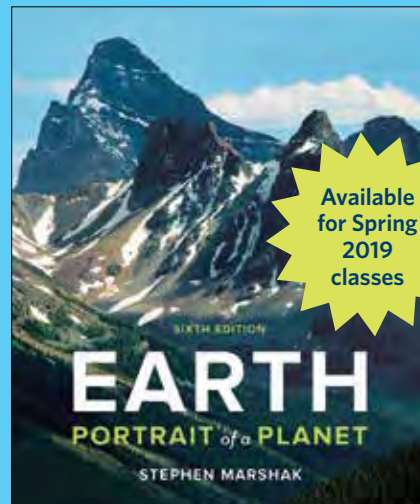
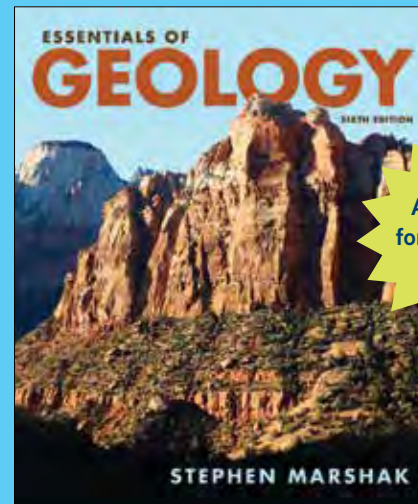


MARSHAK GEOLOGY AND EARTH SCIENCE

 PUBLISHED BY W. W. NORTON & COMPANY



Available for Spring 2019 classes



Available for Fall 2019 classes



NEW Guided Learning Explorations are carefully scaffolded online exercises that get students engaging in increasingly applied ways with geoscience topics. They will be available for Fall 2019 with *Earth: Portrait of a Planet* and *Essentials of Geology*. Stop by booth #414 for a demo.



Give students the tools they need for an enriching, hands-on experience in and out of class.

Every Norton physical geology and Earth science text includes:

- ▶ Smartwork5 online activities
- ▶ Engaging, narrative text
- ▶ Detailed, vibrant visuals
- ▶ The most up-to-date coverage
- ▶ A robust suite of animations, videos, and interactive simulations tied directly to art from the book

Join the conversation: [f NortonScience](#) [@NortonScience](#)

 INDEPENDENT AND EMPLOYEE-OWNED | WWNORTON.COM



4-7 November
Indianapolis, Indiana, USA

Annual Meeting & Exposition Program



GSA 2018 ANNUAL MEETING & EXPOSITION PROGRAM



 THE GEOLOGICAL SOCIETY OF AMERICA®

Add New Layers to Your Quaternary Research

- ✓ $\delta^{18}\text{O}$ now included free with ^{14}C on carbonate and water/ice
- ✓ $\delta^{13}\text{C}$ measured directly on the sample via IRMS
- ✓ Maximize your budget with free consultation and cancellation

— Since 1979 —
Radiocarbon Dating
Consistent Accuracy, Delivered on Time



WHAT
**SCIENCE
STANDS**
FOR

Join more than 24,000 Earth and space scientists from around the world in Washington, D.C., for AGU's Fall Meeting 2018.

- Connect with experts who understand the challenges you face
- Learn about the latest discoveries from leading scientists
- Be inspired by a community's passion to improve society through research

Help us show the world what science stands for and register for Fall Meeting 2018 today!

Early registration deadline: 7 November

fallmeeting.agu.org

AGU100 ADVANCING
EARTH AND
SPACE SCIENCE
FALL MEETING
Washington, D.C. | 10-14 Dec 2018



Take the lead in applied geosciences

With **Penn's Master of Science in Applied Geosciences**, you stay ahead of the curve in remediation practices.

Visit us at booth #122 and learn how our program can advance your industry expertise in:

- Geologic field methods
- Stormwater systems
- Project management
- HAZWOPER certification
- New technologies and techniques

Discover more about our full- and part-time flexibility for working professionals:

WWW.UPENN.EDU/MSAG



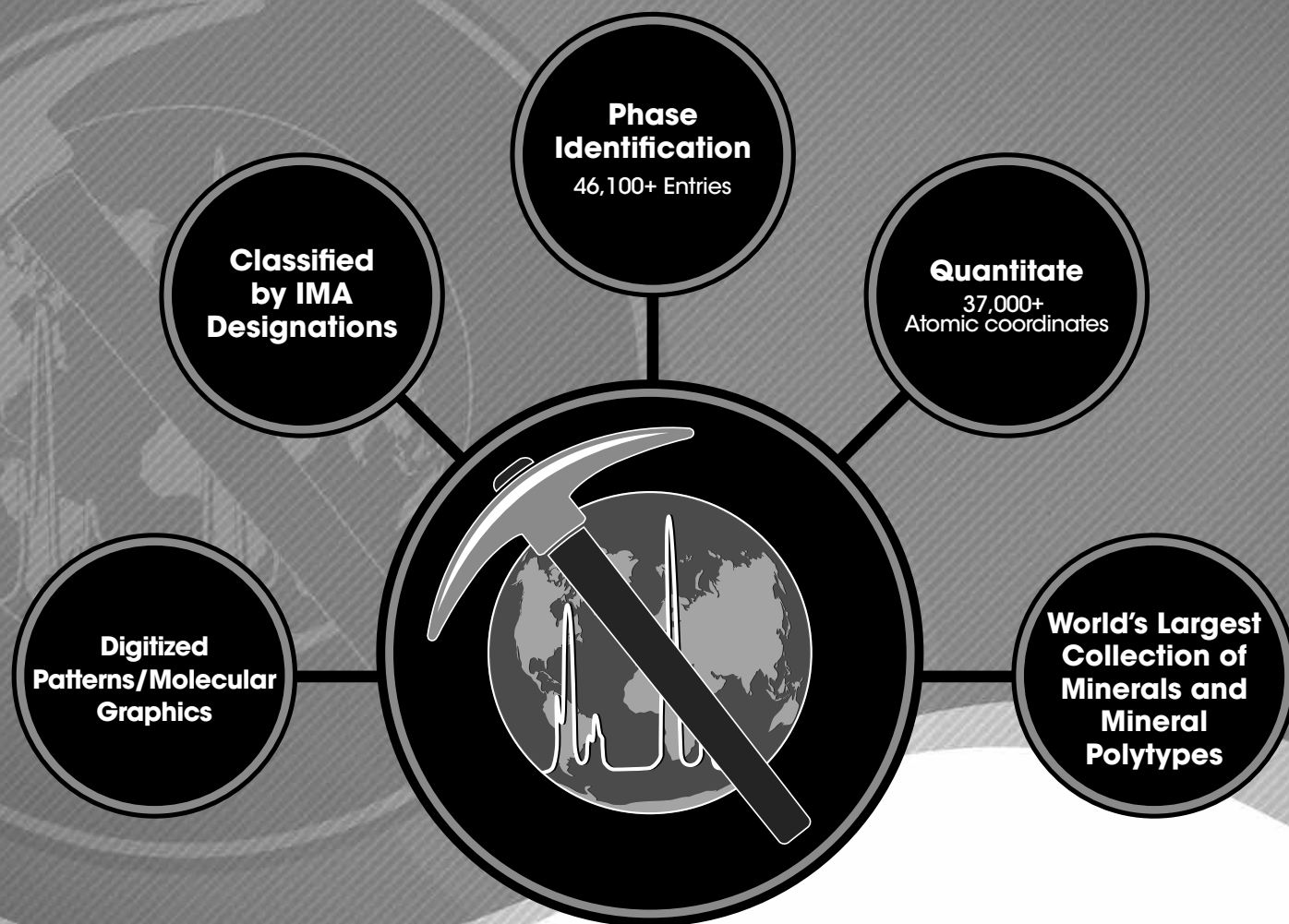
Penn
Master of Science in
Applied Geosciences

Introducing the 2019 Powder Diffraction File™

Diffraction Data You Can Trust

ICDD databases are the only crystallographic databases in the world with quality marks and quality review processes that are ISO certified.

PDF-4/Minerals



Standardized Data

More Coverage

All Data Sets Evaluated For Quality

Reviewed, Edited and Corrected Prior To Publication

Targeted For Material Identification and Characterization

Visit Us at GSA Booth #716

Table of Contents

36	2018 Section Meeting Student Poster Winners	12	Lost & Found
44	2019 Call for Field Trip, Short Course, and Technical Session Proposals	18	Medal & Award Recipients
41	2019 Section Meetings	38	Member Community
36	2019 Graduate Student Research Grants	24	Membership 2019
11	Accommodation and Services	7	Messages from the GSA President and GSA Executive Director
53	Alphabetical Listing of Events by Group or Organization	5	Message from the Annual Meeting General Chair
46	Alumni Receptions (Group and Private)	17	Mobile Meeting App
11	Annual Meeting Offices	12	Mother's Room/Self Care Room/Special Needs
99	Annual Program Committee	40	National Park Service GIP Opportunities
96	Associated Societies	12	Newsroom
21	Award Lectures	35	Notice of GSA Council Meetings
25	Awards & Lectures Calendar	37	On To the Future Events
11	Business Centers	98	Organizing Committee
11	Campus Connection	32	Pardee Keynote Symposia
11	Charging Stations	41	Penrose Guest Hospitality Suite
11	Childcare	12	Poster Presentations
65	Chronological Listing of Events	22	Presidential Address
11	Coat and Luggage Check	21	President's Medal Lecture
11	Coffee Breaks	13	Recycling and Sustainability
11	Concessions	13	Registration Desk
11	Continuing Education Credits	130	Research Funded by GSA Programs and Partners
37	Diversity and Inclusion Events	9	RISE: Respectful, Inclusive, Scientific Events
39	EarthCache	38	Rocks and Hops Soiree
38	Educator Opportunities	15	Safety and Security Tips
14	Events Code of Conduct	13	Saturday Indy Icebreaker
11	Exhibit Hall Hours	48	Scientific Field Trips
74	Exhibitor Descriptions & Booth Numbers	101	Sessions by Category
11	Exhibits Opening Reception	113	Sessions Calendar
22	Feed Your Brain Lunchtime Enlightenment	50	Short Courses
12	First Aid & Emergency Services	38	Social Media
40	Future GSA Annual Meetings	17	Speaker Ready Room
34	GeoCareers	23	Special Presentation
39	GeoCorps™ America	100	Sponsor Recognition—Session Cosponsor Organizations
40	GeoCorps™ Enterprise	16	Sponsors—Thank You!
38	Geoscience Educators Reception	36	Student Information and Activities
38	GeoTeachers 2018	36	Student Geologic Map Competition
21	Gold Medal Lectures	13	Student Volunteer Office
18	GSA Awards Ceremony	143	Technical Sessions—Speakers, Times & Titles
19	GSA Division Primary Awards	32	The Best of AAPG at GSA 2018
20	GSA Fellows (newly elected)	13	Transportation
52	GSA Foundation	13	Visit Indy Information Desk
12	GSA Headquarters (Bookstore—Foundation—Membership—GSA Opportunities)		
9	GSA RISE: Harassment Resistance and Bystander Intervention		
35	GSA Mentoring Center		
43	Guest Program		
277	Index of Authors		
11	Information Pages		
12	Internet		
99	Joint Technical Program Committee Representatives		
33	Late-Breaking Session		
17	Libations & Collaborations—Posters & Conversations		
42	Local Tours		
12	Lodging Information Assistance		

