldonado, Antonio; McDonald, Eric; Baker, Sophie; Santibanez, Isabel; Brown, Nathan D.: **A COUPLED LACUSTRINE AND ALLUVIAL FAN RECORD FOR THE HOLOCENE OF THE ARID SOUTHERN CENTRAL ANDES**
- 53-7 10:15 AM Mohan, Joseph*; Stone, Jeffery R.: **OSCILLATIONS IN MONSOON STRENGTH RECORDED IN THE DIATOM RECORD OF PALEOLAKE HADAR FROM THE PLIOCENE HADAR FORMATION, NORTHERN AWASH VALLEY, ETHIOPIA**

SESSION NO. 54

T30. Application of Organic Geochemical Proxies to (Paleo) Environmental Studies (GSA Limnogeology Division)

9:35 AM, Omni William Penn Hotel Frick, Conference Level

Dervla Kumar and Josef P. Werne, Presiding

- 54-1 9:35 AM Elbakhshwan, Mohamed*; Gill, Simerjeet; Zhao, Chonghang; Ecker, Lynne; Childers, M. Ian; Lopano, Christina L.; Kutchko, Barbara; Fernandez, Carlos: **STUDY THE INTERFACIAL INTERACTIONS OF SELF-HEALING POLYMER-CEMENT COMPOSITES EXPOSED TO CO₂ AND H₂SO₄ USING SYNCHROTRON XRF, XANES AND CT STUDIES**
- 54-2 9:55 AM Freimuth, Erika J.*; Diefendorf, Aaron F.; Lowell, Thomas V.; Bates, Benjamin; Stewart, Alexander K.: **IDENTIFYING BASIN-SPECIFIC CONTROLS ON LEAF WAX RECORDS IN LAKE SEDIMENTS OF THE ADIRONDACK MOUNTAINS, NEW YORK**
- 54-3 10:15 AM Suh, Yeon Jee*; Diefendorf, Aaron F.: **LEAF WAX CARBON AND HYDROGEN ISOTOPIC EVIDENCE OF HYDROLOGIC CONDITIONS IN MIDCONTINENT NORTH AMERICA SINCE THE LAST INTERGLACIAL**
- 54-4 10:35 AM Ferland, Troy*: **A CLIMATE AND ENVIRONMENTAL CONTEXT FOR HOMINID EVOLUTION: PRELIMINARY BIOMARKER AND COMPOUND SPECIFIC ISOTOPE DATA FROM LAKE MAGADI, KENYA**
- 54-5 10:55 AM Karp, Allison T.*; Freeman, Katherine H.: **MOLECULAR EVIDENCE FOR FIRE AND FOREST CLEARING ASSOCIATED WITH C4 GRASSLAND EXPANSION IN THE LATE MIOCENE**
- 54-6 11:15 AM O'Mara, Nicholas A.*; Kelly, Christopher S.; Herbert, Timothy D.; Herguera, Juan Carlos: **ANALYZING FORCED AND INTERNAL VARIABILITY IN LAST MILLENNIUM SUBTROPICAL EASTERN PACIFIC CLIMATE USING AN ALKENONE-DERIVED RECORD OF SST AND PRODUCTIVITY VARIABILITY**
- 54-7 11:35 AM Lyons, Shelby L.*; Baczynski, Allison A.; Vornlocher, Jamie R.; Freeman, Katherine H.: **THE PETM IN THE COASTAL OCEAN: LINKING TERRESTRIAL DESTABILIZATION AND COASTAL PRODUCTIVITY IN MID-ATLANTIC SEDIMENTS**

SESSION NO. 55

T9. Remote Sensing Applications in Geology (GSA Geophysics Division; GSA Geoinformatics Division)

10:15 AM, Omni William Penn Hotel Allegheny, 17th Floor

R.H. Becker, Presiding

- 55-1 10:15 AM Weinell, Meaghan*; Lee, Rachel; Graettinger, Alison; Hughes, Christopher G.: **THE MYSTERY OF MAARS: CHARACTERIZING MAAR-DIATREME VOLCANIC**

DEPOSITS AT HOPI BUTTES VOLCANIC FIELD (AZ) USING GIGAPAN AND THERMAL INFRARED TECHNIQUES

- 55-3 10:55 AM Burke, Michelle*; Roberts, Jessica; Krekeler, Mark P.S.: **SPECTRAL REFLECTANCE INVESTIGATION OF GEOLOGIC MATERIALS FOR CREATION OF REFERENCE LIBRARY TOOL**
- 55-4 11:15 AM Higley, Melinda C.*; Conroy, Jessica L.: **HYDROLOGICAL RESPONSE OF LAKES ON KIRITIMATI ISLAND, KIRIBATI TO RECENT CLIMATE VARIABILITY**
- 55-5 11:35 AM Davis, Alexandra*; Mihindukulasooriya, Lorita; Ortiz, Joseph D.; Kern, Courtney M.; Arcuri, Marissa L.: **TEMPORAL AND SPATIAL VARIATION OF CHLOROPHYLL A IN OLD WOMAN CREEK ESTUARY, LAKE ERIE MEASURED FROM FIELD AND LABORATORY REFLECTANCE MEASUREMENTS**

MORNING POSTER TECHNICAL SESSIONS

SESSION NO. 56

Geomorphology (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- Booth #
- 56-1 1 Steinen, Randolph P.*; Bogart, James; Charney, Allison; VanderLeest, Rebecca; Glairon, Susan: **A HYPOTHESIS FOR THE DISAPPEARANCE OF THE TALCOTT BASALT IN THE VICINITY OF WALLINGFORD, CT**
- 56-2 2 LeTourneau, Peter M.*; McDonald, Nicholas G.; Pagini, Robert: **THE TRAPROCK RIDGELANDS OF THE CONNECTICUT VALLEY: GEOMORPHOLOGY, HISTORY, AND LAND USE PLANNING FOR A PROPOSED NATIONAL HERITAGE CORRIDOR**
- 56-3 3 Inners, Jon D.*; Behr, Rose-Anna; Braun, Duane D.; Conrad, Lynn: **UP THE LACKAWANNA AND DOWN THE STARRUCCA TO THE NORTH BRANCH VALLEY: HISTORY, GEOGRAPHY, AND GEOLOGY ALONG THE D&H RAIL TRAIL IN NORTHEASTERN PENNSYLVANIA**
- 56-4 4 Rice-Snow, Scott*: **IRREGULARITY OF THE GREAT LAKES WATERSHED BOUNDARY: QUESTIONABLE INFLUENCE OF TOPOGRAPHIC RELIEF**
- 56-5 5 Vasylenko, Klavdiya*; Hornung, Christopher B.; King, Tessa; John, Leah; Johnston, Carey; Young, Emma; Hibbard, Shannon; Buynevich, Ilya V.: **CLAST DISTRIBUTION AND FLOW INDICATORS ALONG A GRAVEL BAR, NESHAMINY CREEK, TYLER STATE PARK, PA**
- 56-6 6 Trifunovic, Branimir*; D'Angelo, Anthony; Malstrom, Nicole; Tucker, David; Buynevich, Ilya V.; Herrmann, Jacob; Kopcznski, Karen A.: **TOWARD A REGIONAL GROWTH CURVE FOR LICHENOMETRY RESEARCH IN SE PENNSYLVANIA**
- 56-7 7 Curley, David T.*; Weck, Ryan; Bove, Alexander; McNamara, Kelly; Baird-Tracy, Gaelan; Buynevich, Ilya V.: **DENDROGEOMORPHOLOGICAL ANALYSIS OF THE VARYING EFFECTS OF SLOPE PROCESSES, LOWER BUCKS COUNTY, PA**
- 56-8 8 Smith, Chelsea*; Hanson, Lindley S.: **LATE PLEISTOCENE GLACIAL STRATIGRAPHY OF THE COLD RIVER VALLEY, SOUTH ACWORTH, NEW HAMPSHIRE**
- 56-9 9 Campbell, Hunter J.*; Sasowsky, Ira D.; Guerrero, Jesús; Gutiérrez, Francisco; Gisbert, Mario: **AGE OF CUEVA DEL MUERTO AND AN INCISION RATE FOR STREAMS ON THE EASTERN MARGIN OF THE IBERIAN CHAIN, SPAIN**
- 56-10 10 Potucek, Mark*; Evans, James E.: **AVULSION PROCESSES AND RATES IN A MIXED ALLUVIAL-BEDROCK RIVER, HURON RIVER, NORTH-CENTRAL OHIO (U.S.A.)**