Maps & Floorplans

303–310

303	Downtown Indianapolis Hotels & Attractions
306	Exhibit Hall
304	Indiana Convention Center
308	JW Marriott Indianapolis
307	Poster Hall

Join us at GSA for **The Brunton Challenge**

Test your field skills by taking measurements with
Brunton Instruments as part of an active data collection effort,
and get a chance at free field gear daily.

Daily Grand Prize, Brunton Axis



Dr. Matthew McKay
Missouri State University

**Booth 509
with hosts:**



David Heerschap
Axis Co-Inventor



Message from the Annual Meeting General Chair



Todd A. Thompson

Welcome to Indianapolis!

Indianapolis, the Crossroads of America, is a vibrant city that will welcome you with Hoosier hospitality and surprise you with its diversity, multiculturalism, and cosmopolitan ambiance. The city has much to offer, and we hope you'll take advantage of your time here to explore it a little. I truly hope that you arrived early and will stay late.

People have asked me what it is like to be the general chair for an annual meeting. I liken it to a fire that was started using damp wood. Two years ago the conference was smoldering and producing a lot of smoke. Then last year, after the request for topical sessions, field trips, and workshops was announced, the first few flames appeared. Dry logs were added when the Annual Program Committee met in early 2018; that long meeting left no log unscorched as the technical program, field trips, Pardee sessions, and workshops were reviewed. Now, writing this in the middle of hot Indiana summer, I feel like I am standing close to the flames of a roaring fire—a fire perfectly stoked thanks to the Organizing Committee, colleagues from our GSA Divisions and Associated Societies, and the unseen GSA staff members.

The committee has worked diligently to make sure you'll be excited and engaged by the conference program. Technical Program Chair Kevin Mickus of Missouri State University and Vice-Chair Amy Brock-Hon of the University of Tennessee have spent many hours putting together a great technical program. Field Trip Chair Lee Florea from the Indiana Geological and Water Survey (IGWS) has assembled a variety of interesting and informative field trips that we hope you'll take advantage of. And Outreach Chair Polly Root Sturgeon, also of the IGWS, has planned several stimulating events for students, geologists, and the general public, including a Night at the Indiana State Museum, a K–12 educator's workshop, EarthCache events, and an earthquake experience in the Quake Cottage.

But remember, networking and sharing your stories and experiences are just as important as the research you present. So gather round the bonfire and enjoy the sessions, the field trips, the city, the camaraderie, and even toast a marshmallow or two!

Todd A. Thompson

GSA 2018 General Chair

Director and State Geologist, Indiana Geological & Water Survey



2019 CALENDAR

BUY ONLINE ►
rock.geosociety.org/store

ONLY
\$9.95

Restless Earth

This 12-month, 9.5" x 12.5" calendar showcases compelling submissions to the GSA calendar photo search. Featuring images of Mount Rundle (Canada), 3-minute-old pahoehoe lava (Hawai'i), the Liwu River carving through the Taroko Gorge (Taiwan), and even a photomicrograph of dinosaur bone (Utah), this stunning calendar will delight the geologist in all of us. **CAL2019 \$9.95**

- Dates of many noteworthy eruptions & earthquakes
- Birthdates of famous geoscientists
- Calendar of GSA events, meetings, & deadlines



THE
GEOLOGICAL
SOCIETY
OF AMERICA®

Messages from



Robbie R. Gries

**GSA President
Robbie Rice Gries**

and

**GSA Executive Director
Vicki S. McConnell**



Vicki S. McConnell

“Islands of Diversity in Seas of Despair”—how can you resist a field trip title promising that! Indianapolis is offering Seas of Innovation and Adventure in their remarkable program. For the busy leadership geos like me—obligated to committee meetings and responsibilities for appearances at important events—it is downright frustrating to read about things I might miss. But you won’t have to! You can “Watch What You Drink,” do some “Terrestrial Laser Scanning,” “Explore Your Unconscious Bias,” learn to use “Sketch Comedy and Standup” when teaching, learn to “Paint with the Aid of Mimosas,” delve into the “Big Data Puzzle,” and top everything off with some “Source to Stomach” interactions. Oh, yes, and take advantage of “Rapid-Fire” communicating to address the “Modern Attention Span in Five Minutes or Less”!

Indiana, a perfect place to know more about karst or pseudo-karst, communicating about hazards and risk, the latest in climate change as well as global changes with Triassic evolution and extinctions, urban geochemistry, agrohydrology, urban systems, geoarchaeology, artificial intelligence, and medical geologists—the opportunities abound!

There is something for everyone, including papers that were the peer-judged “Best of AAPG” if you want to learn about the latest in petroleum technology, papers embedded in the Geology Energy and Unconventional Energy sessions.

Talk to me in Indianapolis!