- 56-11 11 Flynn, Ian T.W.*; Schwimmer, Reed A.: **PAST AND FUTURE RATES OF STREAM EROSION ALONG CROSSWICKS CREEK, MERCER COUNTY, NJ**
- 56-12 12 Reed, Miles Mark Langly*; Kite, James Steven: **HOW WILL MASSIVE ANTHROPOGENIC VALLEY-FILL DEPOSITS IN APPALACHIAN HEADWATERS ERODE?**
- 56-13 13 Hicks, J.L.*; Evans, J.E.: **OXBOW LAKES AS GEOLOGICAL ARCHIVES OF HISTORICAL CHANGES IN CHANNEL SUBSTRATE, SWAN CREEK, TOLEDO, OHIO (U.S.A.)**
- 56-14 14 Tisherman, Rebecca Anne*; Bain, Daniel J.: **THE RATE OF URBANIZATION AND VARIATION IN IMPACTS TO FLUVIAL SYSTEMS**
- 56-15 15 Dunn, Richard K.*; Springston, George E.; Pittman, McKaylee: **COMPOSITIONAL HOMOGENEITY OF LODGEMENT TILL MATRIX AND RELIABILITY OF A MODERATELY DISTRIBUTED SAMPLING METHOD**
- 56-16 16 McDermott, Richard A.*; Maguire, David; Miller, Kaley; Sewall, Jacob: **HOW DOES GRAIN SIZE VARY ON THE FLOOD PLAIN?**
- 56-17 17 Springston, George E.*; Gale, Marjorie; Ryan, Peter C.: **DISTRIBUTION OF MAJOR AND TRACE ELEMENT GEOCHEMISTRY OF TILL, MONTPELIER 1:100,000 SHEET, CENTRAL VERMONT**
- 56-18 18 Bierly, Aaron*; Pollok, Roger: **THE ART AND SCIENCE OF THE GLACIAL LAKE CLAYS OF THE SUGAR CREEK VALLEY, BRADFORD COUNTY, PENNSYLVANIA**

SESSION NO. 57

Hydrogeology (Posters)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- Booth #
- 57-1 19 Germanoski, Dru*; Germanoski, Jacob: **EFFECTS OF BEDROCK LITHOLOGY ON GROUNDWATER LEVELS AND GROUNDWATER/SURFACE WATER INTERACTION IN SLATE AND CARBONATE WATERSHEDS IN EASTERN PENNSYLVANIA**
- 57-2 20 Portilla, Karina Andrea*; Martinez-Sacristan, Hernando; Ocampos, Héctor Andrés: **MYTHS AND REALITIES ABOUT THE CONSUMPTION OF GROUNDWATER IN BOYACA, COLOMBIA: FAR FROM RHETORIC, CLOSER TO REALITY**
- 57-3 21 Chowdhury, Shafiu*; Tenhagen, Tanner: **THE DILEMMA ABOUT THE PRICE OF BOTTLED DRINKING WATER IN BANGLADESH**
- 57-4 22 Iqbal, Mohammad*; Bhattarai, Tara N.; Heinzel, Chad; Tuladhar, Sushil: **THE EFFECTS OF INDUSTRIAL LAND USE ON THE BAGMATI RIVER BASIN IN KATHMANDU, NEPAL**

SESSION NO. 58

T33. Shoreline Behavior, Paralic Architecture, and Lake- Level Change in the Great Lakes (Posters) (GSA Quaternary Geology and Geomorphology Division; GSA Sedimentary Geology Division; GSA Limnogeology Division)

8:00 AM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

- Booth #
- 58-1 23 Finnegan, John P.*; Luczak, Jonathan; Armstrong, Eric; Gentner, Tiffany; Krantz, David E.; Fisher, Timothy G.; Stierman, Donald: **ANALYSIS OF EROSIONAL FEATURES IN THE NORTHWEST CORNER OF THE OTTAWA LAKE BASIN, MONROE COUNTY, MICHIGAN**
- 58-2 24 Dilworth, John R.*; Krantz, David; Fisher, Timothy G.; Lepper, Kenneth: **ANALYSIS AND CHRONOLOGY OF GLACIAL LAKE ARKONA IN THE WESTERN LAKE ERIE BASIN, USA**
- 58-3 25 Huang, Zhaoyu*; Morrison, Sean M.; Mulligan, Riley P.M.; Johnston, John W.: **NIPISSING BARRIER STRATIGRAPHY EXPOSED ALONG THE NOTTAWASAGA RIVER IN WASAGA BEACH, ONTARIO**
- 58-4 26 Finnegan, John P.*; Gentner, Tiffany; Armstrong, Eric; Luczak, Jonathan; Krantz, David E.; Fisher, Timothy G.; Stierman, Donald:

- GEOPHYSICAL INVESTIGATION OF MAGEE MARSH, LUCAS COUNTY, OHIO: EVIDENCE OF A PROGRADING BARRIER SPIT**
- 58-5 27 Cockrell, Jay*: **IMPACTS OF A NOVEMBER GALE ON A PROGRADING LAKE SUPERIOR HARBOR-HEADLAND BEACH RESOLVED WITH HIGH-RESOLUTION GPR: IMPLICATIONS FOR STUDYING OLDER SHORELINE ARCHITECTURES.**
- 58-6 28 Van Winkle, Morgan N.*; Boyce, Christina M.: **LAKE-LEVEL INFLUENCES ON SHORELINE BEHAVIOR RECOGNIZED IN GPR DATA FROM GRAND MARAIS HEADLAND, LAKE SUPERIOR, MICHIGAN**
- 58-7 29 Hennessey, Ryan*; Argyilan, Erin; Huysken, Kristin T.; Krekeler, Mark; Torness, Eric; Gurnicz, Katie; Kelly, Daniel: **ATMOSPHERIC DEPOSITION OF CALCIUM AND MAGNESIUM AS A CONTRIBUTOR TO THE FORMATION OF DUNE DECOMPOSITION CHIMNEYS IN A MODERN COASTAL DUNE OF THE INDIANA DUNES NATIONAL LAKESHORE**

SESSION NO. 59

T13. Changing Agricultural Landscapes and Impacts on Groundwater Quality and Quantity (Posters) (GSA Geology and Society Division; GSA Hydrogeology Division)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 59-1 1 Bader, James A.*; Fredrick, Kyle C.: **THERMAL RESPONSE TO CHANGING FLOOD CONDITIONS IN LOW-LYING AREAS**
- 59-2 2 Browne, David C.*: **ASSESSING THE PRESENCE AND FATE OF NEONICOTINOIDS IN GROUNDWATER RESOURCES IN ONTARIO**
- 59-3 3 Johnson, Amber N.*; Bedaso, Zelalem K.; Wu, Shuang-Ye; McTighe, Colin: **QUANTIFYING SEASONAL GROUNDWATER RECHARGE UNDER CHANGING CLIMATE IN DAYTON, OH: AN ISOTOPE MASS BALANCE APPROACH**

SESSION NO. 60

T39. Regional Geophysical Studies in the Central and Eastern U.S. (Posters) (GSA Environmental and Engineering Geology Division; GSA Geophysics Division)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 60-1 4 MacDonald, Megan*; Ebel, John E.: **INDUCED SEISMICITY ASSOCIATED WITH WASTE FLUID INJECTION WELLS**
- 60-2 5 Hoshino, Julia*; Proulx, Katelyn; Frieman, Richard; Valentino, David: **CHARACTERIZATION OF DRUMLINS USING ELECTRICAL RESISTIVITY TOMOGRAPHY, CENTRAL NEW YORK**
- 60-3 6 Balzani, Peter*; Jones, Dustin; Frieman, Richard; Valentino, David: **HIGH RESOLUTION MAGNETIC ANOMALY MAPPING AND BASEMENT STRUCTURE IN THE FINGER LAKES REGION, CENTRAL NEW YORK**
- 60-4 7 Morgan, Luke David*; Reibel, James; Straffin, Eric; Misner, Tamara: **USING SEISMIC REFRACTION AS AN ECONOMICAL INVESTIGATION METHOD FOR GROUNDWATER RESOURCES**
- 60-5 8 Almaz, Moamen*; Mickus, Kevin L.: **LITHOSPHERIC EVALUATION OF THE MID-CONTINENTAL RIFT SYSTEM IN IOWA USING GRAVITY AND MAGNETIC ANALYSIS**
- 60-6 9 Mickus, Kevin L.*: **STRUCTURE OF GEOTHERMAL AREAS IN WESTERN YELLOWSTONE NATIONAL PARK USING GRAVITY DATA**
- 60-7 10 Savage, Nicholas C.*; Bruce, Shayla; Cordova, Esteban; Garate, Margaret E; Gourabou, Adam I.; Townsend, Carolyn; Ebel, John E.: **A DETAILED GRAVITY SURVEY IN THE AREA OF CENTRAL NEW HAMPSHIRE**
- 60-8 11 Maguire, Connor*; Ebel, John E.; Koch, Brendan; Reid, Thomas; Reineke, Erika; Zhang, Rengu; Lynn, Hannah: **SEARCH FOR THE FAULT OF THE 1638 EARTHQUAKE IN CENTRAL NEW HAMPSHIRE**