Robbie R. Gries, GSA President
President, Priority Oil & Gas LLC, Denver, Colorado, USA

As expected, the 2018 GSA Annual Meeting in Indianapolis will be featuring the latest in a wide breadth of earth and planetary science research, mapping, and education information. All that you have to share. We at GSA are honored to assist you in presenting your work, forging new partnerships, and reconnecting with your community.

We have a hot-topic session looking into the science, technology, and policy of responding to the Kilauea volcanic eruption that took on a very different morphology and urgency in May. You will have a chance to attend a “Feed Your Brain” talk by U.S. Geologic Survey Hawai’i Volcano Observatory scientists and ask questions about what it is really like to respond to a natural disaster. In addition, USGS Director James Reilly will be presenting his vision for the USGS.

One of the activities that makes GSA Annual Meetings so unique and important to furthering the geosciences are the field trips. We are offering 25 field trips this year studying the varied geology of the Midwest of the United States. These field trips can broaden your horizons, change the direction of your research, build your network of colleagues, and be all kinds of fun. I encourage you to also review the short course learning opportunities to make the most of your time at the meeting.

Perhaps you are interested in mentoring or being mentored while at the meeting. We offer several ways you can engage and participate. Just go to the mentoring page on the meeting website for more information (community.geosociety.org/gsa2018/science-careers/careers/mentor).

I want to personally invite you to the Presidential Address & Awards Ceremony that takes place in the convention center Sunday, 4 Nov., noon to 1:30. In this short amount of time you can hear GSA’s President Robbie Gries share her thoughts on the state of geosciences and acknowledge the careers and accomplishments of colleagues and friends.

All of us at GSA Headquarters are excited to see all of you in Indianapolis!

Vicki S. McConnell
GSA Executive Director



Take a Trip through the Heartland with GSA



FIELD GUIDE 51 ▶ Ancient Oceans, Orogenic Uplifts, and Glacial Ice: Geologic Crossroads in America's Heartland

Edited by Lee J. Florea

This volume, prepared for the 130th Annual Meeting of the Geological Society of America in Indianapolis, includes compelling science and field trips in Indiana, Illinois, Kentucky, Michigan, and Ohio. A wealth of geologic and human history collides in the Midwest, a confluence that led to the growth of America's industry over the past two centuries. Guides in this volume depict this development from the establishment of New Harmony, the birthplace of American geology, through the construction of Indianapolis's modern skyline. Underpinning this growth were the widespread natural resources—limestone, coal, and water—that built, powered, and connected a growing nation. Take a journey through the Heartland to sand dunes, outcrops, quarries, rivers, caves, and springs that connect Paleozoic stratigraphy with the assembly of Gondwana, continental glaciation with Quaternary geomorphology and hydrology, and landscape with the human environment.

FLD051, 434 p., ISBN 9780813700519 | IN PRESS |

BUY ONLINE ▶ <http://rock.geosociety.org/store/>

You May Also Like

SPE531: Paleozoic Stratigraphy and Resources of the Michigan Basin

SPE530: Quaternary Glaciation of the Great Lakes Region: Process, Landforms, Sediments, and Chronology

FLD031P: Insights into the Michigan Basin: Salt Deposits, Impact Structure, Youngest Basin Bedrock, Glacial Geomorphology, Dune Complexes, and Coastal Bluff Stability

FLD012P: From the Cincinnati Arch to the Illinois Basin: Geological Field Excursions along the Ohio River Valley

SPE258P: Geology and Hydrogeology of the Teays-Mahomet Bedrock Valley System

Related Books



RISE: Respectful Inclusive Scientific Events

GSA Meetings RISE to the Top



We support **Respectful Inclusive Scientific Events** and are committed to ensuring a safe and welcoming environment for all participants.

By registering for this meeting, you have agreed to abide by the GSA Events Code of Conduct Policy (see page 14) in all venues at our meetings, including ancillary events, field trips, and official and unofficial social gatherings.

Remember:

- Exercise consideration and respect in your speech and actions.
- Refrain from demeaning, discriminatory, or harassing behavior and speech.
- Be mindful of your surroundings and of your fellow participants.
- Alert a GSA representative or security personnel if you notice a dangerous situation, someone in distress, or violations of this anti-harassment policy, even if they seem inconsequential.

If you are being harassed, notice that someone else is being harassed, or have any other concerns, please locate a GSA Staff Member or GSA Leader with a GSA RISE button. You may also email us at gsaeventscode@gmail.com or text or call us at +1-720-507-7523.

RISE to the occasion—be an active bystander to ensure a Respectful Inclusive Scientific Event. **Attend this free workshop and learn how you can stop harassment:**

GSA RISE: Harassment Resistance and Bystander Intervention

Presented by Sherry A. Marts, Ph.D., President and CEO, S*Marts Consulting LLC

Tues., 9–11 a.m., Indiana Convention Center, Room 206-207

The damage done by harassers and bullies begins with those they target. It extends to those who witness or hear about it. And it poisons the atmosphere everywhere it happens—including in the workplace, in fieldwork settings, and at meetings and conferences. What can you do to stop harassment when you're the target? How can you step in to stop it when you see it? Learn how to recognize harassment for what it is, how to decide when to step up and step in, and approaches and methods that work to stop harassing and bullying behavior. *Free seminar for all attendees.*

rock.geosociety.org/store

Do you have a group
of topical papers that
you dream of seeing
in a GSA book?

Or a pithy yet
mind-blowing
manuscript looking
for a journal?

Your latest research
will find the right fit
at GSA.