- 60-9 12 Cipar, John J.*; Ebel, John E.: **DEPTH TO THE MOHO IN SOUTHERN NEW ENGLAND AND EASTERN NEW YORK STATE FROM SEISMIC RECEIVER FUNCTIONS**

SESSION NO. 61

T42. Surficial Geologic Mapping (Posters)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 61-1 13 Heath, Stephanie L.*; Lowell, Thomas V.: **PRELIMINARY GEOMORPHIC MAP OF THE GLACIAL FEATURES OF THE PIERRE SUBLOBE, SD**
- 61-2 14 Barrette, Nolan*; Zoet, Lucas; Rawling, J. Elmo: **3D MORPHOLOGY OF DRUMLINS WITHIN THE GREEN BAY LOBE DRUMLIN FIELD IN SOUTHEAST WISCONSIN**
- 61-3 15 Rawling, J. Elmo*; Carson, Eric C.; Rose, Caroline M.R.; Attig, John W.: **QUATERNARY STRATIGRAPHY, GEOMORPHOLOGY, AND PRELIMINARY SURFICIAL MAPPING ALONG THE ST CROIX NATIONAL SCENIC RIVERWAY, BURNETT COUNTY, WISCONSIN**
- 61-4 16 Hammond, Maxwell*; Massey, Matthew A.; Andrews, William; Martin, Steven L.; Bottoms, Antonia: **ANNUAL WORKFLOW OF THE STATEMAP-FUNDED DIGITAL SURFICIAL GEOLOGIC MAPPING PROGRAM AT THE KENTUCKY GEOLOGICAL SURVEY**
- 61-5 17 Vincett, William K.*; Hazebrouck, Garrett D.; Wright, Stephen F.: **GLACIAL HISTORY OF THE BLACK RIVER AND NORTH BRANCH VALLEYS, WEATHERSFIELD, VERMONT**
- 61-6 18 Wright, Stephen F.*; Vincett, William K.; Hazebrouck, Garrett D.; Miers, Mitchell A.; Maglio, Stephen: **SURFICIAL GEOLOGIC MAP OF WEATHERSFIELD, VERMONT: GLACIAL HISTORY AND IMPLICATIONS FOR GROUNDWATER RESOURCES**
- 61-7 19 Miers, Mitchell A.*; Fisher, Benjamin A.; Maglio, Stephen R.; Wright, Stephen F.: **EVALUATION OF SURFACE AND GROUNDWATER HYDROLOGY IN THE BLACK RIVER AND NORTH BRANCH VALLEYS, WEATHERSFIELD, VERMONT**

SESSION NO. 62

T45. Sources, Transport and Fate of Trace Elements and Organics in the Environment (Posters)

8:00 AM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 62-1 20 Scott, Derek J.*; Schroeder, Lauren A.; McLean, Colleen E.; Armstrong, Felicia P.: **ASSESSING WATERSHED CHANGE AND SEDIMENT GEOCHEMISTRY IN A RIVERINE WATER-SOURCE RESERVOIR**
- 62-2 21 Sullivan, R.J.*; Wessner, Lucas J.; Venn, Cynthia; Hallen, Christopher P.: **A GEOCHEMICAL ANALYSIS OF RESIDENTIAL WATER WELLS IN COLUMBIA COUNTY, PA**
- 62-3 22 Jin, Li*; Gutches, Kristina M.; Lu, Zunli: **MODELING NITROGEN DYNAMICS IN THE TIOUGHNOGA RIVER, NEW YORK**
- 62-4 23 Brauckmann, Matthew A.*; Ciecierski, Dereck T.; Venn, Cynthia; Hallen, Christopher P.: **GEOCHEMICAL ANALYSIS OF FISHING CREEK IN COLUMBIA COUNTY, PA**
- 62-5 24 Meadows, Maxwell C.*; Oyewumi, Oluyinka: **SOURCES AND SPATIAL DISTRIBUTION OF HEAVY METALS IN AGRICULTURAL SOILS OF LEBANON, CT**
- 62-6 25 Stegman, Marissa Eve*; Kneeshaw, Tara; Menold, Carrie A.: **A COMPARISON OF SURFACE WATER SALT CONCENTRATIONS FROM DIFFERENT ROAD SALTING METHODS**
- 62-7 26 Rocchio, Andrea Michelle*; Peck, John A.: **A COMPARISON OF RURAL AND URBAN FLUVIAL SYSTEMS AS A FUNCTION OF LAND COVER CHANGES IN SUMMIT COUNTY, OHIO**
- 62-8 27 Lenker, Mitchell R.*; Hooker, David; Venn, Cynthia; Hallen, Christopher P.: **INORGANIC GEOCHEMICAL ANALYSIS OF THE WATER QUALITY OF CATFISH BOG AT CRYSTAL LAKE CAMPS, LYCOMING COUNTY, PA**

- 62-9 28 Walker, Rachel A.*; Hammerschmidt, Chad R.: **MERCURY BIOACCUMULATION IN SPOTTED SALAMANDERS IN SOUTHWEST OHIO**
- 62-10 29 Boring, Dane*; Hammerschmidt, Chad R.; Costello, David M.: **DEFORESTATION AND CULTIVATION MOBILIZE MERCURY FROM TOPSOIL**
- 62-11 30 Gould, William Wallace*: **VLX: A CONVENIENT SPREADSHEET FOR MODELING VADOSE ZONE CONTAMINANT LEACHING TO GROUNDWATER**
- 62-12 31 Luddy, Morrisa*; Weinstein, Allison; Oyewumi, Oluyinka: **THE UPTAKE OF TRACE ELEMENTS IN LAB-CONTAMINATED SOILS FROM LEBANON, CT**
- 62-13 32 Oyewumi, Oluyinka*; Kim, Angela; Weinstein, Allison; Meadows, Maxwell C.: **GEOCHEMICAL ASSESSMENT OF TOPSOIL AND ROCK FORMATIONS FROM LEBANON, CT**
- 62-14 33 Gajda, Emily Sarah*; Evans, Mark A.; Oyewumi, Oluyinka: **TRACE ELEMENT ANALYSIS AND ENVIRONMENTAL IMPACTS OF THE ROXBURY QUARRY, ROXBURY CONNECTICUT**
- 62-15 34 Shaw, Meaghan E.*; Herndon, Elizabeth: **INVESTIGATION OF TRACE METAL TRANSPORT IN AN AMD-IMPACTED STREAM AND TREATMENT SYSTEM IN NORTHEASTERN OHIO**
- 62-16 35 Hussak, Derek Joseph*: **IRON SPECIATION IN ACID MINE DRAINAGE IMPACTED MINGO CREEK, WASHINGTON COUNTY, PA**
- 62-17 36 Shapiro, Nathan S.*; Adams, James M.; Venn, Cynthia; Hallen, Christopher P.: **AN ONGOING ASSESSMENT OF SCARLIFT 15 ABANDONED MINE DRAINAGE REMEDIATION SYSTEM, RANSHAW (NORTHUMBERLAND COUNTY) PA**
- 62-18 37 Prezkop, Joshua T.*; Savidge, Sabrina M.; Ricker, Matthew C.: **TRACE METAL STORAGE IN COAL LEGACY SEDIMENTS DEPOSITED ALONG THE NORTH BRANCH SUSQUEHANNA RIVER, PENNSYLVANIA**
- 62-19 38 Steinhäuser, D.J.*; Sullivan, R.J.; Ricker, M.C.: **SPATIAL ANALYSIS OF CONTAMINANT METAL TRAPPING ON FLOODPLAIN SURFACES OF THE SUSQUEHANNA RIVER IN NORTHEASTERN PENNSYLVANIA**
- 62-20 39 Valkanas, Michelle M.*; Trun, Nancy: **A SEASONAL COMPARISON OF THE PASSIVE ABANDONED COAL MINE REMEDIATION SYSTEM AT WINGFIELD PINES**
- 62-21 40 Rddad, Larbi*; Krämer, Dennis: **RARE-EARTH ELEMENT AND ARSENIC GEOCHEMISTRY OF THE HYDROTHERMAL CALCITE HOSTED IN THE LACUSTRINE FORMATIONS OF THE NEWARK BASIN: IMPLICATION TO THE FLUID MIGRATION AND QUALITY OF GROUNDWATER**