GSA BOOKS

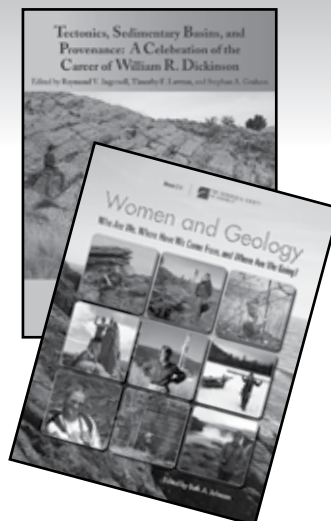
Special Papers and Memoirs are:

- ▶ peer-reviewed
- ▶ published quickly after acceptance
- ▶ online ahead of print
- ▶ distributed worldwide (print + online)
- ▶ included in the Web of Science Book Citation Index

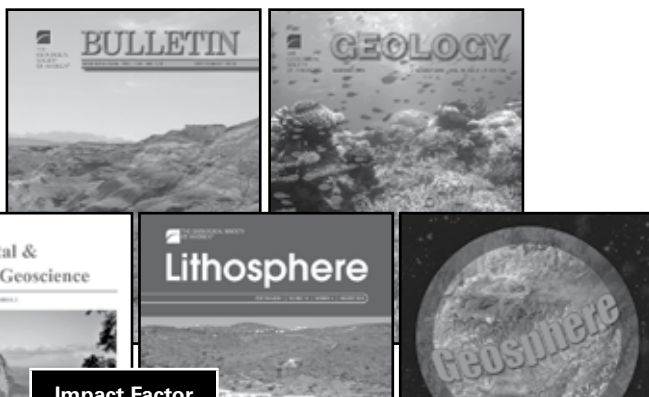
Science Editors:

- ▶ **Joan Florsheim**
University of California, Santa Barbara
- ▶ **Christian Koeberl**, University of Vienna

Details: <http://tinyurl.com/GSA-book-guide>
Submit your proposal: books@geosociety.org



MAKE AN IMPACT: Publish with GSA



JOURNAL	Impact Factor 2018	5-YEAR	SUBMIT ONLINE
GSA Bulletin	4.039	4.450	gsabulletin.msubmit.net
Geology	5.073	5.451	geology.msubmit.net
Geosphere	2.811	2.741	geosphere.msubmit.net
Lithosphere	2.766	3.195	lithosphere.msubmit.net
E&EG	0.318	0.730	http://eeg.allentrack.net/cgi-bin/main.plex

**GSA members receive a US\$100 discount on
Open Access publication fees.**

TOP-RATED JOURNALS

GSA publishes on all aspects of earth science. Editors at the forefront of their fields oversee a rigorous peer-review process for all manuscripts, and pre-issue publication online gets your accepted paper into circulation quickly.

- ▶ **GSA Bulletin**—Published since 1890 and still going strong.
- ▶ **Geology**—Measure your success with a paper accepted into this #1 ranked “geology” journal.
- ▶ **Environmental & Engineering Geoscience**—Explores the interaction of people with hydrologic and geologic systems.

100% OPEN ACCESS:

- ▶ **Geosphere**—Branch out unfettered with animations and interactivity.
- ▶ **Lithosphere**—The voice for integrated and interdisciplinary tectonics.

www.gsapubs.org

Information Pages

(in alphabetical order)

ICC—Indiana Convention Center

ACCOMMODATION AND SERVICES

ICC, Room 209

GSA strives to create a pleasant and rewarding experience for every attendee and is committed to providing universal access to our meeting. If you or your guests need auxiliary aids or services because of special needs, please come to the Annual Meeting Office.

ANNUAL MEETING OFFICES

ICC, Room 209

Phone: +1-317-262-5907

Fri.–Wed., 7 a.m.–6 p.m.

JW Marriott Indianapolis, Conference Level, Registration Room (near Room 108)

Phone: +1-303-357-1041

Fri.–Wed., 7 a.m.–6 p.m.

BUSINESS CENTERS

Ricoh Business Center

ICC, 1st Floor (across from Room 116)

Phone: +1-317-262-4496

Mon.–Fri., 8:30 a.m.–4:30 p.m.

JW Marriott Indianapolis, FedEx Office

10 S. West Street, Indianapolis, Indiana 46204

JW Marriott, 2nd Level (next to Starbucks)

Phone: +1-317-974-0378

Mon.–Fri., 7 a.m.–7 p.m.

Sat.–Sun., 9 a.m.–5 p.m.

CAMPUS CONNECTION

ICC, Hall I

Sun., 2–7 p.m.

Mon.–Tues., 10 a.m.–6:30 p.m.

Wed., 10 a.m.–2 p.m.

CHARGING STATIONS

Stations to charge your phone or tablet can be found in Indiana Convention Center Hall I at the GSA Headquarters Exhibits area, and also on the second floor at the Crossroads and Hoosier Corridor intersection.

CHILDCARE

ICC, Room 212

Phone: +1-317-262-5901

Sat.–Wed., 7 a.m.–6 p.m.

Fees: US\$9 per hour, per child

Age range: 6 months to 12 years

Please check at the childcare office for availability.

COAT AND LUGGAGE CHECK

ICC, Georgia Street Lobby, 1st Floor

Sat.–Sun., 7 a.m.–7 p.m.

Mon.–Wed., 7 a.m.–6:30 p.m.

COFFEE BREAKS

(while it lasts)

ICC

Sun., 9:30 a.m., Hall J-K

Mon.–Wed., 10 a.m., Hall I and Hall J-K

Coffee will also be available for purchase at concessions.