AFTERNOON ORAL TECHNICAL SESSIONS

SESSION NO. 63

Paleontology and Stratigraphy II

1:30 PM, Omni William Penn Hotel Monongahela, 17th Floor

Tamra A. Schiappa, Presiding

- 63-1 1:30 PM Shell, Ryan*; Ciampaglio, Charles N.: **VERTEBRATE BIOSTRATIGRAPHY FROM AN EARLY PERMIAN (LEONARDIAN) MARINE LIMESTONE IN NORTH-CENTRAL TEXAS**
- 63-2 1:50 PM Blakeman, Audrey A.*; Fugitt, Franklin L.: **REVISING THE LOWER MISSISSIPPIAN STRATIGRAPHIC NOMENCLATURE IN THE PORTSMOUTH, OHIO REGION**
- 63-3 2:10 PM Liu, Wei*; Wu, Huaichun; Hinnov, Linda A.; Ma, Chao; Li, Mingsong: **ASTRONOMICALLY FORCED DEPOSITION IN THE EARLY CRETACEOUS SONGLIAO SYNRIFT BASIN, CHINA AND ITS PALEOCLIMATIC IMPLICATIONS**

- 63-4 2:30 PM Karoly, Sean E.*: **MILANKOVITCH SCALE CYCLICITY DURING CRETACEOUS OCEANIC ANOXIC EVENT 2 AT DEMERARA RISE, WESTERN EQUATORIAL ATLANTIC OCEAN**
- 63-5 2:50 PM Baddouh, M'bark*; Hinnov, Linda A.: **CHEMICAL COMPOSITION OF LAMINATED MARINE SEDIMENTS DURING OCEANIC ANOXIC EVENT 2, DEMERARA RISE, EQUATORIAL ATLANTIC OCEAN**
- 63-6 3:10 PM Luna, Melissa*; Carter, Eliza; Centeno, Eduardo; Kaufman, Zachary; Cullen, Kate; Spriggs, Noah; Newman, Illana; OConnell, Suzanne: **THE PLIOCENE RECORD OF ANTARCTIC SEDIMENTATION IN THE JANE BASIN, NORTHWEST WEDDELL SEA, ODP SITE 697**

SESSION NO. 64

T4. Karst Studies from the Appalachians to the Mid-Continent (GSA Karst Division)

1:30 PM, Omni William Penn Hotel Allegheny, 17th Floor

Douglas Gouzie and James Berglund, Presiding

- 64-1 1:30 PM Kochanov, William E.*: **KARST OF THE DEVONIAN CATSKILL FORMATION, NORTHEASTERN PENNSYLVANIA**
- 64-2 1:50 PM Novello, Joshua A.*; Sasowsky, Ira D.: **PSEUDOKARST SINKHOLE IN THE SHARON CONGLOMERATE CANNOT HAVE FORMED SOLELY BY SLIDING OR SLUMPING PROCESSES**
- 64-3 2:10 PM Aden, Douglas J.*: **STATUS OF KARST MAPPING IN OHIO**
- 64-4 2:30 PM Francis, Andrew Kehler*; Peterson, Eric W.; Dogwiler, Toby: **LITHOLOGY AS AN EROSIONAL CONTROL ON A FLUVIOKARST SYSTEM, COMPARING PROFILES OF LIMESTONE AND SANDSTONE BEDDED STREAMS**
- 64-5 2:50 PM Gouzie, Douglas R.*; Lockwood, Benjamin: **USE OF HISTORICAL MAPS TO EVALUATE AN URBAN SINKHOLE INCIDENT**
- 64-6 3:10 PM Berglund, James L.*; Toran, Laura; Herman, Ellen K.: **MONITORING THERMAL AND GEOCHEMICAL DIFFERENCES OF TWO ADJACENT SPRINGS**

SESSION NO. 65

T24. Urban Biogeochemistry and Geochemistry (GSA Environmental and Engineering Geology Division; GSA Geology and Society Division)

1:30 PM, Omni William Penn Hotel Frick, Conference Level

Emily M. Elliott and Daniel Bain, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 65-1 1:35 PM Sugano, Laura L.*; Jefferson, Anne J.; Kinsman-Costello, Lauren E.; Avellaneda, Pedro: **A GREEN ROOF IS A NET SOURCE OF PHOSPHORUS IN NORTHEASTERN OHIO**
- 65-2 1:55 PM Duncanson, Samuel P.*; Theissen, Kevin M.; Houle, Gabrielle R.; Edlund, Mark B.: **DRASTIC SEDIMENTATION CHANGES IN A TWIN CITIES METRO AREA WATERSHED ON THE URBAN-RURAL BOUNDARY**
- 65-3 2:15 PM Moore, Joel*; Bird, Darcy Lynn; Dobbis, Seth; Woodward, Gregory: **CONCRETE WEATHERING AND THE URBAN BUILT ENVIRONMENT AS A MAJOR SOURCE OF INCREASED MAJOR ION CONCENTRATIONS INCLUDING DISSOLVED INORGANIC CARBON AND WEATHERING FLUXES IN URBAN WATERSHEDS**
- 65-4 2:35 PM Hon, Rudi*; Ritoch, Anna; Rice, Mikaela; Besancon, James: **DETAILED MONITORING OF DEICER LEVELS IN STREAMS WITHIN A SMALL WATERSHED, SOUTHEASTERN MASSACHUSETTS**
- 2:55 PM **BREAK**
- 65-5 3:10 PM Besancon, James*; Hon, Rudolph: **ANALYSIS OF SEVENTEEN CATCHMENTS IN A SUBURBAN WATERSHED FOR CONTAMINATION BY ROAD SALT**

SESSION NO. 65

- 65-6** 3:30 PM Dietrich, Matthew*; Wolfe, Amy; Burke, Michelle; Vangala, Sunitha; Argyilan, Erin P.; LeGalley, Erin; Krekeler, Mark P.S.: **A PRELIMINARY URBAN GEOCHEMICAL EXPLORATION OF STREET SEDIMENTS OF GARY, INDIANA INDICATES MAJOR CONCERNS ARE WARRANTED**
- 65-7** 3:50 PM Jefferson, Anne J.*; Sugano, Laura Lynn; Avellaneda, Pedro; Kinsman-Costello, Lauren E.: **WATER ISOTOPES PROVIDE INSIGHTS INTO THE HYDROLOGIC FUNCTIONING OF STORMWATER GREEN INFRASTRUCTURE**
- 65-8** 4:10 PM Williams, Amy J.*; Becraft, Jeremy; Dobbis, Seth; Grams, Ryan; Seibel, Derek; Moore, Joel: **CHLORIDE, METAL, AND NUTRIENT CONTRIBUTIONS FROM URBANIZED UNIVERSITY CAMPUS WATERWAYS, TOWSON, MD**
- 4:30 PM **CONCLUDING REMARKS**

SESSION NO. 66

T33. Shoreline Behavior, Paralic Architecture, and Lake- Level Change in the Great Lakes (GSA Quaternary Geology and Geomorphology Division; GSA Sedimentary Geology Division; GSA Limnogeology Division)

1:30 PM, Omni William Penn Hotel Conference Center A, Conference Level

John W. Johnston and Erin Argyilan, Presiding

- 1:30 PM **INTRODUCTORY REMARKS**
- 66-1** 1:35 PM Loope, Henry M.*; Autio, Robert J.; Monaghan, G. William; Antinao, José Luis; Huot, Sebastien; Lowell, Thomas V.; Curry, B. Brandon: **LAURENTIDE ICE SHEET READVANCE CA. 21.7 K CAL YR BP AND FORMATION OF GLACIAL LAKE EMINENCE, SOUTH-CENTRAL INDIANA**
- 66-2** 1:55 PM Wells, Neil A.*; Posedly, Peter M.: **LARGE EASTWARD WAVES, MULTIPLE LAKE LEVELS, AND A MAJOR REGRESSION DURING LATE-GLACIAL LAKE WHITTLESEY, NORTHWESTERN OHIO, U.S.A**
- 66-3** 2:15 PM Mulligan, Riley P.M.*; Bajc, Andy F.: **NEW INSIGHTS ON GLACIAL LAKE EVOLUTION IN THE SOUTHEASTERN PART OF THE LAKE HURON BASIN BASED ON SURFICIAL SEDIMENT MAPPING, SEDIMENT DRILLING, AND REMOTELY-SENSED DATA IN SOUTHERN ONTARIO**
- 66-4** 2:35 PM Morrison, Sean*; Zamperoni, Anthony; Garcia, Cesar A.; Jol, Harry M.; Johnston, John W.; Lepper, Kenneth: **QUANTIFYING NATURAL LAKE LEVEL FLUCTUATIONS FOR THE IPPEWASH STRANDPLAIN, LAKE HURON: EXAMINING THE CONNECTION BETWEEN THE UPPER AND LOWER GREAT LAKES**
- 2:55 PM **BREAK**
- 66-5** 3:10 PM Zoet, Lucas*; Rawling, J. Elmo: **IN-SITU MONITORING OF BLUFF STABILITY IN SOUTH EAST WISCONSIN**
- 66-6** 3:30 PM Lepper, Kenneth*; Argyilan, Erin P.; Fisher, Timothy G.: **PUSHING THE LIMITS OF OSL APPLICATION TO GREAT LAKES COSTAL DEPOSITS: HOW YOUNG AND HOW SMALL?**
- 66-7** 3:50 PM Johnston, John W.*; Morrison, Sean; Argyilan, Erin P.; Thompson, Todd A.: **INCORPORATING GEOLOGIC KNOWLEDGE TO BETTER UNDERSTAND THE COASTAL ZONE IN THE LAURENTIAN GREAT LAKES**
- 4:10 PM **DISCUSSION**

SESSION NO. 67

T47. Omnipresent Ichnology: Traces of Life From Mountain Slopes to the Deep Sea

1:30 PM, Omni William Penn Hotel Lawrence Welk Room, Mezzanine Level

Ilya V. Buynevich and Daniel I. Hembree, Presiding

- 67-1** 1:30 PM Hembree, Daniel I.*: **NEOICHOLOGY OF TARANTULAS: RECOGNITION OF LARGE SPIDER BURROWS IN THE FOSSIL RECORD**

- 67-2** 1:50 PM Kopcznski, Karen A.*; Buynevich, Ilya V.; Curran, H. Allen; Sparacio, Christopher A.; Nyquist, Jonathan E.; Freedman, Joanna; Seike, Koji: **DIAGNOSTIC GEORADAR SIGNATURES OF BRACHYURAN BURROWS, SAN SALVADOR ISLAND, THE BAHAMAS: IMPLICATIONS FOR CARBONATE NEOICHOLOGY AND BEYOND**
- 67-3** 2:10 PM Sparacio, Christopher A.*; Buynevich, Ilya V.; Kopcznski, Karen A.; Curran, H. Allen; Glumac, Bosiljka; Vasylenko, Klavdiya; Park Boush, Lisa E.: **COMPARATIVE INDICATIVE MEANING OF DECAPOD BURROW COMPONENTS: FOCUS ON LOW-SUPRATIDAL CARBONATES**
- 67-4** 2:30 PM Combs, Kassandra*; Buynevich, Ilya V.; Collins, Timothy: **NEOICHOLOGY OF LARGE MAMMAL BURROWS ALONG STEEP FORESTED STREAM BANKS, LOWER BUCKS COUNTY, PENNSYLVANIA**
- 67-5** 2:50 PM Getty, Patrick R.*: **THE FISH TRAIL *UNDICHTNA* FROM PLAYA LAKE DEPOSITS OF THE HARTFORD BASIN (EARLY JURASSIC EAST, BERLIN FORMATION) OF MASSACHUSETTS: IMPLICATIONS FOR EARLY JURASSIC TERRESTRIAL FOOD CHAINS**
- 67-6** 3:10 PM Buynevich, Ilya V.*; Hembree, Daniel I.; Sparacio, Christopher A.; Ward, Dane C.; August, Jessica M.; Kopcznski, Karen A.; Curran, H. Allen: **BIOTURBATION IN SPACE AND TIME: APPLICATIONS OF CONTINUOUS AND REAL-TIME GEORADAR IMAGING**
- 67-7** 3:30 PM Korf, Jason J.*; Westgaard, John; Hanks, H. Douglas; Willging, Steve: **PRELIMINARY LOOK AT TRACE FOSSILS IN THE LATE CRETACEOUS COLERAINE FORMATION; HILL ANNEX STATE PARK, CALUMET, MINNESOTA**

AFTERNOON POSTER TECHNICAL SESSIONS

SESSION NO. 68

T9. Remote Sensing Applications in Geology (Posters) (GSA Geophysics Division; GSA Geoinformatics Division)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 68-1** 1 Dyer, Elizabeth*; Ramage, Joan: **INVESTIGATION OF THE RELATIONSHIP BETWEEN RECENT WARM WINTER SURFACE TEMPERATURES AND GLACIAL MELTING IN SVALBARD AND THE RUSSIAN HIGH ARCTIC**
- 68-2** 2 McRivette, Michael W.*; Pawelec, Lauren; Menold, Carrie A.: **USING REMOTE SENSING TO CONNECT OUTCROP-SCALE UHP PETROLOGY TO AN OROGEN-SCALE TECTONIC PROBLEM**
- 68-3** 3 Marshall, Steven*; Hoskins, Nate; Schlegel, Christopher; Herlitz, Tristan; Free, James C.; Breda, Caroline; Burke, Michelle; Krekeler, Mark P.S.: **LABORATORY HYPERSPECTRAL INVESTIGATIONS OF GEOMATERIALS FROM THE GREAT MIAMI RIVER AT HERITAGE PARK, COLERAINE TOWNSHIP, OHIO: PROGRESS IN DEVELOPING AN ENVIRONMENTAL LIBRARY FOR COMPLEX GEOLOGIC SETTINGS.**
- 68-4** 4 Thatcher, Sean*: **COASTAL STABILITY ON THE EASTERN AND SOUTHERN COASTLINES OF STATEN ISLAND, NEW YORK**
- 68-5** 5 Melton, Sierra*: **COMPARING METHODS OF QUANTIFYING RAPID TOPOGRAPHIC CHANGES**
- 68-6** 6 Devlin, Kelly*; Borsa, Adrian; Neely, Wesley: **SUBSIDENCE TRENDS IN THE POWDER RIVER BASIN CORRESPONDING TO COALBED METHANE PRODUCTION**
- 68-7** 7 Becker, R.H.*: **ESTABLISHING STREAM DISCHARGE LOCATIONS USING SUAS BASED THERMAL IMAGERY**

SESSION NO. 69

T29. Paleolimnological Studies of Climate Variability and Environmental Response (Posters) (GSA Limnogeology Division)