CONCESSIONS

ICC, Sagamore–Crossroads Corridor (2nd Floor)

Sun.–Wed., 10 a.m.–2 p.m.

ICC, Hall I

Mon.–Wed., 10 a.m.–2 p.m.

ICC, Capitol Food Court

Espresso Caffé, Sat.–Wed., 7 a.m.–4 p.m.

Deli/Grille, Sun.–Wed., 10 a.m.–3 p.m.

CONTINUING EDUCATION CREDIT

GSA's Annual Meeting offers an excellent opportunity to earn CEUs toward your general continuing education requirements for your employer or K–12 school. Please check the meeting website at community.geosociety.org/gsa2018 after the meeting to download your CEU certificate.

EXHIBIT HALL HOURS

ICC, Hall I

Sun., 2–7 p.m.; **Exhibits Opening Reception:** 5:30–7 p.m.

Mon.–Tues., 10 a.m.–6:30 p.m.

Wed., 10 a.m.–2 p.m.



4–7 November
Indianapolis, Indiana, USA

Information Pages

(in alphabetical order)

ICC—Indiana Convention Center



FIRST AID & EMERGENCY SERVICES

Crossroads Corridor, across from Hall E

Sun.–Wed., 8 a.m.–6:30 p.m.

- Any emergency requiring medical, police, or fire assistance at the Indiana Convention Center should be directed to a 24-hour security dispatch by dialing 3350 using a RED house phone or +1-317-262-3350 if you are using a cell phone. Please do not dial 911.
- JW Marriott Indianapolis: Medical emergency: dial 911; non-life threatening emergency: dial 0 and ask for loss prevention.
- Your hotel: Medical emergency: dial 911; non-life threatening emergency, dial 0.

LOST & FOUND

ICC, Registration Area, Hoosier Corridor, Hall H Lobby

Phone: +1-317-262-5904

Sat., 7 a.m.–7 p.m.

Sun., 6:30 a.m.–6:30 p.m.

Mon.–Wed., 7 a.m.–4:30 p.m.

Each year, many lost items are left at the convention center after the meeting ends. We encourage you to check at the Information/Lost & Found Desk if you lose something or find something that's not yours. After the Information/Lost & Found Desk closes each day, items will be transferred to the security office. After the meeting, items come home to the GSA Headquarters in Boulder, Colorado, USA; we'd like to return your things to you before then!

GSA HEADQUARTERS

ICC, Hall I

Bookstore–Foundation–Membership–GSA Opportunities

Sun., 2–7 p.m. Mon.–Tues., 10 a.m.–6:30 p.m.

Wed., 10 a.m.–2 p.m.

INTERNET

ICC

Wireless Internet will be available in various lobby areas of the ICC. Seating for networking will be provided throughout the ICC in lobby areas and the main concourse. Access to electrical power is not guaranteed in all areas.

LIBATIONS & COLLABORATIONS—POSTERS & CONVERSATIONS

Mon.–Wed., 4:30–6:30 p.m., Hall J-K

LODGING INFORMATION ASSISTANCE

If you have any issues with your hotel reservation during the meeting, please call +1-317-262-8191, Mon.–Fri., 8:30 a.m.–5 p.m. EST.

If you have issues outside of these hours, please contact your hotel's manager on duty.

MOTHER'S ROOM/SELF CARE ROOM/SPECIAL NEEDS

ICC, Room CS01 (next to room 212), 2nd Floor

If you are a nursing mother, or have special needs, this room will be available for use during the meeting. The room is lockable from the inside for privacy. There is a restroom within this space.

JW Marriott Indianapolis, Room 109

Sun.–Tues., 7 a.m.–6 p.m.

Please contact a GSA representative at the JW Marriott Annual Meeting Office.

NEWSROOM

ICC, Room 202

Phone: +1-317-262-5903

Sun.–Wed., 7:30 a.m.–6 p.m.

The GSA newsroom will provide workspace for registered media representatives and public information officers only. Media should register and pick up badges, programs, and related information at the main registration desk. Find meeting-related press releases and media coverage in the online newsroom at community.geosociety.org/gsa2018/press/pr.

PENROSE GUEST HOSPITALITY SUITE

ICC, Room 210

Phone: +1-317-262-5900

Sun.–Wed., 8 a.m.–5:30 p.m.

POSTER PRESENTATIONS

ICC, Hall J-K

Sun., 9 a.m.–5:30 p.m., with authors present 3:30–5:30 p.m.

Exhibits Opening Reception: 5:30 p.m.–7 p.m.

Mon.–Wed., 9 a.m.–6:30 p.m., with authors to present during the afternoon Libations and Collaborations, 4:30–6:30 p.m.



4–7 November
Indianapolis, Indiana, USA

Information Pages

(in alphabetical order)

ICC—Indiana Convention Center



RECYCLING AND SUSTAINABILITY

In furtherance of GSA's mission in promoting stewardship of Earth, GSA works continuously to minimize the environmental impacts associated with the planning and execution of all our meetings. Please consider contributing to the GSA Foundation's Energy and Conservation Fund at www.gsafweb.org/donate if you want to make a carbon offset donation for your attendance at the meeting. This fund is used to support sustainability projects at GSA headquarters.

REGISTRATION DESK

ICC, Hoosier Corridor, Hall H Lobby (1st Floor)

Phone: +1-317-262-5904

- Badges are required for access to *all* activities beginning on Saturday, 3 Nov., and should be visible at all times.
- The guest registration fee of US\$99 per person is available for non-geologist spouses or friends of professional and/or student meeting registrants.
- Check in at the Onsite Registration Desk to purchase tickets for local tours, special events, and ticketed functions.
- GSA cannot provide refunds for onsite registration or ticketed/special event sales.
- Please return your badge to the registration desk to be recycled.