1:30 PM, Omni William Penn Hotel Grand Ballroom, 17th Floor

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

Booth #

- 69-1 8 Strong, Damara J.*; Werne, Josef P.; Correa-Metrio, Alexander; Perez, Liseth C.; Caballero, Margarita; Schwalb, Antje; Cohuo-Duran, Sergio; Macario-Gonzalez, Laura Anahi: **LOCAL AND REGIONAL INFLUENCES ON LEAF WAX ΔD VALUES IN LAKE SEDIMENTS IN EASTERN MESOAMERICA**
- 69-2 9 Grochocki, Julian L.*; Peck, John A.: **LATE HOLOCENE ENVIRONMENTAL VARIABILITY AS RECORDED IN THE SEDIMENT OF A NORTHEASTERN OHIO KETTLE LAKE**
- 69-3 10 Grochocki, Konrad K.*; Lane, Chad S.; Stager, Jay Curt: **A 1900-YEAR MULTI-PROXY PALEOENVIRONMENTAL RECONSTRUCTION OF PISECO LAKE, ADIRONDACK MOUNTAINS, NEW YORK**
- 69-4 11 Perello, Melanie*; Bird, Broxton W.; Lei, Yanbin; Polissar, Pratigya J.; Thompson, Lonnie G.; Yao, Tandong: **TRACKING CHANGES IN INDIAN SUMMER MONSOON INTENSITY USING PRECIPITATION AND LAKE LEVEL PROXIES FROM EASTERN TIBET**
- 69-5 12 Finkenbinder, Matthew*; D'Andrea, William J.; Abbott, Mark B.; Ortiz, Joseph D.: **EVALUATING LONG CHAIN ALKENONES AND VISIBLE REFLECTANCE SPECTROSCOPY FOR PALEOTEMPERATURE RECONSTRUCTION FROM HARDING LAKE, ALASKA OVER THE LAST 15,000 YEARS**
- 69-6 13 Hargis, Jordan Riley*; Stone, Jeffery R.; Hixon, Jase: **LONG LAKE FIRE RECONSTRUCTION**
- 69-7 14 Lary, Erin*; Krekeler, Mark P.S.: **TRANSMISSION ELECTRON MICROSCOPY (TEM) INVESTIGATION OF OLDUVAI'S LOCALITY 80 SHOWS UNEXPECTED MINERALOGICAL DIVERSITY: PROGRESS IN THE ACACIA PROJECT**
- 69-8 15 OHara, Sandra L.*; Finkenbinder, Matthew S.; Ortiz, Joseph D.; Huston, Amber N.; Abbott, Mark B.: **A LATEGLACIAL AND HOLOCENE LACUSTRINE RECORD OF PALEOENVIRONMENTAL CHANGE FROM LOST LAKE, INTERIOR ALASKA**
- 69-9 16 Fasulo, Cooper*: **HISTORY OF SEDIMENTATION IN JENNY LAKE, GRAND TETON NATIONAL PARK USING SEISMIC STRATIGRAPHY**
- 69-10 17 Weidhaas, Nicholas*; Woods, Arielle; Rodbell, Donald; Larsen, Darren; Abbott, Mark B.; Hatfield, Rob: **THE TIMING AND MAGNITUDE OF LATE PLEISTOCENE AND HOLOCENE LAKE LEVEL CHANGE FROM A PAIRED CARBONATE $\Delta^{18}O$ - STRATIGRAPHY RECORD OF A CORE TRANSECT IN LAKE JUNIN, PERU**
- 69-11 18 Woods, Arielle*; Abbott, Mark B.; Werne, Josef P.; Rodbell, Donald: **FATTY ACID AND *N*-ALKANE ASSEMBLAGES IN MODERN TERRESTRIAL AND AQUATIC PLANTS FROM LAKE JUNIN, PERU AND THEIR APPLICATION TO THE SEDIMENTARY BIOMARKER RECORD OVER THE LAST 18,700 YEARS**
- 69-12 19 Lyon, Eva*; Carden, Darion; Hodelka, Bailee; Lucas, Joseph S.; O'Dell, Meredith; McGlue, Michael; Woolery, Edward: **INTEGRATED HIGH-RESOLUTION GEOLOGICAL AND GEOPHYSICAL EVALUATION OF SEDIMENTARY ARCHITECTURE AT JUNE LAKE, MONO COUNTY, CA**
- 69-13 20 Griffiore, Melissa P.*: **ISOTOPIC RECORD OF ANCIENT AND PRE-HISTORIC LEAD POLLUTION IN LAGUNA ROYA LAKE SEDIMENTS, NORTHWESTERN SPAIN**
- 69-14 21 Surdel, Theodore*; Smith, Alison J.: **PRELIMINARY STUDY OF LIMNOCYTHERE (OSTRACODA) BIOGEOGRAPHY IN QUATERNARY WESTERN NORTH AMERICA-A TOOL FOR TRACKING CHANGES IN HYDROCLIMATOLOGY**
- 69-15 22 Ahmed, Maliha N.*; Bird, Broxton W.: **HYDROCLIMATIC VARIABILITY DURING HOLOCENE IN THE EASTERN**

COLOMBIAN ANDES DISCERNED USING HIGH-RESOLUTION LAKE SEDIMENT RECORDS FROM LAGUNA DE TOTA

- 69-16 23 Brown, Christopher R.*; Griffiths, Michael L.; Hansen, Kyle G.; Getch, Seth J.; Gillikin, David P.; Brachfeld, Sefanie A.; DaSilva, Michael; Pardi, Richard; Sebetich, Michael: **PREHISTORIC HUMAN CULTURAL SHIFTS IN THE MID-ATLANTIC: EVIDENCE OF CLIMATE INFLUENCE ON ARCHAIC CULTURES IN NEW JERSEY INFERRED FROM A 15,000-YEAR LAKE SEDIMENT CORE**
- 69-17 24 Brundrett, Ashley L.*; Theissen, Kevin M.; Horns, Sarah E.; Hickson, Thomas A.: **MICROBIALITE SIGNATURES IN A GREAT BASIN LAKE CORE RECORD OF THE PAST ~5500 YR**
- 69-18 25 Knights, Cooper*; Hubeny, J. Bradford; Monecke, Katrin; McCarthy, Francine M.G.; Knudstrup, Renee; Passaretti, Melanie; Stager, Jay Curt: **PALEOLIMNOLOGIC VARIABILITY OF MULTIPLE LAKE BASINS: WALDEN POND, MA**
- 69-19 26 Husain, Fatima*; Longo, William M.; Daniels, William; Russell, James M.; Giblin, Anne E.; Huang, Yongsong: **A 10,000 YEAR RECORD OF ARCTIC TEMPERATURE VARIABILITY DURING THE HOLOCENE INFERRED FROM LIPID BIOMARKERS IN LACUSTRINE SEDIMENTS FROM NORTHERN ALASKA**
- 69-20 27 Smith, Margaret*; Beck, Catherine C.: **HISTORICAL SEDIMENTATION IN TWO ADIRONDACK LAKES: A MULTIPROXY STUDY**
- 69-21 28 Hart, Emily*; OHara, Sandra L.; Larsen, Darren; Kinash, Nikki; Cook, Ann; Abbott, Mark B.: **A HOLOCENE RECORD OF CHANGING MONSOON STRENGTH FROM PERU**
- 69-22 29 Horns, Sarah E.*; Theissen, Kevin M.; Brundrett, Ashley L.; Hickson, Thomas A.: **NEW EXTENDED RECORD OF HOLOCENE PALEOECOLOGY AND PALEOHYDROLOGY FROM LOWER PAHRANAGAT LAKE, GREAT BASIN**
- 69-23 30 Onken, Steven*; Stone, Jeffery R.: **RECONSTRUCTING THE IMPACT OF FLOODING ON IZAAK WALTON RESERVOIR, INDIANA**
- 69-24 31 Potter, Noel L.*; Retelle, Michael J.: **HIGH-SEDIMENTATION EVENTS AND ANNUAL SEDIMENT FLUX IN A SEDIMENT TRAP RECORD FROM LINNÉVATNET, SVALBARD**
- 69-25 32 Starbuck, Emily C.M.*; Stone, Jeffery; Bird, Braxton: **CLIMATE RECONSTRUCTION BASED ON DIATOM ASSEMBLAGES WITHIN PRETTY LAKE, INDIANA**

SESSION NO. 70

Coastal Processes (Posters)

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 70-1 1 Bjornton, John*; Beltre, Yalinel; Cruz, Alondra; Delgado, Brian; Henry, Melody; Herzberger, Kyra; Lucero, Keylen; Magadini, Debra; Malecaj, Xhesika; Mittiga, Andrew; Penalo, Raquel; Saad, Batoul; Toure, Salimata; Valentin, Stephanie: **ECO-FRIENDLY HABITAT RESTORATION: USING PHOTO-DEPRIVATION TO ERADICATE *PHRAGMITES AUSTRALIS* AND PROMOTE NATIVE PLANT SUCCESSION IN PIERMONT MARSH, NEW YORK, CONTINUED**
- 70-2 2 Corbett, J. Elizabeth*; Peteet, Dorothy; Shumer, Melissa; Martin, Isabella; Sevilla, Laia; Sun, Eric; Lowery, Ruby; Cabrera-Rivera, Jesus; Garcia, Herman; Newton, Robert; Vincent, Susan: **CARBON STORAGE AND RELEASE IN PIERMONT MARSH; A CONTINUING STUDY**
- 70-3 3 Dubossi, Derek*; JeanPierre, Deanasia; Ojeda, Keilyn; Ramirez, Cody; Parra, Ericka; Quinteros, Erik; Dominguez, Kelvin; Leon, Martha; Chavero, Ulises: **MEASUREMENT OF POLLUTANT LEVELS AND ANALYSIS OF SEDIMENT DEPOSITION AND ACCRETION IN A HUDSON RIVER TIDAL MARSH**
- 70-4 4 Horgan, Julianna S.*; Domack, Cynthia R.: **COASTAL EROSION AND LIGHTHOUSE RELOCATION ON CAPE COD AND MARTHA'S VINEYARD, MASSACHUSETTS**