Badge ribbons: If you have been notified that you should receive a ribbon for your badge, please pick it up at the Information Desk by registration.

SATURDAY INDY ICEBREAKER

ICC, 500 Ballroom

5–7 p.m.

The most popular event at the Annual Meeting is the Icebreaker. Join thousands of industry professionals, students, academics, Divisions, and Associated Societies to kick off the Annual Meeting in Indy with beer and great company.

SPEAKER READY ROOM

ICC, Room 201

Sat., 8 a.m.–8 p.m.

Sun.–Tues., 6:30 a.m.–6:30 p.m.

Wed., 6:30 a.m.–1:30 p.m.

If your presentation is on	Upload no later than
Sunday	8 p.m., Saturday
Monday	6:30 p.m., Sunday
Tuesday	6:30 p.m., Monday
Wednesday	6:30 p.m., Tuesday

STUDENT VOLUNTEER OFFICE

ICC, Room 203

Phone: +1-317-262-5905

Fri., 7 a.m.–5 p.m.

Sat.–Wed., 6:30 a.m.–6 p.m.

TRANSPORTATION

Annual Meeting Office, ICC, Room 209

Phone: +1-317-262-5907

GSA will not be providing shuttle service from the hotels to the ICC. GSA will provide alternative arrangements to and from GSA hotels and the ICC for the elderly or disabled. Contact the Annual Meeting Office to make these arrangements.

Getting around Indy

GO EXPRESS TRAVEL AIRPORT SHUTTLE: This express, nonstop bus service runs from the airport to downtown every 30 minutes from 5 a.m.–11 pm for US\$10 one way. Passengers board the shuttle at Zone 7 of the airport's Ground Transportation Center. Cash payments not accepted, credit cards only.
www.goexpresstravel.com/indy_express

INDYGO BUS SYSTEM: Bus routes operate all around the city, including a fixed route to and from the airport, for as little as US\$1.75 per ride. IndyGo's Transit Center opened in June 2016 as a hub for public transit in the city.
www.indygo.net

TAXIS: Taxis are readily available at the airport, ICC, Circle Centre mall, and major hotels. A typical fare from the airport to downtown is US\$35, and select taxi companies offer a US\$5 flat rate fare for trips within downtown (bordered by the White River, 12th Street, I-65, and I-70).

UBER & LYFT Car service in addition to traditional taxis is available through Uber and Lyft. Both app-based services connect visitors with resident drivers. Requesting and paying for the ride are done via your mobile phone.

www.uber.com

www.lyft.com/rider

VISIT INDY INFORMATION DESK

ICC, Hoosier Corridor

Phone: +1-317-262-8294

Sun.–Wed., 9 a.m.–5 p.m.

Events Code of Conduct

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 (www.geosociety.org/gsa/positions/position15.aspx), 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 (www.geosociety.org/mbrCode).

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;
- 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 or GSA leader wearing a GSA RISE button. You may also email us at gsaeventscode@gmail.com, text or call us at +1-720-507-7523, or stop by the GSA Annual Meeting Office, Room 209 in the Indiana Convention Center, to talk with someone.

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.



Safety and Security Tips

GSA is committed to providing a safe and secure meeting environment. The following are suggestions for how you can protect yourself in situations that may occur during the meeting. **Always remember that if it is a life-threatening emergency, dial 911.** If you are within the convention center or hotel, it is helpful to have someone notify a staff member or building employee if possible to avoid delays with emergency responders.

If an emergency or other situation occurs at any time during the conference and you need additional assistance from GSA, please notify a GSA staff member in the Indiana Convention Center, Room 209, or call +1-317-262-5907 as soon as possible after any incidents. (After hours, you can text or call +1-720-507-7523.)

Important phone numbers in case of emergency:

@ **Convention Center:** Dial 3350 using a red house phone or +1-317-262-3350 when using a cell phone.

@ **JW Marriott:** Dial 0 (or 911 for emergency responders) using a house phone and ask for loss prevention.

@ **Your hotel:** Dial 0 for the hotel operator.

Within the city:

Indianapolis Metropolitan Police Department, 50 North Alabama Street: Non-Emergency Dispatch: +1-317-327-3811
IU Methodist Hospital, 1701 Senate Blvd., +1-317-962-8355

Also Recommended: If you have a cell phone, create an emergency contact entry and list it under “ICE” (In Case of Emergency). On the back of your meeting ID badge, please write an emergency contact name and number for someone who is attending the meeting with you.



FIRE SAFETY

While at the Convention Center: Study the floor plans in the meeting program for the exits nearest to your session room as well as to other rooms you plan to visit, including the Exhibit Hall.

While at Your Hotel: Locate the fire exits on your floor, put your room key close to where you sleep, and check the windows to see if they open.

In case of fire:

- Keep your room key with you;
- Never open a door without first checking for smoke or heat (if the door feels warm, don't open it);
- If smoke is present, keep low to the floor—do not walk upright;
- Do not use elevators;
- If smoke is in a stairwell, avoid it—choose another route or return to your room if there no accessible way out.

If you must remain in your room during a fire:

- Let someone know you are in the room—if the phone works, call for help;
- Open or break (if necessary) the window for fresh air, but *not* if you see smoke outside;
- Hang a bed sheet out the window to signal firefighters;
- Fill the tub and sink with water;
- Soak towels and sheets (and blankets if necessary) and use them to keep smoke out of your room by blocking door cracks and ventilation grills;
- If your room is smoky, place a wet cloth over your nose and mouth.

STREET SAFETY

When Leaving the Convention Centre or Other Meeting Venue:

- Take off and stow your meeting badge;
- Don't walk through isolated areas;
- Keep alert for potentially dangerous situations;
- Find others to walk with you;
- Take a cab if you have had too much to drink (don't make yourself an easy target).

If You Are Accosted:

- Comply with attacker demands as calmly as possible, but do not allow yourself to be moved to a secondary location;
- Get a good description of your attacker;
- Call the police.

Find more city safety tips on our meeting mobile app or on our meeting website.

*GSA is happy to provide these reminders to help make your meeting safer, but please remember: **You are responsible for your own safety.***

Thank *You* Sponsors

Your support of the Geological Society of America's Annual Meeting & Exposition continues a longstanding tradition of serving science and the profession. The Society appreciates your investment in the growth of current and future leaders in the geoscience community. The following list is as of **30 Aug. 2018**.

DOUBLE DIAMOND

ExxonMobil



GOLD



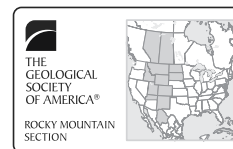
SILVER

CHESAPEAKE

ENERGY



BRONZE



Mobile Meeting

Mobile Meeting App

GSA's meeting app can be used in two ways. When installed as a native app on iOS or Android phones and tablets it allows you to browse and search the entire meeting even without an Internet connection. On other kinds of devices it is accessible as a Web app; i.e., a responsively designed application that will run in your favorite Web browser and will work well on screens of any size. Either way, the meeting app allows you to build your own personal schedule for the meeting. That personal schedule will sync between all of the devices on which you run the meeting app. So you can start planning your time at the meeting using the Web app on your desktop or laptop computer and then continue using the app on your smartphone or tablet while at the meeting.

The apps are available in the Apple Store and Play Store. Please search for **GSA 2018**. If your mobile device is short on memory and you would prefer not to install the native app, and if you have a good cellular data plan just in case you encounter Wi-Fi problems at the meeting, we recommend that you use the Web app on your phone.

Visit community.geosociety.org/gsa2018/mobileapp for more information and for download links.

Everything you need to know about the meeting, always at your fingertips!

- Search the full technical program;
- Locate the sessions and individual talks you want to hear;
- See who is exhibiting and add them as favorites;
- Find speakers and add them as contacts;
- Select events to attend and add them to your calendar; and
- View uploaded presentations.

Poster Presentations

Posters are located in Halls J-K, the following hours:
Sun., 9 a.m.–5:30 p.m., with authors present 3:30–5:30 p.m.
Mon.–Wed., 9 a.m.–6:30 p.m., with authors present during the afternoon **Libations & Collaborations** reception, 4:30–6:30 p.m.

Presenters will be able to set up their posters starting at 7:30 a.m. on the day of the presentation.



Speaker Ready Room

Indiana Convention Center, Room 201

Sat., 8 a.m.–8 p.m.

Sun.–Tues., 6:30 a.m.–6:30 p.m.

Wed., 6:30 a.m.–1:30 p.m.

The Speaker Ready Room does not have Internet service.

Presentation Information

Your abstract acceptance e-mail, sent to you in September, included the time and location of your presentation as well as whether you were slated for a talk or a poster. If you are presenting a talk, please read the following information.

We strongly recommend that all speakers visit the speaker ready room to run through presentations in order to get comfortable with the equipment. We also recommend this to anyone who uploaded their presentation early. It's best to make sure that images and fonts used in your presentation work well on the rented conference center equipment. Highly qualified technicians are on-hand to offer any needed assistance.

If you uploaded your presentation online, or if you were not able to submit your presentation online prior to the meeting, please bring your presentation on a thumb drive to the Speaker Ready Room *the day before*. Below is a schedule

<i>If Your Presentation is on</i>	<i>Upload No Later Than</i>
Sunday	8 p.m., Saturday
Monday	6:30 p.m., Sunday
Tuesday	6:30 p.m., Monday
Wednesday	6:30 p.m., Tuesday

If you have a Sunday presentation and are unable to get to the Speaker Ready Room on Saturday, please take your presentation directly to your session room at least 30 minutes before the session is scheduled to begin.

Acceptable file types: PowerPoint (.ppt, pptx, pps, or .ppsx), Microsoft Word (.doc or .docx), or PDF (.pdf). If your graphics or video clips are not embedded in your presentation, please be sure that you bring them as well. The Speaker Ready Room does not provide thumb drives, so please be sure to come prepared.

Mac Users—Please Read: You will be using a PC for your presentation. Please visit the Speaker Ready Room to make sure your hyperlinks still function, and avoid using a rewritable CD (CD-RW), as we've encountered compatibility problems with them. If your presentation includes embedded video, your video will most likely NOT play automatically on the PC platform. You will need to either convert your .mov files to .avi format or create a link in your slide show to an external .mov file. If you choose the latter, your animation will play in a separate QuickTime window, outside of your PowerPoint presentation. **THE KEYNOTE PRESENTATION SOFTWARE IS NOT SUPPORTED DURING THE ANNUAL MEETING.** If you are unable to run your Mac presentation from a PC, we will be able to accommodate you. Please talk to the technicians in the Speaker Ready Room for more information.