SESSION NO. 70

- 70-5 5 Antonelli, Jenna M*; Cornell, Sean: **REVISITING BARRIER ISLAND BEACH INFILTRATION RATES AND IN SITU POROSITY MEASUREMENTS FOUR YEARS POST-REPLENISHMENT, WALLOPS ISLAND, VIRGINIA.**
- 70-6 6 Cudmore, Devin A.*; Hubeny, J. Bradford: **STRATIGRAPHIC INVESTIGATION OF SELECT NEW ENGLAND SALT MARSHES AND THE POTENTIAL OF PAST HIGH ENERGY EVENTS BASED ON SEDIMENT LITHOLOGY**
- 70-7 7 El-ashkar, Shadya*; Hubeny, J. Bradford; Knudstrup, Renee: **BLUE CARBON SEQUESTRATION IMPACTED BY A LATE HOLOCENE HIGH ENERGY SAND DEPOSIT IN A SALT MARSH, ROCKPORT MA**
- 70-8 8 Annadale, Mary C.*; Hubeny, J. Bradford; Monecke, Katrin: **DETERMINING THE LATE QUATERNARY GEOLOGIC AND RELATIVE SEA LEVEL HISTORY OF SALEM HARBOR USING DATED SEDIMENT CORES AND SUB-BOTTOM GEOPHYSICS**
- 70-9 9 Williams, Bethany*; Moskalski, Susanne M.: **MARSH STRATIGRAPHY AND SEDIMENTATION RATE OF HIGBEE BEACH CAPE MAY, NEW JERSEY**
- 70-10 10 Agrios, Liana*; Licht, Kathy; Hemming, Sidney; Williams, Trevor: **USING U-PB DETRITAL ZIRCON GEOCHRONOLOGY TO STUDY ICE STREAMS IN THE WEDDELL SEA EMBAYMENT, ANTARCTICA**

SESSION NO. 71

Economic and Energy Geology (Posters)

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 71-1 11 Hand, Kristen L.*: **GENESEO, MARCELLUS, AND UTICA CORE DESCRIPTIONS AND ANALYSIS FROM THE RIDGE AND VALLEY OF CENTRAL PENNSYLVANIA; HOWARD TO MILL HALL QUADRANGLES, CENTRE AND CLINTON COUNTIES, PENNSYLVANIA**
- 71-2 12 Metz, Kyle*: **UNCONVENTIONAL RESOURCE POTENTIAL OF ORGANIC-RICH DEVONIAN SHALE FORMATIONS, EASTERN OHIO, USA**
- 71-3 13 Stucker, J.D.*: **OHIO'S FUEL AND NON-FUEL MINERAL INDUSTRIES IN 2016**
- 71-4 14 Flett, Lonnie*; Krekeler, Mark P.S.: **TRANSMISSION ELECTRON MICROSCOPY (TEM) OF TYPE 2 GOLD ORE AT ROUND MOUNTAIN, NEVADA REVEALS COMPLEXITIES IN MINERALIZATION AND POINTS TO CAUSES FOR EXTRACTION IN EFFICIENCY**
- 71-5 15 Albarran, Christopher A.*; Comuso, Christina; Disessa, Nicholas; Severs, Matthew J.: **ORIGIN AND ECONOMIC VIABILITY OF THE ROSE BLANCHE QUARTZ-GOLD BODY, NEWFOUNDLAND**
- 71-6 16 Freed, Brian*; Maute, Donald; Fischer, Gregory; Severs, Matthew J.: **FLUID EVOLUTION AT THE EXCELSIOR COPPER SKARN, ORGAN MOUNTAINS, NM**
- 71-7 17 Griswold, John Thomas*; Castle, Evan; Zappas, John; Severs, Matthew J.: **DOCUMENTING CHANGES IN FLUID EVOLUTION OF ORGAN MOUNTAIN ORE DISTRICT AT MEMPHIS MINE, NM**
- 71-8 18 Haas, Lisa D*; Zambito, James; Stewart, Esther K.: **WONEWOC SANDSTONE AS A POTENTIAL CONDUIT FOR MISSISSIPPI VALLEY-TYPE MINERALIZATION IN WESTERN AND SOUTH-CENTRAL WISCONSIN**

SESSION NO. 72

T25. Biogeochemistry & Geobiology of Anoxic/Euxinic Systems (Posters)

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 72-1 19 Boucher, Jonah*; Havig, Jeff; Hamilton, Trinity L.; Antonopoulos, Dionysios A.; Koval, Jason; McCormick, Michael: **MAPPING MICROBIAL COMMUNITY COMPOSITION AND GEOCHEMICAL**

GRADIENTS AT HIGH SPATIAL RESOLUTION IN A MEROMICTIC LAKE (GREEN LAKE, FAYETTEVILLE, NEW YORK)

- 72-2 20 Fouskas, Fotios*; Gilhooly, William; Werne, Josef P.; O'Beirne, Molly D.: **SULFUR CYCLING AND PYRITE FORMATION IN MODERN EUXINIC LAKES**
- 72-3 21 Henke, Alyssa Nicole*: **GEOCHEMICAL ANALYSIS OF THE WEST FRANKLIN LIMESTONE MEMBER OF THE SHELburn FORMATION (UPPER PENNSYLVANIAN) OF SOUTHWESTERN INDIANA**
- 72-4 22 Kurek, Martin*; Druschel, Gregory; Gilhooly, William: **A NOVEL METHOD TO REDUCE AND QUANTIFY ELEMENTAL SULFUR**

SESSION NO. 73

T26. Biogeochemical Cycling and Biomineralization: Observations at the Microscale (Posters)

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

Booth #

- 73-1 23 Frederick, Hannah*; Yarger, Brianne; Herndon, Elizabeth: **GEOCHEMICAL EVALUATION OF WEATHERING PROCESSES IN COAL MINE SPOIL**
- 73-2 24 O'Neal, Evan W.*; Marks, Kirk; Knudson, Christine A.; McAdam, Amy; Williams, Amy J.: **GEOBIOLOGY OF AN ACID MINE DRAINAGE ENVIRONMENT ALONG A STREAM GRADIENT, CENTRALIA, PA**
- 73-3 25 Noone, Samantha*; Cardace, Dawn: **DETERMINING THE DEGREE OF SERPENTINIZATION OF CORED ROCKS IN THE COAST RANGE OPHIOLITE IN LOWER LAKE, CA, USA**
- 73-4 26 Markley, Laura A.*; Peters, Stephen C.; Pazzaglia, Frank J.: **CHARACTERIZATION OF THE GOETHITE/HEMATITE RATIO IN MODERN AND ANCIENT SOILS IN THE MID-ATLANTIC REGION AS A PALEOCLIMATIC INDICATOR**

SESSION NO. 74

T41. Geoarchaeology (Posters) (GSA Archaeological Geology Division)

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

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- 74-1 27 Rogers, Kayleigh A.*; Raymond, Renee; McKenzie, Scott C.: **A CAVE BEAR SKULL SECTION SHOWING ALTERATION LIKELY MADE BY NEANDERTHALS FROM THE PLEISTOCENE DEPOSITS OF AURISINA CAVE IN ITALY**
- 74-2 28 Flynn, Melanie J.*: **SEA LEVELS AND POTENTIAL SITE INUNDATION IN SUSSEX COUNTY, DELAWARE**
- 74-3 29 Buff, Lindsay*; Bailey, David G.; Goodale, Nathan; Kendall, Heather; Prentiss, Anna M.: **PETROGRAPHIC AND GEOCHEMICAL CHARACTERIZATION OF EOCENE VOLCANIC ROCKS, BRITISH COLUMBIA, AND THEIR APPLICATION TO ARCHAEOLOGICAL TOOLSTONE SOURCING**
- 74-4 30 Homsey-Messer, Lara*; Chadwick, William: **GEOARCHAEOLOGY AND LANDSCAPE HISTORY OF THE SQUIRREL HILL ARCHAEOLOGICAL SITE**
- 74-5 31 Soto, Nora*; Yanes, Yurena; Parker, Wesley G.; Mesa, Eduardo; Hernández-Marrero, Juan Carlos; Pais, Jorge: **ASSESSING THE INTENSITY OF SHELLFISH EXPLOITATION FROM PRE-HISTORIC TO RECENT TIMES IN THE CANARY ISLANDS**
- 74-6 32 Perry, Gabrielle*; Hansell, Patricia K.; Buynevich, Ilya V.: **COMPARING GRAIN-SIZE ANALYSIS METHODS IN MONGARILLO SHELL MIDDEN SEDIMENT MATRIX, PARITA BAY, PANAMA**

SESSION NO. 75***T46. Ground Penetrating Radar Applications in the Earth Sciences and Archaeology (Posters)***

1:30 PM, Omni William Penn Hotel Urban, 17th Floor

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

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- 75-1 33 Shaak, Riley*; Sutter, Brandon; Ofoma, Ogonna; Sewall, Jacob:
**SEDIMENT STORAGE ON A 1ST ORDER STREAM FLOOD PLAIN
 USING GPR**
- 75-2 34 Hynek, Madeline R.*; Jol, Harry M.; Seamans, Jackelyn M.:
**SUBSURFACE IMAGING OF PAST SHORELINES OF LAKE
 MICHIGAN AT MANISTIQUE, MICHIGAN, USA**

- 75-3 35 Wenhold, Leah*; Buynevich, Ilya V.; Rankin, Jennifer; Stewart,
 Michael; Kopcznski, Karen A.: **GEOLOGICAL CONTEXT OF THE
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- 75-4 36 Mattheus, C.R.*; Fowler, J.K.; Boyce, C.M.; Cockrell, J.; Van Winkle,
 M.N.: **SUBSURFACE ARCHITECTURES MAPPED ALONG
 HARBOR-HEADLAND BEACHES OF THE LAURENTIAN GREAT
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 EXPLAINED BY RADAR FACIES PATTERNS AND SEQUENCE
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The second number (following the dash) indicates the presentation order of the paper within its session.

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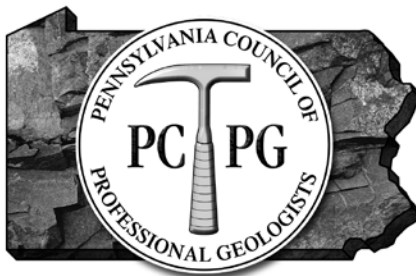
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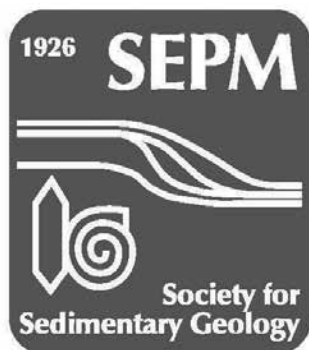
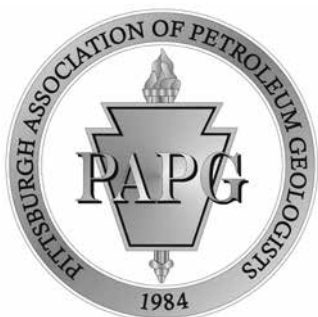
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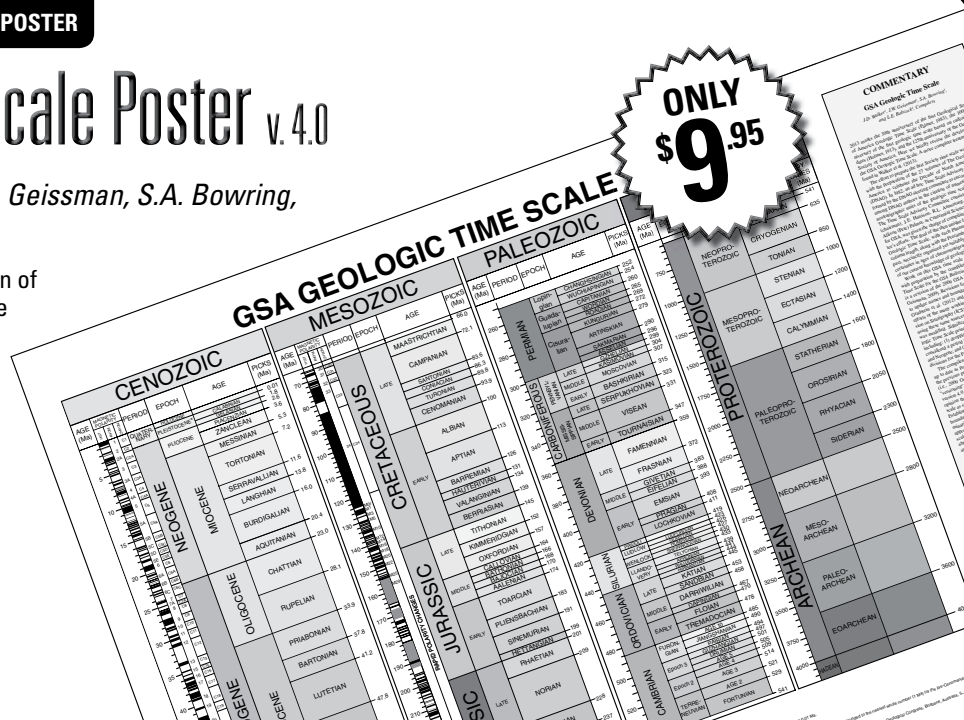
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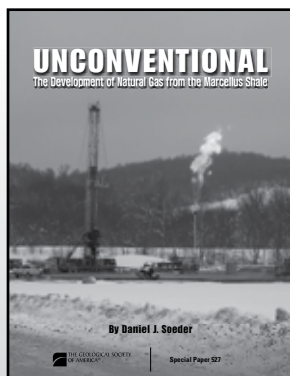
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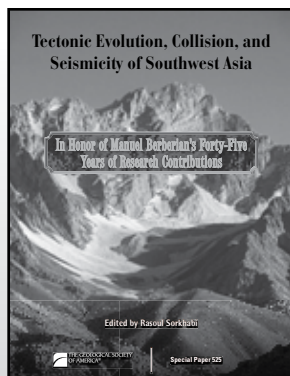
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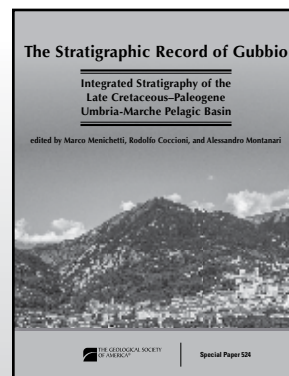
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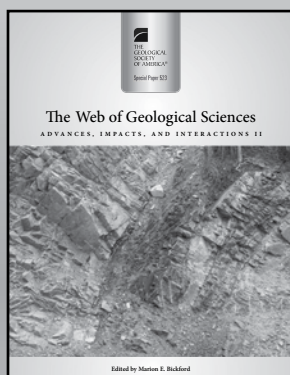
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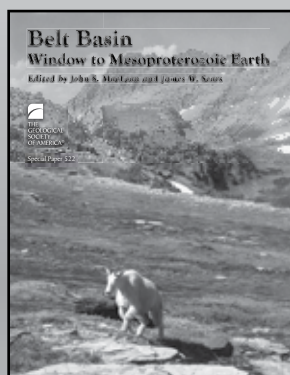
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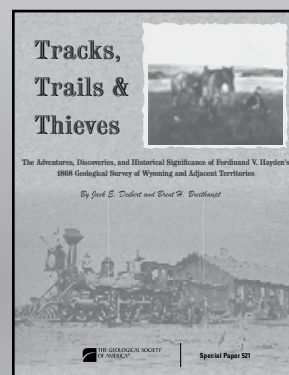
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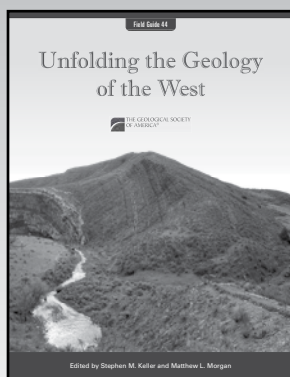
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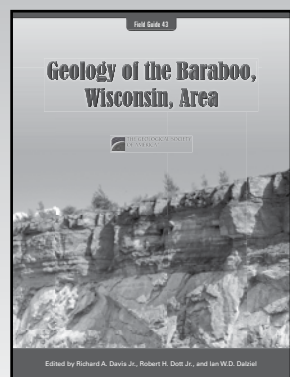
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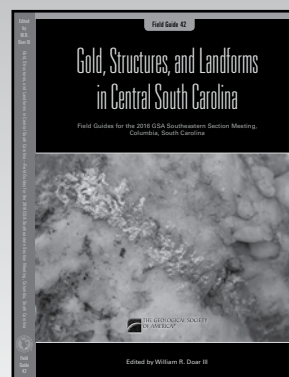
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